ACTION-ORIENTED STUDIES IN GREEN CRIMINOLOGY AND A HARMFUL TRADE IN PET WILDLIFE IN TRINIDAD AND TOBAGO

By

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ABSTRACT

ACTION-ORIENTED STUDIES IN GREEN CRIMINOLOGY AND A HARMFUL TRADE IN PET WILDLIFE IN TRINIDAD AND TOBAGO

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This dissertation presents five chapters, inclusive of three manuscripts styled as draft publications, to advance the contested paradigm of green criminology—or the study of crimes and harms that involve the natural world, non-human species, and the human communities that depend on them—and to support the emerging professional practice of non-governmental wildlife trade reduction. Two of the presented manuscripts meet the requirements for submission to scientific journals in criminology, while another is a long-form text modeled on contemporary non-governmental 'wildlife trade assessment' reports. The specific wildlife trade under study is a harmful trade in pet wildlife occurring in Trinidad and Tobago and the wider world. This trade was particularly under-studied prior to this dissertation research project and broader initiative.

The dissertation is action-oriented in that it seeks to support the green criminology paradigm's empirical, theoretical, and technical development. The resulting manuscript-style chapters have been designed using a best-practice 'Open Standards' planning approach now popular in wildlife trade reduction projects. The underlying research activities were also action-oriented in that they were and continue to be conducted in partnership with local activists and scientists as part of a non-governmental project to reduce the harmful trade in pet wildlife trade in Trinidad and Tobago (see www.nurturenaturett.org). The underlying research included focus group discussions with wild animal keepers (n=75), key informant interviews (n=172) with seven stakeholder groups, more than two years of participant observation of physical sites and

social media, a national household survey on animal keeping (n=2004), and a taxonomic legal inventory of wildlife laws in Trinidad and Tobago and its trade partners.

The first chapter, “Introduction,” provides essential background information on the dissertation research, encompassing project, and implementing researcher. In this way, the chapter describes the developmental context of this dissertation thesis and the strategies employed to produce the dissertation chapters. The second chapter, “The illegal keeping of pet wildlife in Trinidad and Tobago: Diversity, prevalence, populations, and harms,” is designed for submission to a criminological journal on global crime issues and provides insights into the nature of an illegal wildlife trade in a Caribbean country. The third chapter, “‘We all know it’s inhumane’: The awareness and justification of green crimes and harms among Trinidadian songbird keepers,” is designed for submission to a criminological journal on social deviance and provides insights for the development of Neutralization Theory to reduce green crimes and harms.

The fourth chapter, “An assessment of the harmful trade in songbirds in Trinidad and Tobago and the wider world,” is designed as a gray-literature ‘wildlife trade assessment’ to educate and empower activists, donors, and policymakers in Trinidad and Tobago and the wider world. A final chapter, “Conclusion and Reflections,” considers the researcher’s experience in relation to action, green criminology, project-based intervention, and science-based activism. The researcher’s concluding reflections include the identification of several next steps to advance green criminology for the continuing and future reduction of harmful wildlife trades and other green crimes and harms.

Dedicated to a better world for people, plants, and animals.

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This dissertation was produced with the generous support of numerous communities, individuals, and institutions. First and most importantly, I express my deepest gratitude to the School of Criminal Justice and the entire Graduate School at Michigan State University (MSU) for supporting this area of research. Nowhere else could I have found such a supportive environment to develop a specialized form of criminology based on extensive fieldwork and community activism. Truly, I have been able to engage in some of the most rewarding research of my career as an MSU doctoral student and researcher.

Second, I thank the many research participants who contributed to this study. Without you, I could never have begun to understand the realities and opportunities to reduce such a harmful wildlife trade in Trinidad and Tobago and the wider world. This dissertation is humbly built upon your experiences and stories, and I am indebted for the faith you have placed in me to create something of greater meaning. I hope I have done justice to your hopes and fears and that, one day we might all be able to agree that "Trinidad is a beautiful place," and not that "Trinidad is not a *real* place," as the popular expression goes.

Third, I wish to thank the many who have been guides and collaborators in this academic and professional journey. To my Guidance Committee Chair—Dr. Steven Chermak—and my Guidance Committee members—Drs. Merry Morash, Joseph Hamm, and Mark Axelrod—thank you for helping me craft my research project through your coursework and insights. I cannot thank you enough for your support, especially as this dissertation grew in scale and scope with donor funding. To my long-time mentor, Dr. Heather Eves, thank you for your inspiration, counsel, and reminding me that *trust* is essential to any project. To my long-time colleague

David Mahabir, thank you for always believing that wildlife conservation is possible in Trinidad and Tobago. To the director of the Nurture Nature Campaign's core implementing organization, Dr. Nigel Noriega, thank you for taking a chance on this unusual project and for having faith in me even when I doubted myself.

Fourth, I thank the donors and supporting organizations that have given life to the Nurture Nature Campaign (www.nurturenaturett.org). These organizations include: the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), the US Fish and Wildlife Service (USFWS), the US Agency for International Development (USAID), the Windward Islands Research and Education Foundation (WINDREF) at St. George's University. Additional thanks are given to the other coalition member organizations that have united to end the harmful pet wildlife trade in Trinidad and Tobago, specifically: Animal Welfare Network (AWN), Animals 360 Foundation (A360); Animals Alive (AA), Corbin Local Wildlife Park (CLWP), El Socorro Centre for Wildlife Conservation (ECWC), Environment Tobago (ET), Trinidad and Tobago Field Naturalists' Club (TTFNC), Trinidad and Tobago Society for the Prevention of Cruelty Against Animals (TTSPCA), the Trinidad and Tobago Veterinary Association (TTVA), Venus Doggess of Love (VDL), and the Veterinary Students' Association of Trinidad and Tobago (VSATT). This project has only been made possible by the foundation of work already laid for animal welfare and wildlife conservation in Trinidad and Tobago. I thank you all for your dedication and belief in the power of coalition-based campaigning.

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Finally, to my family and friends, I say thank you, and I love you. It has been quite an "unexpected journey" through these past years of pandemic and international research, and I could not have done this project without your faith, support, and good humor. Yes, this "pet detective" now "hot on the case."

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KEY TO ABBREVIATIONS

A360	Animals 360 Foundation
AA	Animals Alive
ACS	Association of Caribbean States
APHD	Animal Production and Health Division
ASTSG	Asian Songbird Trade Specialist Group
AWN	Animal Welfare Network
CARICOM	Caribbean Community and Common Market
CITES	Convention on the International Trade in Endangered Species
CLiC	Conservation Leadership in the Caribbean, a conservation training program
CLWP	Corbin Local Wildlife Park
CMP	Conservation Measures Partnership
CRESTT	Centre for the Rescue of Endangered Species of Trinidad and Tobago
CSO	Central Statistical Office of Trinidad and Tobago
DNRF	Department of Natural Resources and Forestry
ECWC	El Socorro Centre for Wildlife Conservation
ED	Enumeration district
EMODE	Easy-Moderate-Difficult-Extreme, a veterinary scoring system for pet suitability
ET	Environment Tobago
EWCL	Emerging Wildlife Conservation Leaders, a conservation training program
FAO	Food and Agriculture Organization of the United Nations
GISD	Global Invasive Species Database

GORTT	Government of the Republic of Trinidad and Tobago
ICCWC	International Consortium on Combating Wildlife Crime
IGCWG	International Green Criminology Working Group
IRB	Institutional Review Board
IUCN	International Union for Concerned Scientists
MALF	Ministry of Agriculture, Land, and Fisheries of Trinidad and Tobago
MOF	Ministry of Finance of Trinidad and Tobago
MOH	Ministry of Health of Trinidad and Tobago
MoU	Memorandum of Understanding
MSU	Michigan State University
NGO	Non-governmental organization
ONSA	National Organization for Rescue and Maritime Safety in the Aquatic Spaces of Venezuela
SARA	Scan, Analyze, Respond, and Assess
SII	Sustainable Innovation Initiatives
TTCG	Trinidad and Tobago Coast Guard
TTFNC	Trinidad and Tobago Field Naturalists' Club
TTPS	Trinidad and Tobago Police Service
TTSPCA	Trinidad and Tobago Society for the Prevention of Cruelty Against Animals
TTVA	Trinidad and Tobago Veterinary Association
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development

USDOS	United States Department of State
USFWS	United States Fish and Wildlife Service
UWI	University of the West Indies
VDL	Venus Doggess of Love
VPHU	Veterinary Public Health Unit of the Ministry of Health of Trinidad and Tobago
VSATT	Veterinary Students' Association of Trinidad and Tobago
WINDREF	Windward Islands Research and Education Foundation
ZSTT	Zoological Society of Trinidad and Tobago

CHAPTER 1

INTRODUCTION

> Research that produces nothing but books will not suffice. This by no means implies that the research needed is in any respect less scientific or "lower" than what would be required for pure science...I am inclined to hold the opposite true.
>
> —Lewin (1946, p. 35)

1.1. Overview

This introductory chapter provides background information on the dissertation research, the encompassing project to reduce a harmful pet wildlife trade in Trinidad and Tobago and the wider Caribbean, and the researcher as a central actor. Fundamentally, this research was designed to be 'action-oriented' by contributing to both the contested scientific paradigm of green criminology and the emerging professional practice of wildlife trade reduction. The research approach applied in this work is consistent with a 'multi-manuscript' thesis model and resulted in the production of three stand-alone manuscripts for publication in either scientific journals or as non-governmental gray literature. The research was also embedded within a wildlife trade intervention project in Trinidad and Tobago as so it was designed with several action-oriented process frameworks.

1.2. The Nature and Choice of 'Action-oriented' Research

Action-oriented research may be broadly defined as a philosophy of science that first emerged in the mid-20th century (Masters, 1995; McNiff, 2017; Stringer & Ortiz Aragón, 2020). Though accounts vary, many trace the origins of the paradigm to Kurt Lewin in the 1940s and 1950s who sought to use science to produce change in real-world settings (Adelman; 1993; Lewin, 1946). In contemporary times, various professional fields have articulated specialized

paradigms for action-oriented research, including the fields of education (i.e., 'action research,' see Mertler, 2019), healthcare (i.e., 'action research,' see Williamson et al., 2011), human development (i.e., 'participatory action research,' see Lawson et al., 2015), natural resource management (i.e., 'adaptive management', see Allen & Garmestani, 2015), and police-based law enforcement (i.e., 'problem-oriented policing,' Hinkle et al., 2020). These paradigms and their practitioners broadly vary in their scientific aims, from engaging in research *on action* (e.g., Mertler, 2019) to research *for action* (e.g., Stringer & Ortiz Aragón, 2020) to research *for and on action* (e.g., McNiff, 2017).

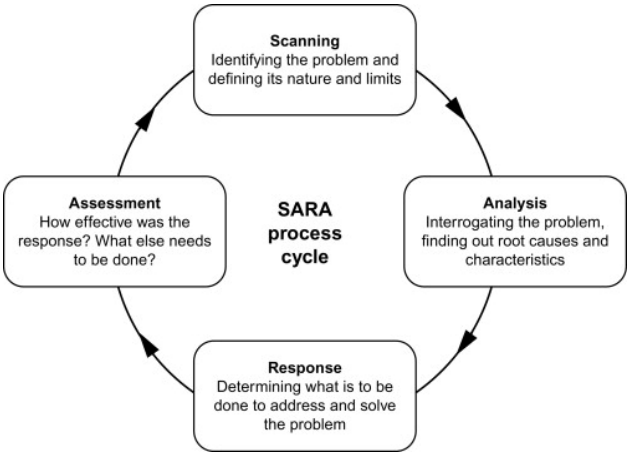
Despite the depth and sophistication of action-oriented research as a scientific philosophy, there, in fact, exists no available guidance on how to conduct action-oriented research associated with green criminology. This may be partly understood and explained given the contested nature of the green criminology paradigm itself (see Section 1.3). In short, there is too little agreement among green criminologists to articulate a distinct and unifying 'paradigm' in Kuhnian sense (see Bird, 2014), let alone an action-oriented variant of such a paradigm. This also appears to be related to a limited range of existing action-oriented approaches in criminology more generally. Notably, substantial research has been conducted to improve the effectiveness of police-based law enforcement (e.g., Lum & Koper, 2017), but relatively little research has been yet conducted to understand how non-governmental organizations (NGOs) may best reduce crimes (e.g., Hollis-Peel et al., 2011). Meanwhile, real-world projects that reduce 'green crimes and harms' are commonly carried out by non-governmental organizations but without the use of formal process frameworks.

Given the lack of prior articulation of 'action-oriented' criminology and green criminology, highly discretionary decisions had to be made with respect to the dissertation's

definition of action, research orientation, and use of one or more action-oriented process frameworks. 'Action' is herein defined as an interactive and often iterative process of learning, planning, and doing to solve a problem, which is a definition broadly consistent with contemporary articulations of action-oriented scientific paradigms (e.g., Allen & Garmestani, 2015; Masters, 1995). Consistent with contemporary articulations of action research (e.g., Coughlan, P., & Coghlan, 2002), the research is oriented to be both *for* and *on* action to reduce or end green crimes and harms. That is, the manuscript-style chapters presented in this dissertation are designed to support learning, planning, and doing to reduce a harmful wild trade. Meanwhile, the introductory and conclusion chapters are designed to establish a frame of reference and identify lessons learned for the continued development of green criminology and the professional practice of creating and implementing harmful wildlife trade reduction projects, or research on action.

Discretionary choices were also made with respect to the process frameworks underpinning this action-oriented dissertation and encompassing project. Process frameworks are a common if not defining feature of action research. Nevertheless, in the course of this study, the three best candidate frameworks to structure an action-oriented green criminological dissertation and project were each found to be individually insufficient. The first adopted framework was the Scan, Analyze, Respond, and Assess (SARA) framework, which is used popularly in problem-oriented policing projects (Hinkle et al., 2020) (Figure 1). Though popular among action-oriented criminologists, the dissertation researcher came to agree with contemporary critics that the framework is overly simplistic and leaves unexamined many other important dimensions of action (Sidebottom & Tilley, 2011).

Figure 1: Scan, Analyze, Respond, and Assess (SARA) framework. Image sourced from Staniforth (2014).

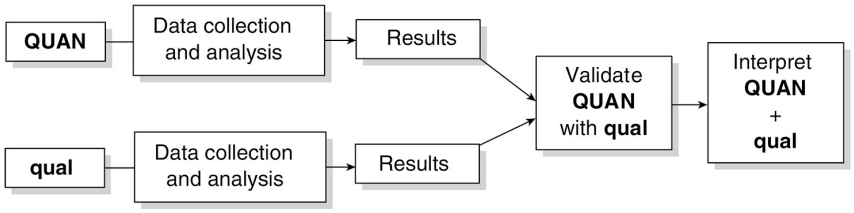


The SARA framework was initially employed for use in preliminary dissertation research with the MSU Conservation Criminology Program that investigated and developed recommendations to reduce harmful fishing on the Caribbean coast of Nicaragua (Gibson, 2015). SARA was also used to develop the core dissertation project in Trinidad and Tobago, but this process framework was eventually dropped in favor of the Open Standards project cycle framework. Nevertheless, it is reported here as a matter of record as its attempted use and evolution to consider a unifying planning stage (Figure 2) prompted important reflection on how to improve the Open Standards (see Chapter 5).

Figure 2: A modified SARA framework for action-oriented green criminology.

The second candidate framework was the research design framework typically used to implement a mixed methods research approach (Creswell & Plano Clark, 2017, p. 51-65). This framework was employed from the beginning of the core dissertation research in Trinidad and Tobago using a selected convergent mixed methods research design (Figure 3), which was embedded within a larger convergent mixed methods research design using autoethnographic reflection (Chang, 2016), a method commonly used for action-oriented research (e.g., Acosta et al., 2015). The mixed methods research design framework was used to support a high quality of research (Greene et al., 1989), such as by improving data triangulation and expanding the breadth and range of research, and because mixed methods research is increasingly advocated as a methodological approach in action research (Ivankova, 2015; Ivankova & Wingo, 2018). Nevertheless, during the course of the research, the mixed methods research design framework was modified substantially to better support action (see Section 1.5).

Figure 3: A convergent mixed methods research design. Image sourced from Edmonds & Kennedy (2017).



The third candidate process framework was the Open Standards project cycle (Figure 4), which is part of the Open Standards for the Practice of Conservation, a popular conservation project management approach developed by the Conservation Measures Partnership (CMP) (Bower et al., 2018). The Open Standards are now in version 4 (CMP, 2020) and consist of: a five-step project cycle, supporting project management software (www.miradishare.org), a specialized planning method (i.e., situation and theory of change modeling, CMP, 2020, pp. 29, 33), and an array of strategic and taxonomic literature to guide this project development (e.g., a

taxonomy Conservation Actions, CMP, 2019). The Open Standards were employed from near the beginning of the core dissertation project as part of a grant agreement with the US Fish and Wildlife Service (USFWS) and the US Agency for International Development (USAID) (see Section 1.7). To accommodate green criminological research and action, the Open Standards were also applied in a novel way to focus on an array of targets and normative perspectives of broader green criminological interest (see Section 1.5).

Figure 4: The Open Standards for the Practice of Conservation process framework. Image sourced from CMP (2020).

Ultimately, the dissertation researcher used both mixed methods research design and Open Standards project cycle frameworks to guide the entire course of action-oriented research. These frameworks were also adjusted during research to improve the integration of the two frameworks. As a small way to produce research *on action* in this study, the concluding chapter

explores the dialectical exchange between the three process frameworks used and the overall project management experience.

1.3. The Contestation of Green Criminology

Remarkably, the paradigm of green criminology is both increasingly popular among criminologists and yet increasingly contested by those said to be practicing it. Concerning its popularity, green criminology as a named paradigm first emerged in the final decade of the 20th century when advocated for by Lynch (1990), and it was further conceptualized by other green criminologists toward the end of the 20th century (Beirne et al., 2018). Now, roughly 30 years later, the green criminology paradigm is supported by an array of textbooks (e.g., Lynch et al., 2017; Goyes, 2019; White & Heckenberg, 2014) and college lectures and courses (e.g., The Open University, n.d.; the University of Oslo, n.d.; University of Tasmania, 2021). Among practitioners, various working groups have also been established in support of green criminology, including the International Green Criminology Working Group (IGCWG) with more than 50 members around the world (IGCWG, 2012) and the more recently formed "Green Criminology Specialist Group" at the International Union for Concerned Scientists (IUCN), which has an action-oriented mission to introduce green criminology to conservation policy and practice (IUCN, n.d.).

Despite its growing popularity, green criminology as a paradigm is increasingly contested, such that many practitioners disagree as to precisely who is a green criminologist and what is a green criminological contribution. On the one hand, green criminological 'pluralists' define the paradigm as broadly inclusive of all criminological scholarship that is concerned with crimes and harms affecting and involving the natural world, non-human species, and the human communities that depend upon them (e.g., IUCN, n.d.; White & Heckenberg, 2014). For

instance, White and Heckenberg (2014) write in their textbook *Green Criminology* that the paradigm should be defined "as widely as possible" (p. 7) and, in turn, identify six distinctive green criminological "perspectives" or paradigmatic variants: conservation criminology, constructivist green criminology, eco-global criminology, environmental criminology, non-speciesist criminology, and radical green criminology (p. 8).

On the other hand, many externally identified "green criminologists" want nothing to do with the green criminology label and explicitly declare their embrace of alternative paradigms. This is very explicitly the case with 'conservation criminology' (Gibbs et al., 2010) and the 'environmental criminology of wildlife' (Moreto & Pires, 2018), which define themselves in explicit contrast to green criminology. For instance, proponents of conservation criminology describe green criminology as "left open to the critique that it is loosely connected, descriptive, and overly subjective" (Boratto & Gibbs, 2021, p. 778). Further evidencing the lack of essential agreement on green criminology are the reflections of Lynch (2020) approximately thirty years after first invoking the green criminology paradigm: "'What is a green crime?' Any area of research must have well-defined concepts, and as I illustrate later, *this has not* been a strong suit in GC, where there are many competing definitions" (p. 51).

Amid this paradigmatic contestation, the dissertation researcher has again made difficult design decisions in order to produce research that may be broadly accepted as 'green criminological' as well as 'action-oriented.' Based on the researcher's professional motives and personal beliefs (see Section 1.7), a definition of green criminology was adopted that closely aligns with a pragmatic scientific philosophy of 'dialectical pluralism' (Johnson, 2017) and that strongly supports the inclusion of the paradigm's original 'critical' perspective (Lynch, 1990) and a relatively new 'action research' perspective (except see: Gibson, 2017; Wellsmith, 2010, p.

138; Lemieux & Pickles, 2020). Appropriate treatment of dialectical pluralism is beyond the scope of this action-oriented dissertation. However, it may be broadly described as "a way for researchers, practitioners, clients, policymakers, and other stakeholders to work together and produce new workable 'wholes' [across paradigms], while, concurrently, thriving on differences and intellectual tensions" (Johnson, 2017, p. 156).

As a paradigmatic foundation, this study defines 'green criminology' as the scientific study of harms and crimes involving the natural world, non-human species, and the human communities that depend upon them. Thus, the definition of green criminology used for this dissertation accords with various pluralistic definitions (e.g., Beirne & South, 2007; Goyes, 2019; White & Heckenberg, 2014). In turn, any secondary definition of 'green crimes and harms' must be broadly inclusive of a wide range of harm perspectives used in contemporary green criminological literature, including normative perspectives valuing animal welfare (e.g., Sollund, 2011), biodiversity conservation (e.g., van Solinge, 2020), biosecurity (Beirne, 2021), human rights (e.g., Johnson et al., 2016), public health (e.g., Croall, 2013), and the rule of law (e.g., Kahler et al., 2021).

In strong support of green criminology's originating 'critical' perspective, the researcher also essentially adopts the interpretation of the green criminology paradigm offered by Goyes (2019), which was provided in support of a more critical 'southern green criminology' variant. This interpretation is summarized as a set of "three tenets" (Goyes, 2019, pp. 4-6) and "two characteristics" (pp. 6-7), which are slightly amended to accord with this dissertation's definition of green criminology. The three tenets of green criminology embraced for this study are:

(1) Green criminology is a scientific paradigm used within the field of criminology.[1]

(2) Green criminology is concerned with how human action and agency cause legal and illegal harms involving the natural world, non-human species, and the human communities that depend upon them.[2]

(3) Green criminology expands the category of victim to include ecosystems, natural environments, and non-human species.[3]

Goyes' two additional characteristics of green criminology are: 'the adoption of an illegal and extra-legal harm perspective' and 'the development of multi-scalar analyses.'[4] Again, these tenets and characteristics are expertly explored in Goyes (2019, pp. 4-7).

In strong support of a new 'action-oriented' perspective in green criminology, the researcher further defines 'action-oriented green criminology' as the use of green criminology to reduce harms and crimes involving the natural world, non-human species, and the human communities that depend upon them. This paradigmatic variant may be considered a new addition to a growing diversity of variants based on White and Heckenberg (2014, pp. 8-9). At a fundamental level, a green criminological study on or for action may benefit from an understanding of the various approaches to 'green criminology.' The White and Heckenberg list has been expanded to include the more recently described 'southern green criminology' of Goyes

[1] Tenet (1) originally read as: "is *located within the discipline* of criminology." The formal use of the term 'paradigm' is here added to support formal paradigm development from a philosophy of science rooted in Kuhnian sociology (see Blum et al., 2016) and dialectical pluralism (see Johnson, 2017).

[2] Tenet (2) originally read as: "...how human action and agency *elicit harmful ecological consequences*." The use of the term ecological in this statement appears to be contextually erroneous as the original form of tenet (3) also included anthropocentric and biocentric concerns.

[3] Tenet (3) originally read as: "...to include ecosystems and non-human animals." The notion of victimhood is expanded to include broader sentient and non-sentient components of the natural world, which is also consistent with more recent applications of green criminology (e.g., Beirne, 2021; Bedford et al., 2020; Lynch et al., 2018).

[4] The first characteristic has been modified with the addition of 'illegal and extra-legal' as a formal analytical concept, which aligns with the Goyes' additional description as well as existing green harm analyses (e.g., White, 2018).

Table 1: Taxonomy of green criminology variants. This taxonomy is modeled on White and Heckenberg (2014, pp. 8-9) and is updated to include 'southern green criminology (Goyes, 2019) and a newly envisioned 'action-oriented green criminology.

Paradigmatic Approach	Conceptual Concerns	Exemplar
Action-oriented Green Criminology	Research for and on the reduction, resolution, and mitigation of green crimes and harms	Christie (1999)
Conservation Criminology	The conservation of biological diversity and management of environmental risk	Gibbs et al. (2010)
Constructivist Green Criminology	The social construction of green crimes and harms	Brisman (2012)
Critical Green Criminology[5]	The nature of power, justice, and social change	Lynch and Stretesky (2003)
Eco-global Criminology	The transnational nature of green crimes and harms	White (2018)
Environmental Criminology	The situational factors of green crimes and harms	Wellsmith (2010)
Non-speciesist criminology[6]	The nature of crime and harm from an animal or sentience rights perspective	Beirne (2009)
Southern Green Criminology	The dynamics of green crime and harm in the Global South	Goyes (2019)

[5] Modification was made to the original title in White and Heckenberg (2014, p. 9) of 'radical green criminology.' 'Critical' is another common self-identifier among cited 'radical green criminologists,' while 'radical' may incorrectly suggest that such green criminologists engage in professional social activism to reduce green crimes and harms.

[6] Modification was made to White and Heckenberg (2014, p. 9) original titling of 'specieist criminology,' which was obviously an error given the cited source material.

(2019) and a new action-oriented variant that may be in some small way exemplified by this dissertation. This 'taxonomy of green criminological approaches' is presented in Table 1. Since the action-oriented variant is envisioned but not yet realized, an exemplary work in all but the paradigmatic label may be that of Christie (1999), an action research dissertation that sought to facilitate community-based conservation in coastal Nicaragua.

As elaborated below in the research design (Section 1.5) and project and researcher background (Section 1.7), the defining elements of green criminology selected for this dissertation study are envisioned to support impactful action-oriented dissertation research outputs and to more broadly foster a green criminology that supports science-based activism on green crimes and harms.

1.4. The Reduction and Resolution of 'Harmful Wildlife Trades'

Under this project's broad definition of 'green criminology,' the occurrence of 'harmful wildlife trades' would likely serve as a prototypical 'case' of paradigmatic concern (see Ragin & Becker, 1992). Wildlife trades and their harms have been of particular concern to conservation scientists since at least the 1960s (Milner-Gulland, 2018) and are more recently a popular problem to consider among green criminologists (e.g., Cao Ngoc & Wyatt, 2013; Boratto & Gibbs, 2021). Other meaningful cases for action-oriented green criminology may include the general environmental harms outlined by Nellemann and colleagues (2016, p. 20): harmful logging and trade, harmful fishing and trade, harmful extraction and trade of minerals, and harmful trade and dumping of hazardous waste.

The reduction or even resolution of 'harmful wildlife trades' may be particularly enhanced by green criminology. Literature on harmful wildlife trades broadly indicates that these

cases are usually only considered for their illegal and legal harms affecting the sustainability of species and ecosystems (e.g., ‘t Sas-Rolfes et al., 2019). Nevertheless, contemporary critique indicates that existing studies of illegal and unsustainable wildlife trades often fail to appreciate the full range of illegality (Pascual et al., 2021) and their intersection with other serious green harms (Baker et al., 2013). For instance, Baker and colleagues (2013) reviewed wildlife trade literature published from 2006 to 2011 and concluded that “[r]arely was the term [animal] welfare mentioned, evidence of welfare impact documented, or welfare improvement recommended” (p. 928). Similarly, Bezerra-Santos and colleagues (2021) remark that actual published empirical reports of zoonotic diseases in wildlife trades are “scanty” (p. 181). Thus, green criminology may at the very least support novel and improved case descriptions if not also problem-solving to reduce or resolve wildlife trades.

Green criminology may also notably support reductions and resolutions of harmful wildlife trades. There is now a burgeoning technical field dedicated to science-based action on wildlife trades causing particular harms to ecosystems and non-human species. This field is supported by a diversity of applied wildlife trade research (‘t Sas-Rolfes et al., 2019) as well as specialized funding and technical programs like the USAID Wildlife Trafficking Program (USAID, 2021) and the United Nations Office on Drugs and Crime (UNODC) Global Programme for Combating Wildlife and Forest Crime (UNODC, n.d.) and their many associated technical outputs (e.g., USAID, 2017; UNODC, 2021). Academic programs in support of this professional practice and conservation more generally have also been developed in recent years, including the Oxford Martin Programme on the Illegal Wildlife Trade at Oxford University, the Conservation Criminology Program at Michigan State University, and the Center for Conservation Crime Science at Rutgers University.

More practically, this emerging professional practice of wildlife trade reduction is supported by specialized project planning and management tools (Bower et al., 2018), which offers a tremendous resource to any action-oriented green criminologist. In particular, the Open Standards for Conservation have been developed in ways that may notably support research and action to reduce harmful wildlife trades, albeit with emphasis on reducing harms to ecosystems and species (Browne et al., 2021; USAID, 2017). Therefore, in support of a genuinely action-oriented green criminology to reduce harmful wildlife trades, this dissertation is built in the Open Standards as a core process framework.

In keeping with the dissertation's use of explicit definitions for core terms, special consideration must be given to the term 'harmful wildlife trade.' Although wildlife has long been used and harmed by humanity, the notion of a 'wildlife trade' appears to be a relatively recent intellectual development in the last century. One argument for this linguistic emergence is that humanity itself is only recently coming to appreciate the impact it has upon the natural world (Dunlap & Mertig, 2014; Robin, 1994; Lewis & Maslin, 2015). Perhaps as a result of this conceptual novelty, only a small number of scientists or social actors yet formally define the term 'wildlife trade' or its dimensions of harm (except see: Phelps et al., 2016, p. 2; 't Sas-Rolfes et al., 2019, p. 203; USAID, 2017, p. 4). Therefore, this dissertation adopts an explicit definition that might be best supportive of green criminology.

Herein, a 'harmful wildlife trade' is defined as 'the human activities necessary to sustain the production, exchange, and use of wildlife across a specific geography that cause or may cause legal or illegal injuries or damages.' The use of the word 'trade' in this definition is broadly consistent with layperson and scientific use of the term denoting habitual behaviors that support material production, exchange, and consumption, either on an individual level or as part

of a larger economy or economic system, that are further defined by two or more physical geographies (e.g., Bernstein, 2009; Ricardo, 1817). The word 'harmful' in this definition is also broadly consistent with layperson and scientific use of the term as connoting injury or damage. However, it is carefully worded to support contemporary notions of risk, or the likelihood of harm occurring (see Beck, 1992).

Supplementary definitions are also needed to properly align the primary definition of 'harmful wildlife trade' with contemporary definitions of 'wildlife' (e.g., Fukushima et al., 2020) and 'traded wildlife' (e.g., Moreto & Lemieux, 2015). 'Wildlife' is defined as all undomesticated species and subspecies, including animals, plants, and other taxonomic groups that are not ordinarily dependent upon the direct support of one or more humans. In practice, a definition of wildlife based on the concept of 'domestication' can be problematic for several reasons: full genetic domestication occurs across many generations (Larson & Fuller, 2014), individuals of an undomesticated species can become dependent on humanity within their lifetimes (i.e., tamed), and some undomesticated species and subspecies demonstrate signs of domestication within only a few generations of captivity (Christie et al., 2012; Milla et al., 2021). Nevertheless, neither taxonomic nor wildlife management communities appear to have yet developed an improved scheme for classifying domesticated and undomesticated species. Therefore, to avoid conceptual confusion, the definition of wildlife focuses on species and subspecies that typically live outside of human captivity.

Finally, 'traded wildlife' is defined as specimens of wildlife species and their derivative products, including food, ornamentation, and pets. Thus, a harmful wildlife trade may involve the production, exchange, and consumption of both living and non-living wild specimens.

1.5. Research Design

The research project was formally designed to achieve action-oriented informational objectives with the production of stand-alone manuscripts that meet doctoral standards for data collection, analysis, and presentation. In this way, the dissertation aligns with the increasingly popular 'multi-manuscript' style of doctoral theses. Though Michigan State University (MSU) does not have guidelines for such theses, a common standard for doctoral programs is to require presentation of at least two manuscripts that are ready for submission for publication or are in some other stage of publication. Therefore, to ensure an appropriately sized dissertation thesis for the MSU School of Criminal Justice, *three* manuscript-style chapters are presented (Chapters 2, 3, & 4).

Two of the three manuscript-style chapters meet the requirements for submission to scientific journals in criminology (Chapters 2 & 3), while another manuscript is a long-form text and multimedia presentation modeled on contemporary non-governmental 'wildlife trade assessment' reports (Chapter 4). This introductory chapter and a concluding and reflective chapter (Chapter 5) also are designed to be action-oriented by collectively offering reference material and perspective on the experience of action-oriented and green criminological research. As further described below, each manuscript was designed and written to achieve several objectives:

(1) develop insights for the practice of action-oriented green criminology;

(2) generate novel scientific understanding and theory on the decision-making of harmful pet wildlife keepers; and

(3) produce comprehensive case study literature on a previously under-studied harmful wildlife trade.

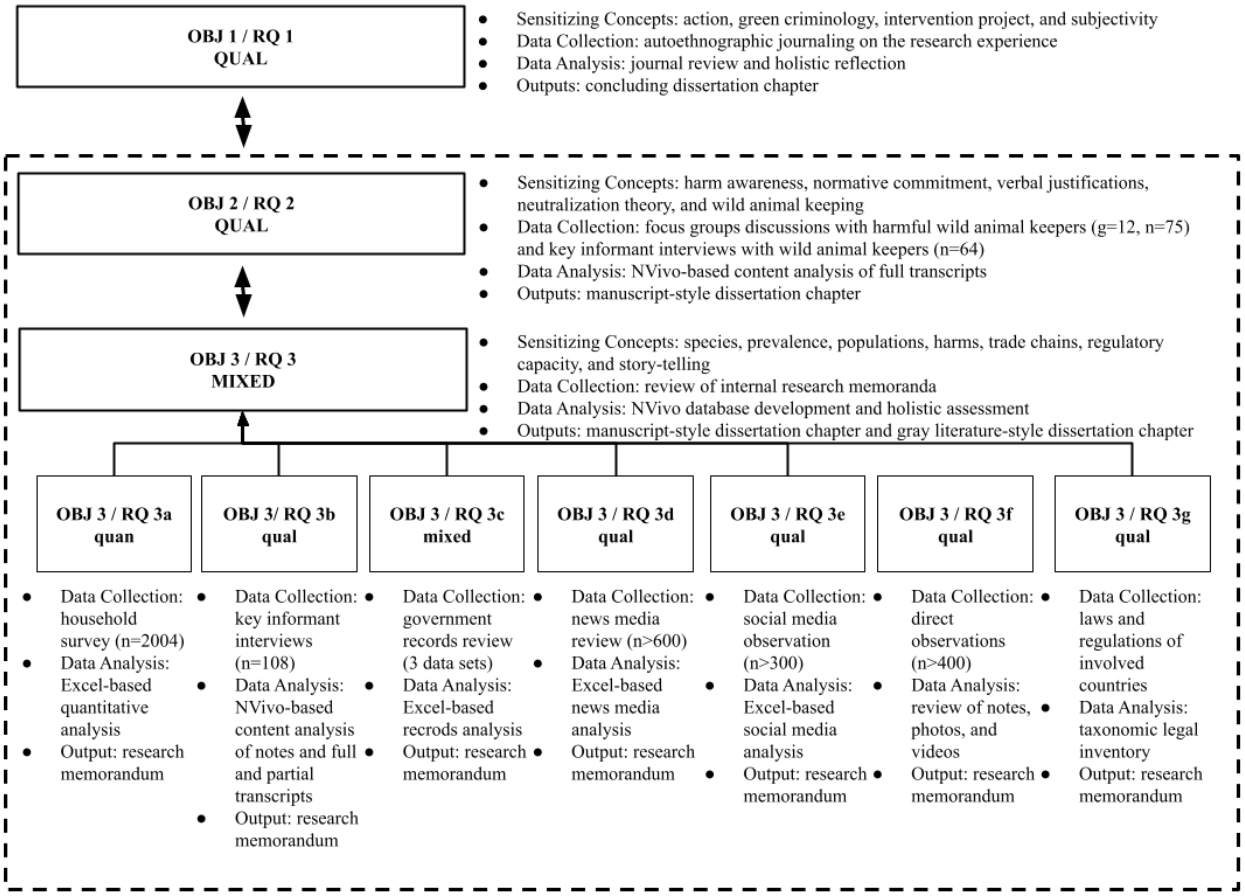
In order to support the design and implementation of action-oriented research, three specialized process frameworks were employed in the research process, and two continue to shape the direction of an associated non-governmental intervention project in Trinidad and Tobago (see www.nurturenaturett.org). Though initially united by necessity, these three frameworks ultimately provoked a valuable and ongoing dialectical exchange for learning, which is reflected upon in the concluding chapter. These three frameworks and their evolving use are outlined above (see Section 1.2). Ultimately, a convergent-embedded mixed methods research design was used throughout the core dissertation study. Using popular mixed methods notation, the ultimately used design can be described as: QUAL + [QUAL + MIXED[quan + qual + mixed + qual + qual + qual + qual].[7] The tailored mixed methods research design was further elaborated to include action-oriented research objectives, guiding research questions, and planned outputs (Figure 5). Additionally, as explored in the concluding chapter, the use of this framework prompted novel reflection on how mixed methods research may better support action-oriented research in terms of notation and broader integration in the Open Standards.

Third, the dissertation study employed the Open Standards project cycle framework by specifically encompassing one full project cycle consisting of: Assessment, Planning, Implementation, Analysis & Adaptation, and Sharing (see Figure 4). The mixed methods research design and broader framework directly supported all Open Standards stages except for Assessment and could only partially support Planning. The Open Standards, however, are particularly sophisticated concerning the conduct of these rather unsupported action stages and offer a specialized modeling method to create a situation model and at least one theory of change

[7] The notation indicates if a research activity involves the use of qualitative data and analyses ('qual'), quantitative data and analyses ('quant'), a mix of qualitative and quantitative data and analyses ('mixed') and use of capitalization to indicate high and low research priorities (HIGH, low).

for this dissertation. These models are constructed using technical concepts and terminology (CMP, 2020) and are typically created using Miradi software (www.miradishare.org). The construction of these models for this dissertation study was supported by the researcher's previous training in Open Standards as a fellow of the Emerging Wildlife Conservation Leaders (EWCL) Program.

Figure 5: A convergent-embedded mixed methods design for this dissertation.



The project's most recently updated situational model for the harmful pet wildlife trade in Trinidad and Tobago may be found in Appendix A, and the dissertation project's most recently updated theory of change model for reducing the harmful pet wildlife trade may be found in Appendix B. This modeling work benefited from a preliminary Assessment research experience and the best-practice models offered by USAID (2017) to reduce wildlife trades that harm

species and ecosystems. Importantly, this theory of change model, and broader dissertation project, followed the recommended strategy to "Improve Conservation Approaches Through Better Information on Status and Trends" (USAID, 2017, p. 54). Unlike typical applications of the Open Standards, however, the modeling conducted for this project focused on reducing a broader array of green harms of concern to the project's stakeholders (see Section 1.7). These models were developed by the dissertation researcher and a community of social activists and applied scientists through both formal and informal consultation during the preliminary research and twice during the core dissertation research phases.

Consistent with the Open Standards, the dissertation project's three objectives were further developed into a Theory of Change Model (Appendix B). This model integrated 10 mixed methods research questions and sub-questions (see Table 2) produced three associated manuscript-style chapters. The resulting chapter outputs from these objectives are as follows: objective 1 was completed through the production of dissertation Chapter 5, objective 2 was completed through the production of Chapter 3; and objective 3 was completed through the production of Chapters 2 and 4.

Research question exploration was conducted through the application of a variety of data collection and analysis methods detailed in each of the manuscript-style dissertation chapters. The selection of methods proceeded on the basis of established literature chosen as models for each chapter (see Section 1.9). Broadly, the methods employed in pursuit of objective 1 consisted of autoethnographic journaling (Chang, 2016) on the project and research experience. The methods employed for objective 2 consisted of focus group discussion (Nyumba et al., 2018), key informant interviewing (Kumar, 1989), and software-supported qualitative content analysis using NVivo (Kaefer et al., 2015). The methods employed for objective 3 were more

Table 2: Research objectives and questions for an action-oriented green criminological study.

Objective	Research Question
(1) Develop insights for the practice of action-oriented green criminology	(1) How might green criminologists better develop their paradigm for action on harmful wildlife trades and other general cases of concern?
(2) Generate novel scientific understanding and theory on the decision-making of harmful pet wildlife keepers	(2) How do pet wildlife keepers explain and justify their harmful choices?
(3) Produce comprehensive case study literature on a previously under-studied harmful wildlife trade	(3) What is the nature and structure of the trade that supports pet wildlife keeping?
	(3a) What patterns exist in the household keeping of pet wildlife?
	(3b) How do local stakeholders describe and explain the occurrence of harmful pet wildlife keeping and the broader trade?
	(3c) What do local enforcement records suggest about the occurrence of harmful pet wildlife keeping and the broader trade?
	(3d) What do news media articles suggest about the occurrence of harmful pet wildlife keeping and broader trade?
	(3e) What do social media postings suggest about the occurrence of harmful pet wildlife keeping and the broader trade?
	(3f) What do direct observations suggest about the occurrence of harmful pet wildlife keeping and the broader trade?
	(3g) What does taxonomic legal inventory suggest about the occurrence of harmful pet wildlife keeping and the broader trade?

varied than for the other two. In addition to incorporating and repeating methods applications used for objective 2, activities to achieve objective 3 also used methods of direct observation (Gavin et al., 2010), government records review (Crow et al., 2013), household surveying (Drews, 2001), news media review (Paudel et al., 2022), social media observation (Krishnasamy & Stoner, 2016), and taxonomic legal inventory (Pascual et al., 2021).

1.6. Research Site and Case Definition

The preliminary and core dissertation research was conducted almost entirely on-site in Trinidad and Tobago, a twin-island republic in the Southern Caribbean region (Figure 6). The country lies seven miles off the northeastern coast of Venezuela and 103 miles south of Grenada and has a population of approximately 1.4 million people. The country is highly biodiverse and uniquely serves as a bridge country between the Caribbean and South American bioregions (Kenny, 2008). The country enjoys a relatively high degree of human development (United Nations Development Program, 2020) but struggles with serious issues, including violent crime, corruption, and unsustainable development (GORTT, 2016; Seepersad, 2016; Transparency International, 2021).

The core dissertation research was further contextualized as occurring within the wider Caribbean region. This 'fuzzy' geopolitical region may be broadly described as the island and coastal states and territories in the tropical region of the Caribbean Sea and the western Atlantic Ocean. This region has been tremendously shaped by its biological and cultural diversity, small island economies, and colonial and post-colonial experiences (Bishop, 2013; Jackson, 2012; Puri, 2004). The range of countries and dependent territories in this 'wider Caribbean' may be broadly conceived as those highlighted in Figure 7, which also highlights some of the geopolitical complexity of the region. Entire books could be researched and written on this

Figure 6: A map of Trinidad and Tobago in the southeastern Caribbean.

Figure 7: A geopolitical map of the wider Caribbean region. 'CARICOM' stands for 'The Caribbean Community and Common Market and 'ACS' stands for the 'Association of Caribbean States.'

fascinating, under-studied, and marginalized region, which is well beyond the scope of this action-oriented dissertation. Nevertheless, in clear recognition that more equitable and effective research and action are needed for the Caribbean region (Mohammed et al., 2022), the dissertation research and encompassing project have been designed and conducted in a highly participatory manner with an array of local civil society organizations (see Section 1.7).

The specific case of concern for this action-oriented, green criminological dissertation study and encompassing project is the harmful trade in pet wildlife in Trinidad and Tobago. Prior to this dissertation, relatively little had been researched with respect to the harmful trade in pet wildlife trade among project stakeholders. For instance, the most comprehensive scientific publication on this trade is that of Desenne and Strahl (1991), which evidenced a large and sprawling trade in pet parrots from Venezuela to Trinidad and Tobago, Guyana, and beyond. Preliminary interviews with law enforcement officers and parrot keepers in Trinidad suggested that many were unaware of the geographic origins or expansive harms associated with wildlife keeping (Chu Foon et al., 2018; Hosein et al., 2018). Meanwhile, gray literature reports indicate extensive trafficking of wildlife between Venezuela and Trinidad and Tobago in addition to drugs, guns, humans, livestock, and other types of contraband (e.g., Franklin, 2018; Venezuela Investigative Unit, 2020).

In order to bound the dissertation to a more practical scope, research into the harmful pet wildlife trade in Trinidad and Tobago was further limited to the trade in terrestrial wild species and subspecies. Meanwhile, the geographic dimensions of this particular harmful wildlife trade were regularly and ordinarily explored as part of the research, and it was ultimately found that Trinidad and Tobago is just one of many countries in an expansive regional trade in pet wildlife. In fact, according to participating key informants, Trinidad and Tobago is directly engaged in

harmful and often illegal pet wildlife trades with at least eight countries: Barbados, Brazil, Colombia, Dominican Republic, Grenada, Guyana, the United Kingdom, and the United States.

1.7. Project and Researcher Background

All core dissertation research has been conducted as part of an intervention project to reduce a harmful pet wildlife trade in Trinidad and Tobago called the Nurture Nature Campaign (www.nurturenaturett.org). The dissertation researcher also serves as a volunteer campaign director and grants manager, so the history of this project and dissertation study is important to share for transparency. This section, therefore, provides general background information on: the dissertation researcher's program of study, the larger development project that encompasses it, and the dissertation researcher's professional and personal motives.

The dissertation project and resulting thesis are the culmination of the dissertation researcher's multi-year effort to establish and produce initial findings from a 'learning laboratory' for effective criminological interventions to improve sustainable natural resource management. In fact, the original 2014 application for admittance to the MSU School of Criminal Justice, proposed as many as *three* learning laboratories for comparison. Though such a goal remains a worthy challenge, the experience of establishing and studying just one 'action research project site' suggests that this alone is no small feat. Apart from the technical complexity, external events have had a way of disrupting even the best-laid plans. Of particular note in this dissertation's history is that an original project site was based in the southern Caribbean region of Nicaragua (e.g., Gibson, 2015), not Trinidad and Tobago. However, this site had to eventually be ended due to political persecution and violence (e.g., Robles, 2018).

A silver lining of the first project's cancellation is that it opened new opportunities to create a tailored project in a more suitable location and with more appropriate long-term design

thinking. In particular, the dissertation researcher's professional contacts through the EWCL program placed him in contact with a community of conservationists seeking to reduce a harmful wildlife trade in Trinidad and Tobago with the Conservation Leadership in the Caribbean (CLiC) program. This led to the dissertation researcher serving as an advisor to local studies with local law enforcement officers, veterinarians, and wild animal keepers on the trade in macaws and parrots (Chu Foon et al., 2018; Hosein et al., 2018). Just as importantly, this led to an opportunity to serve as a supporting green criminologist and grant writer for interested local NGOs and government agencies beginning in early 2018.

Importantly, the first effort in Nicaragua and preliminary research experience in Trinidad and Tobago offered three important design lessons that were implemented in the full project in Trinidad and Tobago. First, the original project designed to support a local government agency was found to be very challenging due to a lack of resources and available staff. As a result, the second project iteration was focused instead on supporting civil society organizations. Notably, the United Nations Environment Programme (UNEP) has evaluated government capacity to be a near-universal constraint to creating an environmental rule of law globally (UNEP, 2019).

Second, the original project was not sufficiently structured to secure meaningful funding. The original project was developed using a SARA process framework, a best-practice framework for action-oriented criminology, yet donors typically request other process frameworks, including the Open Standards for Conservation. As a result, the second project was carefully designed to have a formally explicit process that could be easily shared and communicated with project partners, donors, and issue stakeholders.

Third and finally, the original project was insufficiently envisioned to have a meaningful impact. The original project was designed to fit within a 1-2 year cycle of work that produces

only knowledge products in the hopes of spurring local action by project partners, yet contemporary professional conservation projects often plan to achieve meaningful impact over far longer time scales and with far more sophisticated strategies. That is, in addition to the "Better Information" strategy partly implemented by this dissertation project (see Section 1.5), the resulting information supports the implementation of three other best-practice strategies for harmful wildlife trade reduction: "Reduce Consumer Demand Through Behavior Change Methodologies," "Build Law Enforcement Capacity," and "Reform National Laws and Policies Addressing Wildlife Crime" (USAID, 2017, pp. 16, 20, 32). Theory of change models for these strategies are also available upon request and approval by the Nurture Nature Campaign.

The larger project encompassing this dissertation project began in October 2018 upon the award of US$104,728 from the USFWS and USAID (federal award no.: F18AP00936) to the Windward Islands Research and Education Foundation (WINDREF) and its two partner organizations, the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT) and Sustainable Innovation Initiatives (SII). These implementing non-governmental organizations (NGOs) collectively contributed an additional US$72,603 in cash and kind to the implementing project phase completed in March 2020. An additional application for follow-up funding was also successful in April 2020 and yielded an additional US$115,981 from the USFWS and USAID (federal award no: F20AP00310) to SII, CRESTT, and a civil society coalition with 11 other supporting local NGOs. As of March 31, 2022, the implementing NGOs have contributed an additional US$55,996 in cash and kind to this second phase that will end in September 2022.

This project was managed *pro bono* by the dissertation researcher, who was also able to use project data in support of this dissertation. The grant proposal also served as the researcher's

third qualifying examination at the MSU School of Criminal Justice. The full project was managed by a 'selected steering group' coalition model in which one organization manages a project with supporting contributions from other NGOs (Moyes & Nash, 2011, pp. 24-25). The dissertation researcher served as the lead project manager for SII, which led the steering group. This project design was formalized by a Memorandum of Understanding (MoU) signed by all coalition members in March 2020 after a multi-day project design workshop.

Importantly, this immediate project work to reduce the harmful wildlife trade in Trinidad and Tobago is built upon many decades of supporting advocacy and project work by coalition NGOs. Though a full historical examination of conservation work in Trinidad and Tobago is beyond the scope of this dissertation, several standout efforts are important to mention briefly. First, in the 1990s and 2000s, Dr. Bernadette Plair of CRESTT and her many local and international colleagues were successful in returning blue and gold macaws (*Ara ararauna*) to their native range in Trinidad's Nariva Swamp (Plair et al., 2013), and this project included social marketing in local communities.

Second, El Socorro Centre for Wildlife Conservation (ECWC), Corbin Local Wildlife Park (CLWP), and the Trinidad and Tobago Field Naturalists' Club (TTFNC) have many years of experience publicly advocating for sensible wildlife conservation policies. Third, local animal welfare organizations, including the Animal Welfare Network (AWN), Animals 360 Foundation (A360), Animals Alive (AA), Trinidad and Tobago Society for the Prevention of Cruelty Against Animals (TTSPCA), have long advocated for better animal welfare for all domesticated and undomesticated animals. Notably, in 2021, these and other animal welfare NGOs realized a long-time goal of introducing comprehensive animal welfare legislation in Trinidad and Tobago (Anonymous, 2021).

1.8. Institutional Approvals

The conduct of this dissertation research was subject to two major institutional approval processes to ensure that the research was conducted ethically and oriented to benefit Trinbagonian society. The first process involved securing approval from the Trinidad Ministry of Agriculture, Land, and Fisheries (MALF) and the Tobago Division of Food Production, Forestry, and Fisheries. Each agency provided formal letters of support for the USFWS- and USAID-funded initiation and continuation grants and each agency's wildlife managers were closely involved in project design.

The second process involved the ethical review of the study's research methods involving human subjects by the MSU Institutional Review Board (IRB) (Table 3). This review was conducted to ensure that the applied methods meet United States federal standards for the ethical conduct of research. In particular, the preliminary and primary methods of interviewing, focus groups, household surveys, and in-person participant observations were submitted to the MSU IRB, which ruled that all such methods were minimal risk and so exempt from further review under federal regulations. Additionally, the MSU IRB reviewed the methods of records review and social media-based participant observation and determined that such methods did not constitute human subjects research. Other methods used in this study were not submitted to the MSU IRB as they did not constitute research on human subjects (e.g., news media review).

1.9. Chapter Preparation

Finally, a few brief notes are offered on this and the other chapters. This first introductory chapter is a modified version of material originally presented as part of the Ph.D. dissertation proposal in August 2019. It has been revised following the completion of drafts of chapters 2 through 4. The final concluding chapter was written after the introductory chapter and other

dissertation chapters were drafted and revised. The introductory and concluding chapters have been designed to present core background information and reflective insights using a holistic presentation.

The other three remaining manuscript-style chapters have been incrementally crafted to meet the dissertation project's objectives and provide meaningful answers to associated research questions (see Section 1.5.). Each manuscript-style chapter has been modeled on existing exemplars and publication platforms to improve publishability and impact. Additional

Table 3: IRB applications and outcomes.

Application ID	Study Title	Determination	Associated Study Methods
STUDY00000489	A Multi-Stakeholder Analysis of Macaw Ownership and the Wider Wildlife Trade in Trinidad and Tobago	Exempt	Focus group discussions, key informant interviewing
STUDY00003141	A Household Survey of Animal Ownership and Nature Experiences in Trinidad and Tobago	Exempt	Household surveys
STUDY00003142	Participant Observation of Captive Wildlife in Trinidad and Tobago	Exempt	In-person direct observation
STUDY00003143	Analysis of Government Records on Wildlife Ownership in Trinidad and Tobago	Does not involve "human subjects"	Government records review
STUDY00003144	Analysis of Public Social Media Postings on Wildlife Ownership in Trinidad and Tobago	Does not involve "human subjects"	Social media observation

information is provided on the intended co-authors and publication platform. Specifically, the second chapter, “The illegal keeping of pet wildlife in Trinidad and Tobago: Diversity, prevalence, populations, and harms,” is designed as a manuscript for submission to *Global Crime,* a criminological journal exploring global and international crime, and is modeled as a green criminological update to an article format used by Drews (2001) to describe mostly illegal wildlife keeping in Costa Rica. Local stakeholders identified this model article as meriting replication for improved problem description in Trinidad and Tobago. Drews also provided their original household survey instrument in support of the household survey in this project.

The third chapter, “‘We all know it’s inhumane’: The neutralization of green harms among Trinidadian songbird keepers,” is designed as a manuscript for submission to *Deviant Behavior,* a criminological journal on social deviance, and provides key insights for the green criminological development of Neutralization Theory and interventions to reduce harmful songbird keeping in Trinidad and Tobago. This manuscript was modeled on Neutralization Theory research with illegal hunters in the United States by Eliason and colleagues (Eliason, 2003, 2004; Eliason & Dodder, 1999, 2000), but with modifications to more clearly identify the scope of green harms and norms of interest. Importantly, this manuscript presents only one component of Neutralization Theory research completing objective 2, which also explored harmful parrot, monkey, and turtle keeping in Trinidad and Tobago.

The fourth chapter, “An assessment of the harmful trade in songbirds in Trinidad and Tobago and the wider world,” is designed as a gray literature ‘wildlife trade assessment’ report to educate and empower local and regional experts and policymakers. As such, it is meant for publication by the Nurture Nature Campaign, possibly with additional design support from an external donor. The manuscript is modeled on contemporary gray literature reports on wildlife

trades now increasingly produced by national and international conservation NGOs (e.g., Charity & Ferreira, 2020; Rossi, 2018; TRAFFIC North America, 2009). This manuscript was further modeled on recent best available advice for the description of wildlife trade chains (UNODC, 2021), their laws and policy gaps (Dongol & Heinen, 2012; Pascual et al., 2021), and the nature of their legal and illegal harms (Cunningham et al., 2017; Goyes, 2019, p. 6-7). Importantly, this manuscript focuses on the harmful trade in pet songbirds as a particularly harmful and distinctive component of a more extensive harmful pet wildlife trade.

All manuscript-style chapters include information on authorship and intended publication platforms. Epigraphs sourced from influential literature are also provided at the beginning of each chapter in order to support the reader's reflection upon the topics explored within.

APPENDICES

APPENDIX A

Situation Model of a Harmful Pet Wildlife Trade in Trinidad and Tobago

Figure 8: Situation model of the harmful pet wildlife trade in Trinidad and Tobago. This situation model was designed using the Open Standards (CMP, 2020). The figure is presented first as a one-page image and then as a set of panel images.

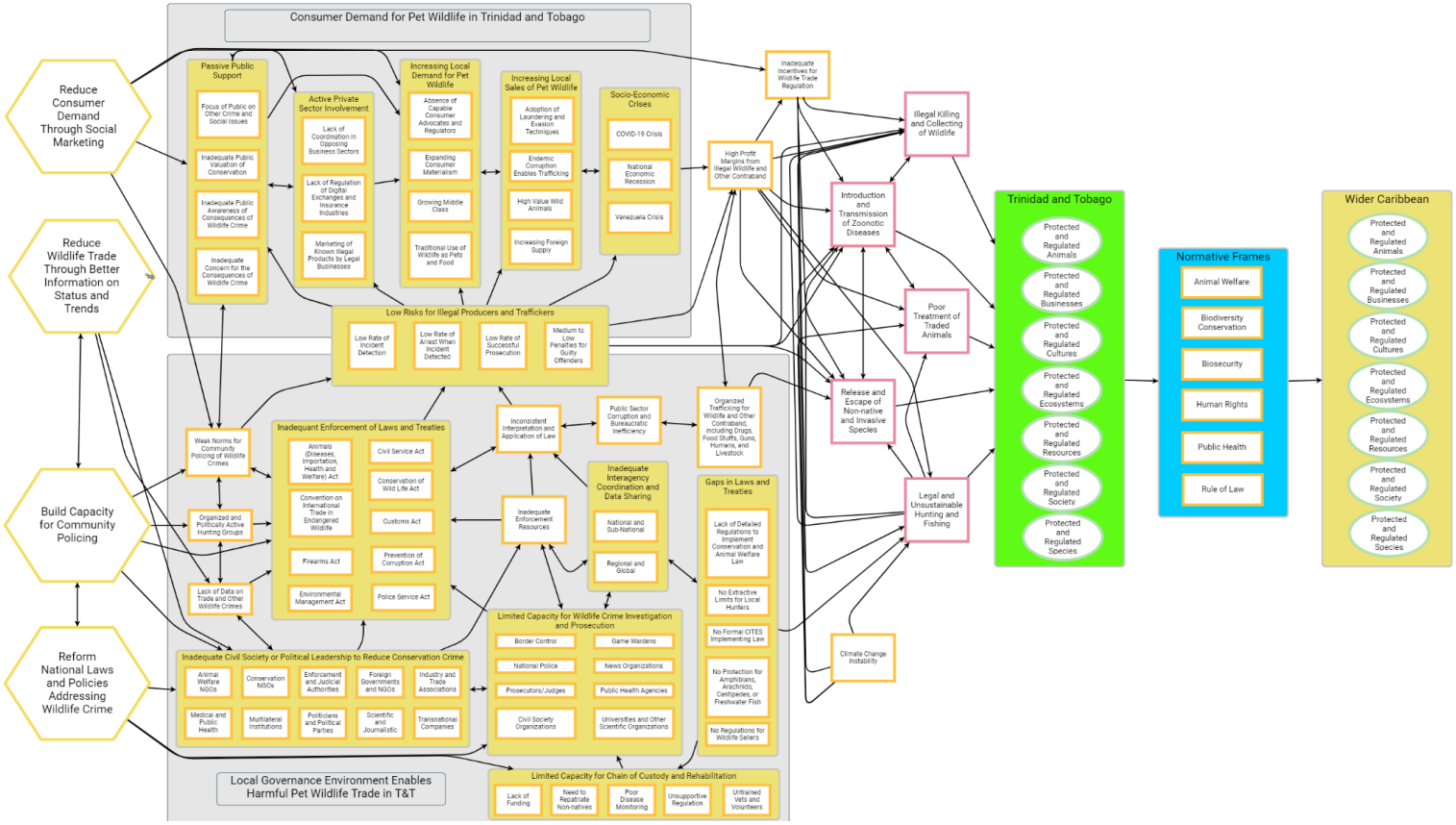
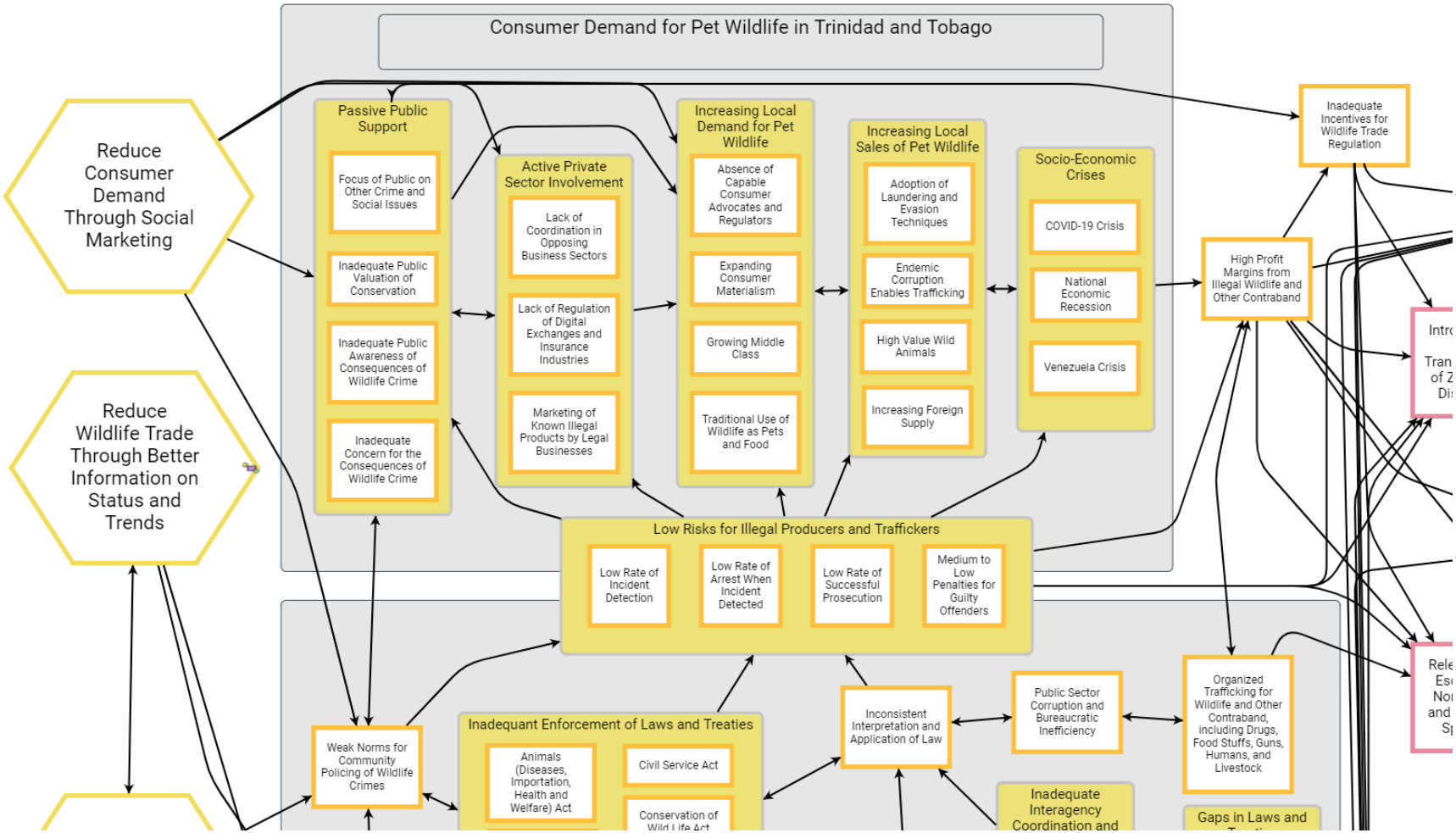


Figure 8 (cont'd)



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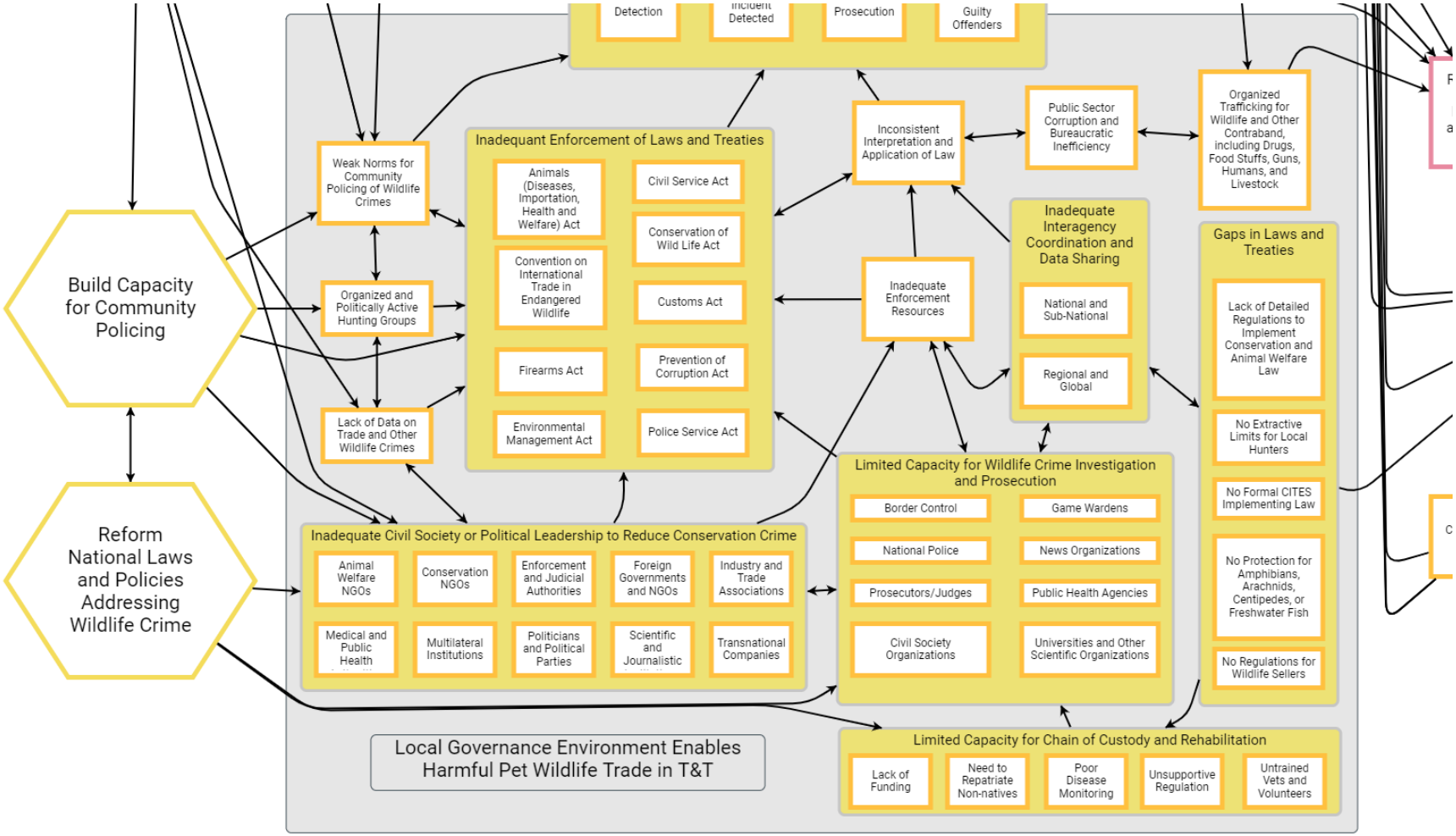

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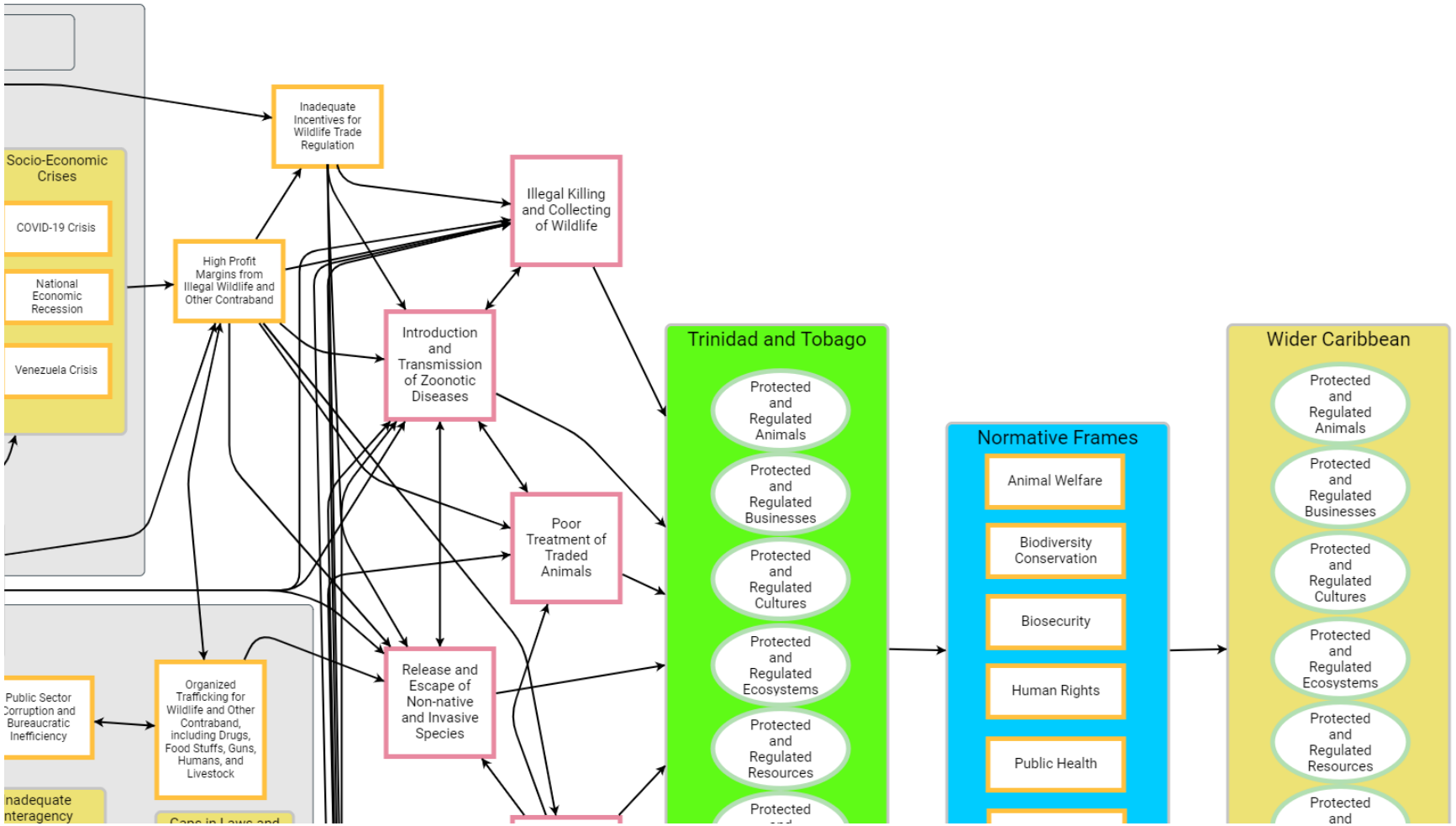
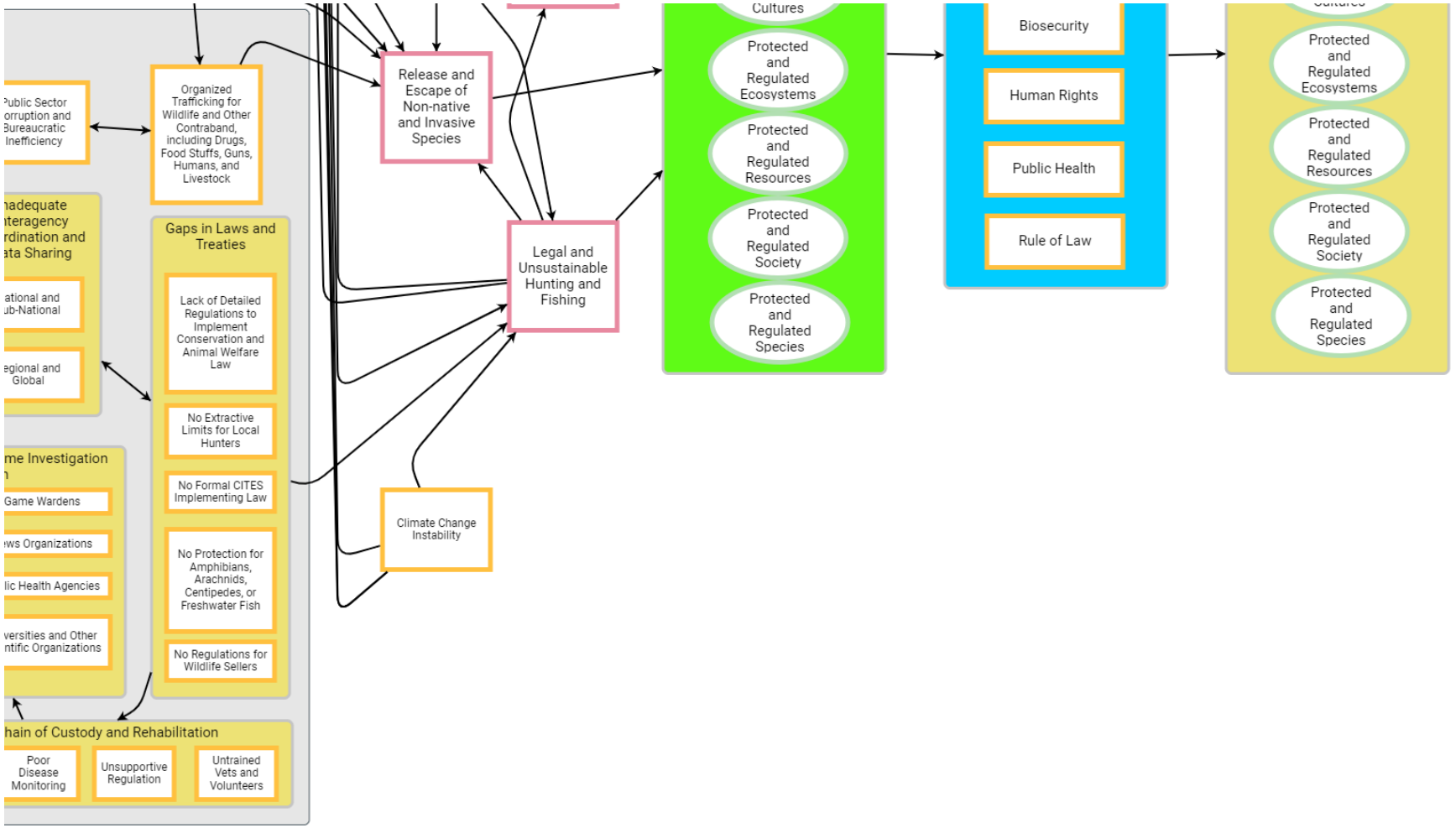


Figure 8 (cont'd)



APPENDIX B

Theory of Change for Action-Oriented Green Criminological Research

Figure 9: A 'better information' theory of change model to reduce the harmful pet wildlife trade in Trinidad and Tobago. This theory of change was designed using the Open Standards (CMP, 2020). The figure is presented first as a one-page image and a set of four panel images on the following four pages.

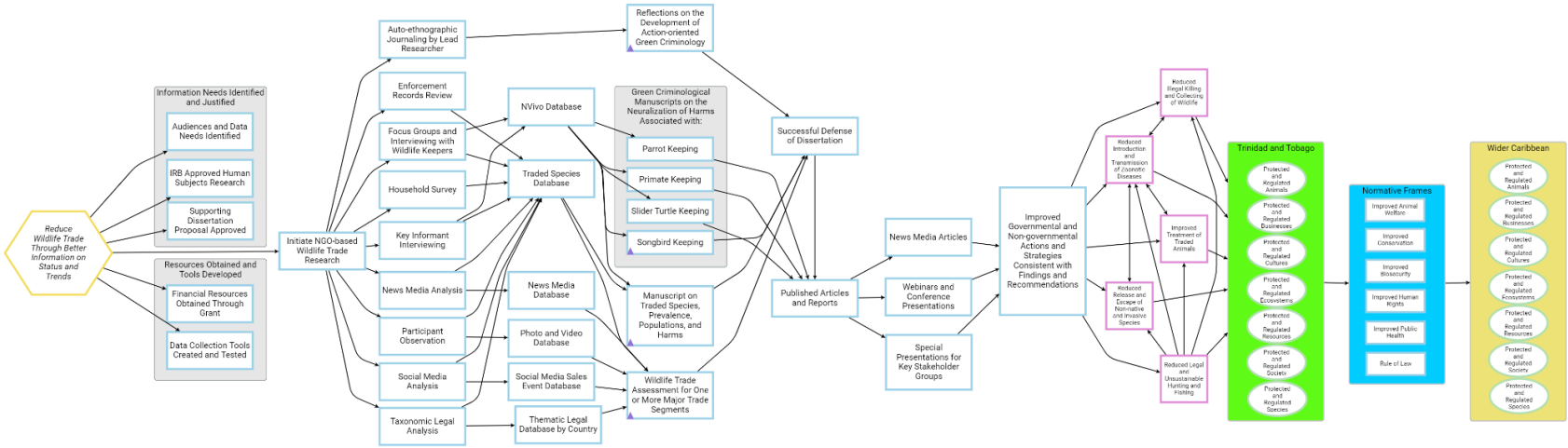


Figure 9 (cont'd)

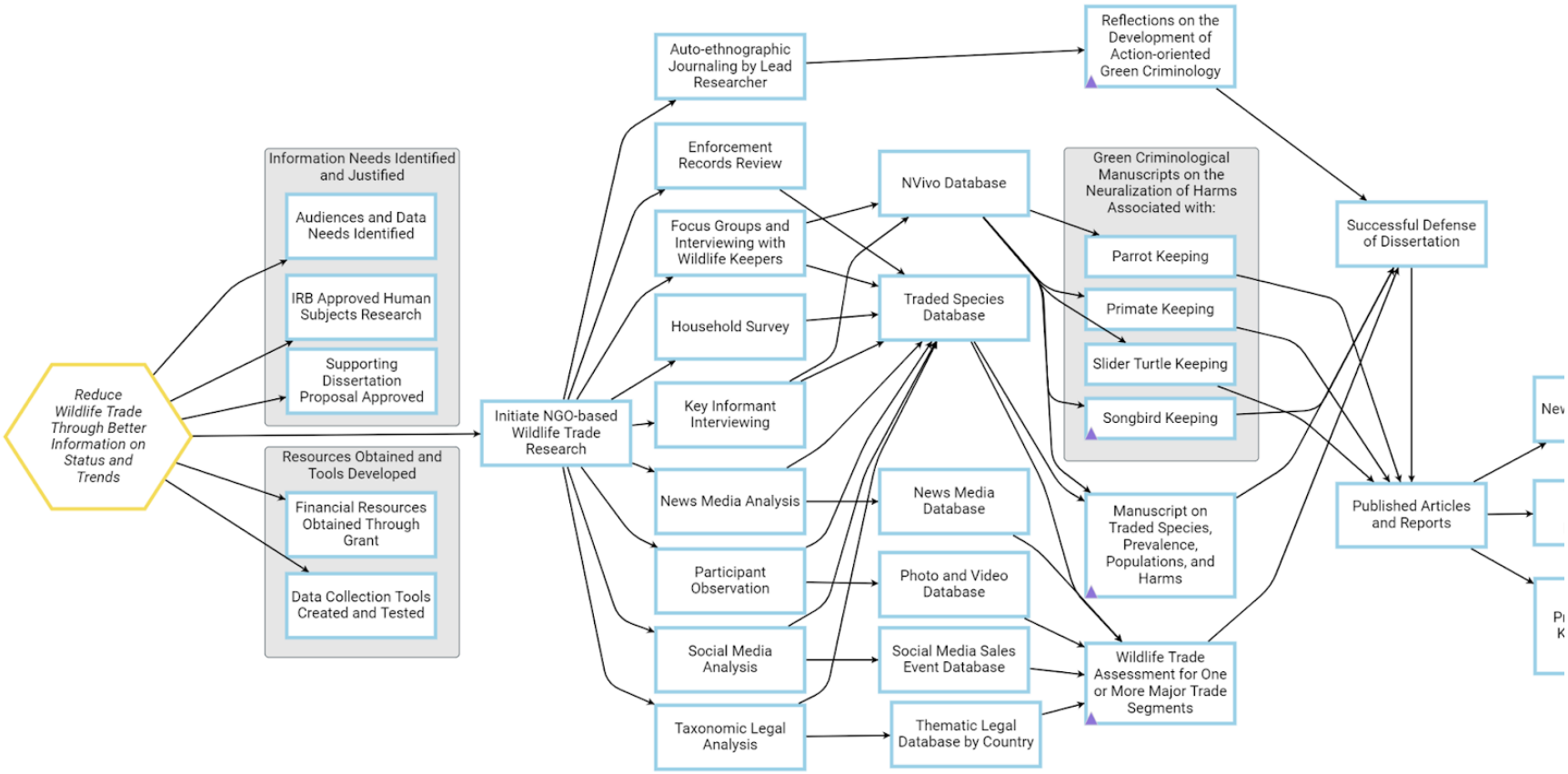
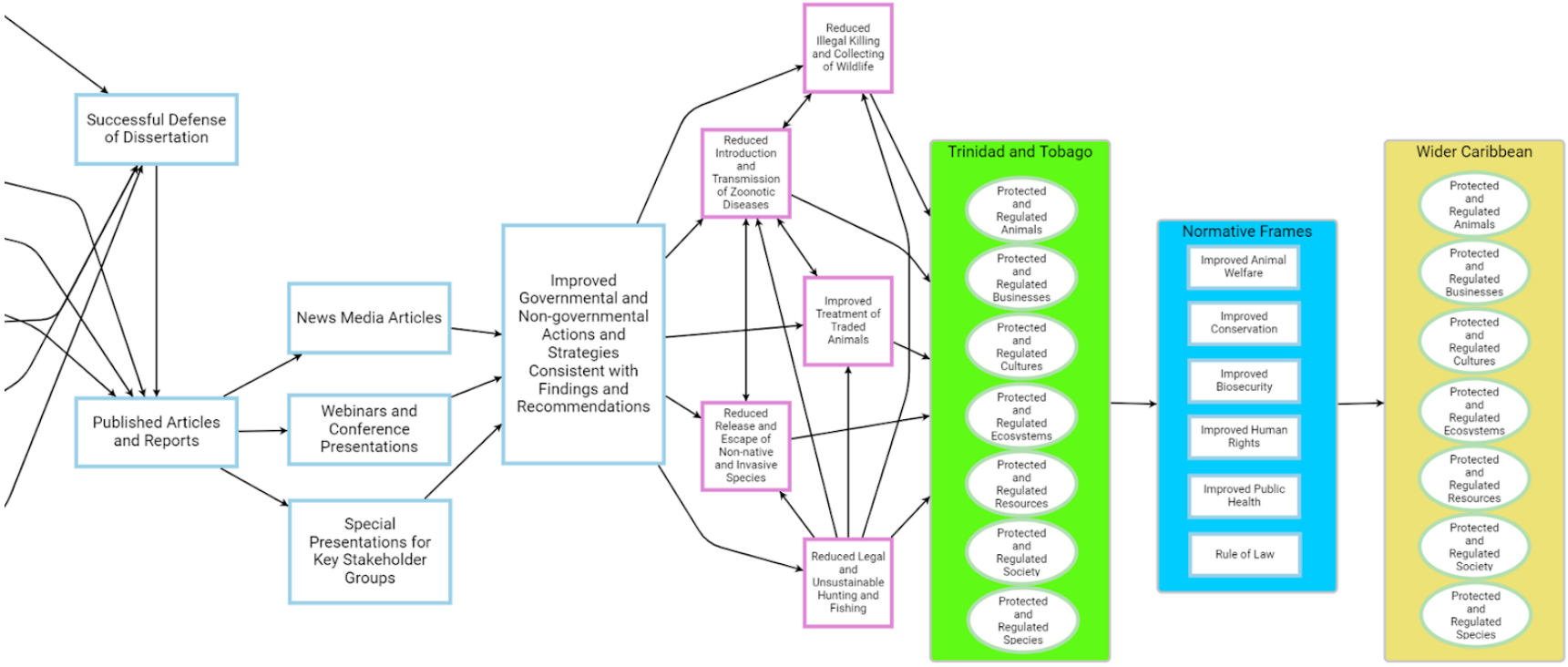


Figure 9 (cont'd)



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CHAPTER 2

THE ILLEGAL KEEPING OF PET WILDLIFE IN TRINIDAD AND TOBAGO: DIVERSITY, PREVALENCE, POPULATIONS, AND HARMS

> Information and statistics on the levels and patterns of wildlife and forest crime are essential to the proper planning of justice reforms and capacity-building, as well as technical assistance initiatives.
>
> —International Consortium on Combating Wildlife Crime (2012, p. 169)

2.1. Authorship and Intended Publication

This manuscript and the underlying research have been produced by the dissertation researcher (MG) as lead author and multiple co-authors: Lauren Ali (LA), Ryan Mohammed (RM), Déserée Noel (DN), Nigel Noriega (NN), and Niamh Vaughan (NV). Each has contributed to this current manuscript draft as described using the Contributor Roles Taxonomy (https://credit.niso.org/) (Table 4).

The manuscript has been developed for submission to *Global Crime*, a criminological journal with the aim of exploring crime in its global and international dimensions. Importantly, this journal previously published a range of research on illegal wildlife trades (e.g., Reuter & O'Regan, 2017), including wildlife trade studies that formerly align with the green criminology paradigm (e.g., Wyatt, 2009). The journal also has a substantial number of articles presenting empirical research to understand diverse crime phenomena (Ioannou & Oostinga, 2015). The manuscript has been developed according to the target journal's submission guidelines, with exception of certain content and formatting required for a cohesive thesis and to fulfill the formatting guidelines of the MSU Graduate School.

Table 4: Contributor roles in the production of Chapter 2.

Role	MG	LA	RM	DN	NN	NV
Conceptualization	✓				✓	✓
Data Curation	✓	✓		✓		✓
Formal Analysis	✓	✓	✓	✓		✓
Funding Acquisition	✓				✓	
Investigation	✓			✓		✓
Methodology	✓		✓		✓	
Project Administration	✓	✓			✓	
Resources	✓				✓	
Software						
Supervision	✓	✓			✓	
Validation	✓	✓	✓		✓	✓
Visualization	✓				✓	
Writing – original draft	✓					
Writing – review & editing	✓	✓	✓		✓	✓

2.2. Abstract

A green criminological study was conducted on the illegal and otherwise harmful keeping of pet wild animals in Trinidad and Tobago. Four research methods were employed: government record review, household surveying, key informant interviewing and focus group discussion, and participant observation. The data indicate that households keep at least 191 species of native and

non-native terrestrial wild animals, spanning arachnids, centipedes, birds, mammals, and reptiles. At least one in every six households keep wild animals nationally (16.9%), representing a minimum population of 102,127 captive individuals. A majority of captive wild animals are estimated to be illegally possessed on the larger island of Trinidad (97.0%), while a majority of captive wild animals on both islands are estimated to have never received veterinary care (95.4%). More than 40 kept species also pose risks of extinction and invasive species introduction. The findings suggest a need for local management reform and demonstrate how green criminology may incorporate a mixed methods research approach.
Keywords: captivity, wildlife, conservation, animal welfare, green criminology

2.3. Introduction

The illegal keeping of wild animals for private use is a growing issue at national, regional, and global scales (Bush et al., 2014; Gong et al., 2009; IPBES, 2020, p. 23-24; Spee et al, 2019). Unfortunately, illegal wild animal keeping results in a wide range of harms, including the death and suffering of animals (Weston & Memon, 2009), extinction of species (Nijman et al., 2021), introduction of invasive species (Lockwood et al., 2019), and transmission of zoonotic diseases (Craft, 2015). In spite of this, the practice of illegal wild animal keeping and its associated trade is rarely studied directly, and researchers note broad knowledge gaps related to involved species (Hughes et al., 2021), prevalence and captive populations (Drews, 2001), associated violations (Pascual et al., 2021), and other associated harms (Baker et al., 2013).

The purpose of this study is to improve understanding of illegal wild animal keeping and trade through a green criminological exploration of the diversity of kept species, prevalence of keeping at the household level, size of captive populations, and nature of harms in Trinidad and Tobago, a twin-island country in the southeastern Caribbean. It is ‘green criminological’ in that

the study is designed using the green criminology paradigm, which is concerned with crimes and harms involving the natural world, non-human species, and the human communities that depend upon them (White & Heckenberg, 2014), and it specifically builds upon green criminologists' common concern for the multidimensional nature of harm occurrence (Brisman & South, 2019). The study also contributes to the paradigms' development by demonstrating how it may be combined with the mixed methods approach to address broad critiques of the paradigm's existing methodologies (Gibbs et al., 2010; Lynch et al., 2017).

2.3.1. Wild animal keeping and trade

The keeping and trade of wild animals is an ancient practice dating as far back as human prehistory (Russell, 2011). As a result of humanity's long experience of wild animal keeping, many species have evolved into the domesticated varieties that account for many kept species today, including domestic camels, cows, dogs, goats, and horses (Driscoll et al., 2009). In modern times, however, wild animal keeping continues and involves thousands of distinct, undomesticated species (Scheffers et al., 2009). Contemporary motivations for wild animal keeping and trade are numerous and combine into complex drivers (Thomas-Walters et al., 2021). Some of the most commonly described motivations include companionship, the enjoyment of a hobby, and household ornamentation (Kidd & Kidd, 1999; Mirin & Klinck, 2021; Reuter & Schaefer, 2017).

Contemporary policymaking and activist communities are particularly concerned by the keeping and trade of living wild animals, and their derivatives, due to the range of harms that may result (e.g., United Nations General Assembly, 2015). By their nature, wild animal species are poorly adapted for human cohabitation, so captivity often results in suffering and early death (Baker et al., 2013). The keeping of wild animals can introduce a diversity of zoonotic pathogens

to human captors, agricultural systems, and broader communities (Craft, 2015). The removal of wild animals from their natural habitats also can have detrimental impacts on ecosystem functioning and species survival (Cardoso et al., 2021), and can lead to species translocation to new habitats where they may become invasive (Lockwood et al., 2019).

Given the many harms that can result from wild animal keeping and trade, governments have also established various laws and agreements for its regulation. The most important international agreement is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which governs the trade in undomesticated species and their products when there is an associated risk of extinction. Nationally, wild animal keeping and trade is also subject to a diverse body of law that is only now beginning to be studied in a structured manner (Pascual et al., 2021). These legal regimes include permitting systems for captive animals, restrictions and requirements for transportation and sale, and lists of approved and prohibited species for private keeping. Unfortunately, many studies indicate serious compliance and enforcement issues facing both the CITES regime (e.g., Nijman, 2010) and national legal regimes governing wild animal keeping (e.g., Herrera & Hennessey, 2007).

In spite of the many harms associated with wild animal keeping and trade, researchers also highlight substantial knowledge gaps with respect to its contemporary occurrence. Hughes and colleagues (2021) suggest research on wild animal keeping and trade is biased toward species that are internationally regulated and assessed for their conservation status, and that this leaves many species unaccounted for in available literature. Drews (2001) highlights that the prevalence of wild animal keeping at the household level and the size of captive wild animal populations have been explored in only a few countries globally. Baker and colleagues (2013) indicate that harms to animal welfare are rarely considered in wildlife trade research.

Collectively, these knowledge gaps hinder comprehensive understanding of wildlife keeping, and may also limit the effectiveness of efforts to reduce the practice or otherwise mitigate its harms.

2.3.2. The paradigm of green criminology

Green criminology is a specialized criminological paradigm for the study of harmful practices and crimes involving the natural environment (White & Heckenberg, 2014), and so might serve as an appropriate scientific paradigm for any investigation of wild animal keeping. In spite of this, various criminologists studying issues associated with wildlife have selected other paradigms to guide their research. Such alternative paradigms include 'conservation criminology' (Gibbs et al., 2009), which unites criminology, natural-resource management, and decision sciences, and the 'environment criminology of wildlife,' which is a specialized criminology of place and situational factors for the study of wildlife crimes (Moreto & Pires, 2018). Meanwhile, non-criminologist researchers concerned with crimes and other harms involving wildlife show little awareness or regard for green criminology, or any criminological paradigm for that matter. Notable competing paradigms put forward by these researchers include 'conservation biology' (Soulé, 1985), which is the applied study of the conservation of nature and biodiversity, and 'animal welfare science' (Lund et al., 2011), which is the applied study of animal well-being.

Two leading explanations for green criminology's lack of field embrace relate to its methods and applications. First, with respect to methods, green criminologists admit to having relied heavily on critical analysis and qualitative methods and suspect this may have limited their paradigm's appeal among more 'orthodox' criminologists that prefer quantitative methods (Lynch et al., 2017). Supporting this, McFann and Pires (2018) conducted a review of wildlife crime literature and found that a majority of all published articles employ methods that may be

described as either theoretical (40%) or qualitative (39%) in nature. Second, many proponents of alternative criminological paradigms argue that green criminology has developed in a way that is primarily focused on theoretical considerations and is therefore poorly suited to real-world problem-solving. Boratto and Gibbs (2021) argue that an alternative conservation criminology paradigm can overcome green criminology's "discursive nature of theory" and "over-reliance on case studies" to produce more "empirically driven policy" on wildlife issues (p. 1). Similarly, Moreto and Pires (2018) indicate that an environmental criminology of wildlife should be considered an "independent and viable approach" distinct from green criminology (p. xi) that can be used to develop "empirically supported pragmatic solutions to address wildlife crime" (p. xiv).

Ultimately, green criminology's lack of mainstreaming may hinder efforts to study and act upon wild animal keeping and its associated trade. In particular, the paradigm appears to be uniquely designed to explore a diversity of illegal and extra-legal harms associated with the human use of the environment and non-human life (Halsey & White, 1998; Nurse, 2017). For instance, where a conservation criminology study of wild animal keeping might explore issues of ecological harm (Gibbs et al., 2009), a green criminological approach would also explore harms extending unrelated to ecosystem function, including harms to animal welfare and public health. Similarly, where a study of wild animal keeping based in environmental criminology might consider harms that are prohibited or regulated under law (Moreto & Pires, 2018), a green criminological approach would invite consideration of both legal and illegal harms.

2.4. The Pet Wildlife Trade in Trinidad and Tobago

The Republic of Trinidad and Tobago is a biologically and culturally diverse country found in the southeastern Caribbean. Located seven miles off the coast of Venezuela, it is

composed of two islands with a land area of 1,981 mi² and an approximate population of 1.4m people (CSO, 2022). Though wild animal keeping and trade is a long-established tradition in the country (Boomert, 2002), available scientific information on the trade itself is highly limited. For instance, the most comprehensive available research on the pet wildlife trade in Trinidad and Tobago appears to be published by Desenne and Strahl (1991), who found the illegal parrot trade in Venezuela resulted in the trafficking of approximately 26 species of parrots to Trinidad and Tobago and other countries. More recently, Mahabir (2019) evaluated various gaps in Trinidad and Tobago's implementation of CITES and identified a limited number of species of illegally traded wild animals on the basis of government seizure records.

More recent research provides more specific evidence of the trade's harms, but do not explore the nature of keeping and trade itself. Notably, Plair and colleagues (2013) reported on the successful reintroduction of Blue and Gold Macaws after the species had been extirpated due to both illegal capture as for the pet trade and illegal forest clearance for agriculture. Mohammed and colleagues (2017) report on the sighting of Red-eared Slider turtles in the wild and note that these animals would either be accidental or intentional releases by pet keepers. Suepaul and colleagues (2019) assessed the disease potential of seized songbirds that had been trafficked into Trinidad and identified a novel pox virus.

Meanwhile, news media reports provide regular anecdotal information on the occurrence of wild animal keeping and trade. For instance, Wilson (2019) reported on a seizure of wild animals that included a "Sloth, 18 parrots, a Toucan, a Yellow-foot Tortoise, five baby Capuchin monkeys and a baby wild hog," all of which were destined for sale on the local black market. Similarly, Fraser (2021) interviewed a resident of Icacos, the closest Trinidadian village to Venezuela, who shared that the village's economy specializes in contraband inclusive of living

wild animals: “[C]attle, goat, sheep, honey, gold, milk, cheese, weed…[p]arrot, bird, monkey, goat...If that is a criminal offence [to bring in from Venezuela], then come and lock up the whole village.” Other news reports also highlight serious problems of animal suffering and mortality, such as Doodnath (2020), which quotes one local activist as saying that many smuggled animals are “kept in deplorable, cramped and unsanitary conditions” such that “many never even survive the trip.”

Illegal wild animal keeping and trade may be defined in Trinidad and Tobago as behaviors that violate CITES and a range of national laws that apply to wildlife. One of the most important national laws is the ‘Conservation of Wild Life Act’ or ‘COWL Act,’ which regulates the collection, sale, and possession of all undomesticated birds, mammals, and reptiles, but not other species. Under the COWL Act, a system of possession permits has been established, while some wildlife is strictly prohibited from possession and other wildlife is made specially exempt from permitting requirements. Two other very important laws are: the ‘Animals (Diseases, Importation, Health and Welfare) Act’ or ‘Animals Act,’ which regulates the animal welfare, importation, and public health aspects of all captive animals in the country; and the ‘Environmental Management Act’ or ‘EM Act,’ which extends special protections to native species determined to be ‘environmentally sensitive.’

2.5. Methods

This study was conducted in Trinidad and Tobago from August 2018 to December 2021 as part of a larger research project on the national and transnational illegal wildlife trade in the Southern Caribbean. This study was implemented using a convergent design for mixed methods research (Creswell & Plano Clark, 2017). Under this design, four research methods were applied independently and then interpreted collectively in order to explore the diversity of kept species,

prevalence of keeping at the household level, size of captive populations, and nature of harms. All research methods applications were approved by the Institutional Review Board (IRB) at Michigan State University (MSU). The four research methods and integrating analytic strategy are further described below.

2.5.1. Government records review

Three sets of governmental records were obtained and analyzed as part of this study. The Trinidad Forestry Division provided two of these datasets, which consisted of applications and permit issuances for the keeping of wild birds, mammals, and reptiles. These datasets were anonymized prior to distribution and corresponded to the time period of January 2016 through August 2018. Additional records were requested for the time period up to December 2020, but the agency was only able to provide summary statistics on permit issuances due to staffing shortfalls (D. Mahabir, pers. comm., February 7, 2022). Similar records were also requested from the Tobago Department of Natural Resources and Forestry (DNRF), but these records were unavailable due to staffing limitations (D. Henry, pers. comm, May 23, 2019). A third and final dataset was obtained from the CITES Secretariat covering all terrestrial wild animals regulated by the treaty and imported into Trinidad and Tobago from 2016 to 2020 (https://trade.cites.org/).

2.5.2. Household survey

A national survey was conducted from September 2019 to February 2020 in order to gather a range of data on animal keeping practices in 2,004 households, or approximately 0.5% of all households nationally. The primary sampling unit was the enumeration district (ED), which is the smallest geographical unit used for statistical fieldwork and generally consists of 150-200 households. Households within each ED constituted secondary sampling units and a total of 12 households were to be sampled from each selected ED. Given the relatively smaller

resident population in Tobago (~60,000) compared to Trinidad (~1,300,000), EDs were relatively over-sampled in Tobago to improve the statistical power of the results. As such, a total of 146 EDs and 1752 households were to be surveyed in Trinidad and 21 EDs and 252 households were to be surveyed in Tobago.

Sampling of EDs and households was conducted using a multistage, population-weighted approach with the support of the Trinidad and Tobago Central Statistical Office (CSO). In the first sampling stage, quotas for ED selection were established proportionally to the population size of Trinidad's 14 administrative divisions and Tobago's seven administrative divisions. In the second sampling stage, specific EDs were selected from each division in which the probability of ED selection was proportional to the number of residents recorded in each ED. Households in each ED were selected through random number generation and number assignments on official ED maps maintained by the CSO. Surveys were conducted by a team of 14 CSO-affiliated surveyors who prioritized interviewing the head of household, followed by anyone who keeps or owns an animal in the household, followed by anyone else that might be available. In the event that a surveyor found no one home in the household, they would return at different times and days until three attempts had been made. In the event that a surveyor was ultimately unable to contact a household representative, or if a household representative explicitly declined to participate, the surveyor would attempt to conduct the survey with the household next in sequence on the official CSO map.

All surveys were conducted anonymously and, prior to initiation, informed consent was obtained through discussion and review of a study information sheet (see Appendix A for instrumentation). Relatively high participation rates were achieved among initially-selected households in both Trinidad (89.3%) and, to a lesser extent, Tobago (72.3%). On average, each

household survey lasted approximately 27 minutes. Survey participants were asked a range of questions to understand their household's animal keeping practices and the specific animals kept. To aid participants, an identification booklet was prepared to assist in the identification of the most commonly kept species (e.g., Blue and Gold Macaws, dogs, goats) and species groups (e.g., Capuchin monkeys, Parakeets), which were determined on the basis of consultation with local biologists and survey piloting experiences. Less precise species groupings were determined to be necessary during piloting as the specific names of some species were not commonly known among households. In order to ensure safety, surveyors were expressly prohibited from entering homes to identify species.

2.5.3. Key informant interviewing and focus group discussions

Key informant interviews and focus group discussions were conducted with a total of 247 persons from January 2019 to March 2020 in order to explore topics associated with the keeping and trade of wild animals in Trinidad and Tobago (see Appendices B, C, & D for instrumentation). In total, representatives from seven stakeholder groups participated in one-on-one interviews (n=172): animal breeders (n=3), animal welfare advocates (n=7), wild animal keepers (n=64), pet shop operators (n=40), veterinarians (n=23), wildlife conservationists (n=30), and wildlife traffickers (n=5). A total of 12 focus groups were also conducted with wild animal keepers (n=75). Wild animal keepers were identified through social media marketing and received an honorarium of TT$100 (~US$15) for participating in a one-on-one interview and TT$200 (~US$30) for participating in a focus group interview. Other informants were selected through purposive sampling and received no monetary compensation for their participation. Self-identified animal welfare advocates and wildlife conservationists were included only if they

indicated having at least two years of full-time professional experience or at least five years of volunteer experience.

Wild animal keepers provided basic information on the animals that they keep, and keeper interviews were audio recorded. All interviews were either audio recorded or memorialized with written notes, depending upon each participant's preference. Each key informant interview lasted 64 mins on average, while focus group discussions lasted 102 mins on average. Transcripts and interview notes were subsequently inputted into NVivo for qualitative analysis of keeping reports and other key themes (Kaefer et al., 2015). All interviews and discussions were conducted privately and anonymously and, prior to initiation, informed consent was obtained through discussion and review of a study information sheet.

2.5.4. Participant observation

Participant observation of wild animal keeping and associated trade was conducted from August 2018 through December 2021. Two modalities were employed: direct observation of physical locations and observation of social media. Direct observations were made through opportunistic visitation of a range of public and publicly-accessible locations where captive wildlife could be found, including: bars, pet shops, shopping areas, songbird competition sites, residential streets, tourist sites, and zoological parks. Observations of residential homes and businesses not ordinarily accessible to the public were also made, but only after obtaining the informed consent of an adult member of the household or a property manager (see Appendix E for instrumentation). Meaningful direct observations were recorded through written notes as well as photography and videography when appropriate and permissible (see Appendix E for instrumentation). A total of 407 distinctly recorded observation events were ultimately recorded through 286 written observations and 6,919 photos and videos.

Social media observations were made through structured monitoring of sale offers and requests on 26 public Facebook groups and pages from September through October 2019, and thereafter through unstructured monitoring of public groups and pages until December 2021. Structured online observations were recorded according to a variety of descriptors in an Excel workbook and through unstructured written notes (see Appendix E for instrumentation).

2.5.5. Mixed methods analytic strategy

A convergent analysis of the collected data was conducted to explore four dimensions of wild animal keeping in Trinidad and Tobago: i) species diversity, ii) behavioral prevalence, iii) captive populations, and iv) associated harms. "Wild animal" was defined as any animal species or species group that usually lives and breeds in non-human environments and "domesticated animal" was defined as any animal species or species group that usually depends upon human captivity to live and breed. In cases where a species might fit both definitions, it was categorized as a wild animal. This decision rule was determined to be necessary given that there is substantial debate over the domesticity of certain species (e.g., Russel, 2002).

Species Diversity. The diversity of wild animal species kept in Trinbagonian households was determined through the integration of all reports and observations from the four research methods into a single Excel spreadsheet. CITES import records were considered only for live animals traded for commercial, personal, or breeding purposes, while permit applications and issuances were considered only for live animals identified as kept as pets or home exhibits since 2016. Each identified wild species and species group was annotated based on the method(s) used to positively identify them as kept species kept in private homes.

Behavioral Prevalence. The prevalence rates of keeping wild animals at the island level were calculated as the proportion of household survey reports made by respondents on each

island, while national prevalence rates were calculated as the average of each island's prevalence rates when weighted by each island's estimated number of households. As the most recent census data was collected in 2011, an updated estimate of household numbers in Trinidad and Tobago was developed on the basis of a June 2021 estimate of the national population provided by the CSO. This new estimate of households was calculated assuming a stable average household size on each island and uniform population growth across both islands since the 2011 census. A confidence interval of 95% was used in all prevalence calculations, but the lower bound of some estimated prevalence rates was set to zero in cases where imputed prevalence rates were negative. Prevalence rates for the keeping of domesticated animals were also calculated to serve as a basis for comparison.

Captive Populations. A conservative estimate of captive wild animal populations was calculated on the basis of household survey reports. These estimates were based on the prevalence rates and associated confidence ranges for each island's sampling at 95% confidence and cautious assumption of actively keeping households possessing no more than one animal of a species. The majority of wild animal species reported on the household survey were kept at rates exceeding one animal per household, but this assumption was deemed more appropriate than the median or average observed animals per household given that there were fewer than 30 households reporting for some species.

Harms. The harms associated with wild animal keeping were analyzed first qualitatively on the basis of all identified species and then quantitatively on the basis of estimated captive populations. This analysis explored four categories of harm associated with wild animal keeping: i) illegal possession, ii) improper care, iii) invasive introduction, and iv) species endangerment.

The risk and occurrence of illegal possession was evaluated on the basis of permitting requirements under the COWL Act and special protections assigned under the EM Act. Following the COWL Act, to which the EM Act defers for permitting, captive wild animals fall into three main categories and six sub-categories of regulation: A) animals that require a permit for possession if they are i) protected animals or ii) specially identified second schedule animals; B) animals that require no permit for possession if they are i) vermin animals, ii) unregulated animals, or iii) specially exempted second schedule animals; and C) animals that are prohibited from possession during the closed hunting season if they are i) ordinary second schedule animals. Estimated captive animal populations requiring permits were compared with associated government permit issuance records to evaluate rates of compliance. In the case of one ambiguous report of a kept species group—"parakeets"—which might include species of more than one legal category, this group was assigned the permitting status of the animal most likely referenced, the green-rumped parrotlet, which is a specially-exempted second schedule animal and so does not require a permit for possession under the COWL Act.

The risk and occurrence of improper care was evaluated on the basis of scores under the Easy-Moderate-Difficult-Extreme (EMODE) scoring methodology (https://emodepetscore.com/), a diagnostic tool to determine the suitability of wild animals as pets, and household survey reports of animals having received veterinary care even once. This methodology has been developed by a community of veterinarians seeking to improve public and veterinary awareness of 'exotic pet' suitability (Warwick et al., 2018). In cases where EMODE scores had not already been calculated, the underlying methodology was used to produce original scores by the authors using the rankings of similar species as guides.

The risk of invasive species introduction was evaluated according to whether a species is listed in the Global Invasive Species Database (GISD) of the International Union for Conservation of Nature (IUCN) (http://www.iucngisd.org/gisd/) or is considered to be locally introduced. An animal was determined to be native, non-native, or introduced on the basis of species descriptions provided by the Department of Life Sciences at the University of the West Indies (UWI, 2018) and professionally accredited wildlife biologists participating in the study's informant interviews.

The risk of species extinction was evaluated using the conservation status assigned to each identified species by the IUCN Red List (https://www.iucnredlist.org/). Following the IUCN status categories, a species is considered to be threatened by extinction if it is listed as 'critically endangered,' 'endangered,' or 'vulnerable.'

2.6. Results

2.6.1. Diversity

Integration of species reports from the four research methods allowed the identification of at least 191 species or species complexes of wild terrestrial arachnids, centipedes, birds, mammals, and reptiles as kept in Trinbagonian households (contact lead author for supplementary data file). All species and complexes were identified at the species level, with the exception of the Galapagos tortoise, which may represent 13 extant species. The methods identifying the most number of individual species and complexes (herein 'species') were key informant interviews and focus group discussions (69.1%), followed by government records review (62.8%), participant observation (47.1%), and household surveying (21.5%). A majority of species were positively identified on the basis of at least two research methods (56.5%). Of the 83 species identifiable by only one method, a majority of these identifications are made by

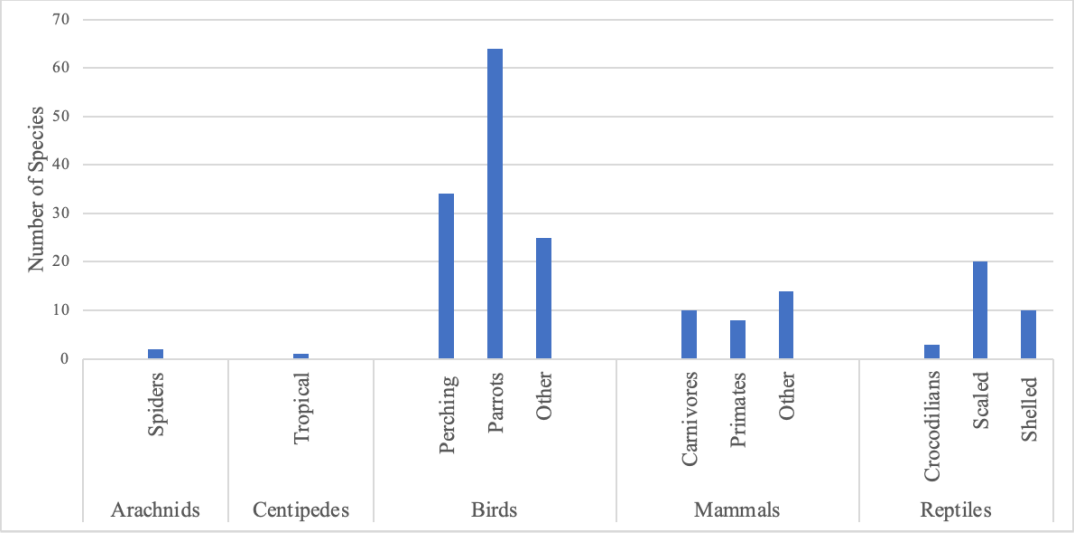
government records (42), followed by informant interviews (40), and participant observation (1). There were no instances of single-method identification through the household survey. Collectively, the four methods used also gave supporting but inconclusive evidence of there being as many as 44 additional wild terrestrial animal species that are kept as pets in Trinidad and Tobago.

The range of terrestrial wild animal species identified as kept in households spans a diversity of taxonomic groupings (Figure 10), but nearly all identified species, or 188 of 191 species (98.4%), may be classified as vertebrates (subphylum Vertebrata). Of the 191 identified species, birds (class Aves) constitute the largest taxonomic class with a total 123 species (64.4%). Parrots (order Psittaciformes) account for the relative majority of birds with 66 species, while perching birds (order Passeriformes) account for the second largest majority with 32 species, and a wide variety of other bird orders account for the remaining 25 species. These other bird orders are: Accipitriformes (5), Anseriformes (1), Caprimulgiformes (1), Columbiformes (1), Falconiformes (1), Galliformes (5), Pelecaniformes (1), Piciformes (3), Strigiformes (6), and Suliformes (1).

After birds, reptiles (class Reptilia) constitute the second largest taxonomic class with a total of 33 species (17.3%). Scaled reptiles (order Squamata) account for the relative majority of reptiles with 20 species, followed by shelled reptiles (order Testudines) with 10 species, and crocodilians (order Crocodilia) with three (3) species. Mammals (class Mammalia) constitute the third largest taxonomic class with a total of 32 species (16.8%). Carnivores (order Carnivora) account for a relative majority of mammals with 10 species, followed by primates (order Primates) with eight (8) species, and a wide variety of other mammal orders account for the

remaining 14 species. These other mammal orders are: Artiodactyla (3), Chiroptera (1), Cingulata (1), Didelphimorphia (1), Perissodactyla (1), Pilosa (2), and Rodentia (5).

Figure 10: Identified species of wild terrestrial animals kept in Trinbagonian homes by taxonomic grouping.



Finally, though the majority of identified species are vertebrate species, a small number are invertebrates, with two (2) species classified as arachnids (class Arachnida) (1.0%) that may be further classified as spiders (order Araneae), and one (1) species classified as centipedes (class Chilopoda) (0.5%) that may be further classified as a tropical centipede (order Scolopendromorpha).

2.6.2. Prevalence

A total of 349 of the 2,004 participating households in the national survey reported keeping one or more terrestrial wild animals. This yielded behavioral prevalence rates of 16.6% (±1.7%) in Trinidad, 23.0% (±5.2%) in Tobago, and 16.9% (±1.9%) in the entire country. This prevalence was primarily due to the popularity of keeping wild birds, with prevalence rates of 14.2% (±1.6%) in Trinidad, 18.7% (±4.8%), and 14.4% (±1.8%) in the entire country. By

comparison, the prevalence of households that kept one or more domesticated animals was 41.6% (±2.3%) in Trinidad, 56.7% (±6.2%) in Tobago, and 42.3% (±2.5%) in the entire country.

The prevalence of households that kept any type of terrestrial animal was 48.3% (±2.3%) in Trinidad, 67.1% (±5.8%) in Tobago, and 49.2% (±2.5%) in the entire country. The six most prevalent wild species of terrestrial arthropods, birds, mammals, and reptiles identified in the household survey at the national level consisted of psittacine and passerine birds, while the six most prevalent domesticated species at the national level consisted overwhelmingly of dogs and other commonly kept domesticated pets and farm animals (Table 5).

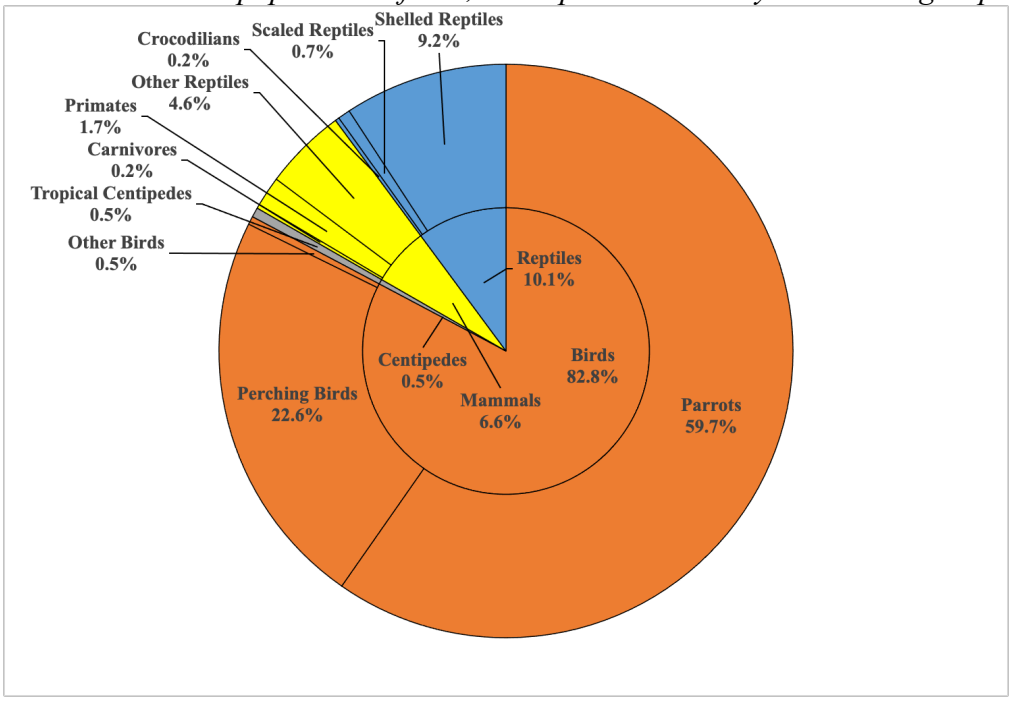
Table 5: Prevalence of most common wild and domesticated terrestrial animals.

Type	Common Name	Trinidad	Tobago	National
Wild	All identified wild species	16.6% (±1.7%)	23.0% (±5.2%)	16.9% (±1.9%)
	Orange-winged amazon (*A. amazonica*)	7.0% (±1.2%)	13.9% (±4.3%)	7.3% (±1.3%)
	Chestnut-bellied seed finch (*S. angolensis*)	2.4% (±0.7%)	1.6% (±1.6%)	2.4% (±0.8%)
	Lovebird (*Agapornis spp.*)	1.6% (±0.6%)	1.6% (±1.6%)	1.6% (±0.6%)
	Gray seedeater (*S. intermedia*)	1.4% (±0.6%)	0.0% (±0.0%)	1.4% (±0.5%)
	Yellow-crowned amazon (*A. ochrocephala*)	1.1% (±0.5%)	0.8% (±1.1%)	1.1% (±0.5%)
	Budgerigar (*M. undulatus*)	1.0% (±0.5%)	2.0% (±1.7%)	1.1% (±0.5%)
Domestic	All identified domesticated species	41.6% (±2.3%)	56.7% (±6.2%)	42.3% (±2.5%)
	Dog (*C. familiaris*)	34.5% (±2.2%)	0.8% (±1.1%)	34.9% (±2.4%)
	Cat (*F. catus*)	5.4% (±1.1%)	5.2% (±2.7%)	5.4% (±1.1%)
	Chicken (*G. domesticus*)	5.1% (±1.0%)	8.3% (±3.4%)	5.2% (±1.1%)
	Duck (*A. platyrhynchos domesticus*)	2.7% (±0.8%)	2.4% (±1.9%)	2.7% (±0.8%)
	Rabbit (*O. cuniculus domesticus*)	2.1% (±0.7%)	5.2% (±2.7%)	2.2% (±0.8%)
	Sheep (*O. aries*)	0.7% (±0.4%)	11.9% (±4.0%)	1.2% (±0.6%)
Both	All identified domesticated and wild species	48.3% (±2.3%)	67.1% (±5.8%)	49.2% (±2.5%)

2.6.3. Populations

Based on the household survey, the captive population of terrestrial wild animals in Trinidad and Tobago is conservatively estimated at 102,127 individual animals, with a lower bound estimate of 56,252 animals and an upper bound estimate of 154,172 based on a 95% confidence interval. Broken down by the largest taxonomic groups, birds account for 82.8% of the mean estimate of all captive individuals, while reptiles account for 10.1%, and mammals and centipedes respectively account for 6.6% and 0.5% (Figure 11). No arachnids were reported on the national survey in spite of being reported as kept by participant observations and key informant interviews. The bird orders of parrots and perching birds also represent the largest sub-groupings, respectively representing 59.7% and 22.6% of the mean population estimate.

Figure 11: Mean estimated population of 102,127 captive animals by taxonomic groupings.



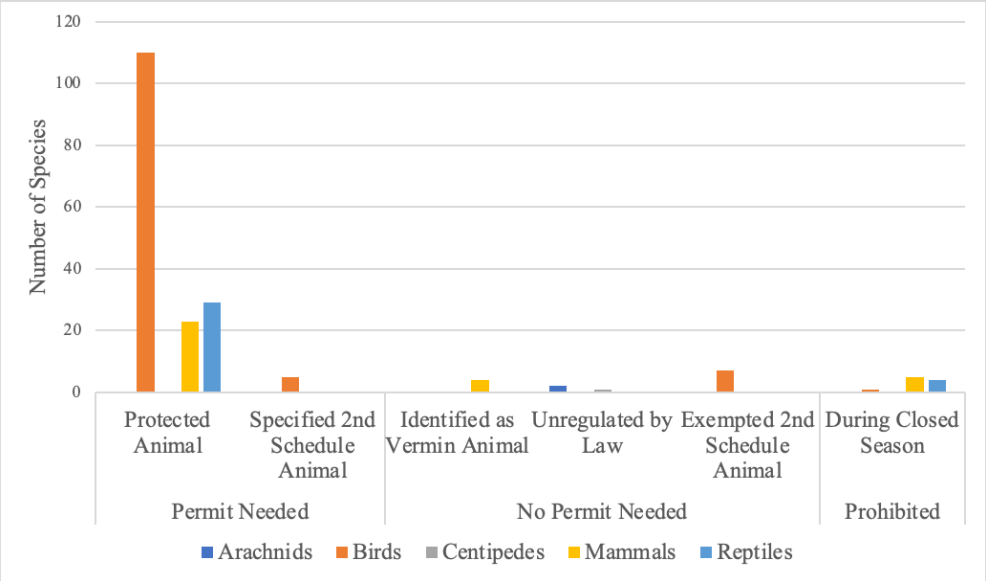
Not including domestic honey bees, estimated captive domestic animals kept at private homes substantially outnumber their wild counterparts with an estimated captive population of 249,695 domesticated animals, with a lower bound estimate of 201,944 animals and an upper

bound of 299,224 animals. This captive domestic animal population is primarily composed of dogs representing 63.5% of the mean estimate, followed by cats representing 11.1%, and chickens representing 9.1%.

2.6.4. Illegal possession

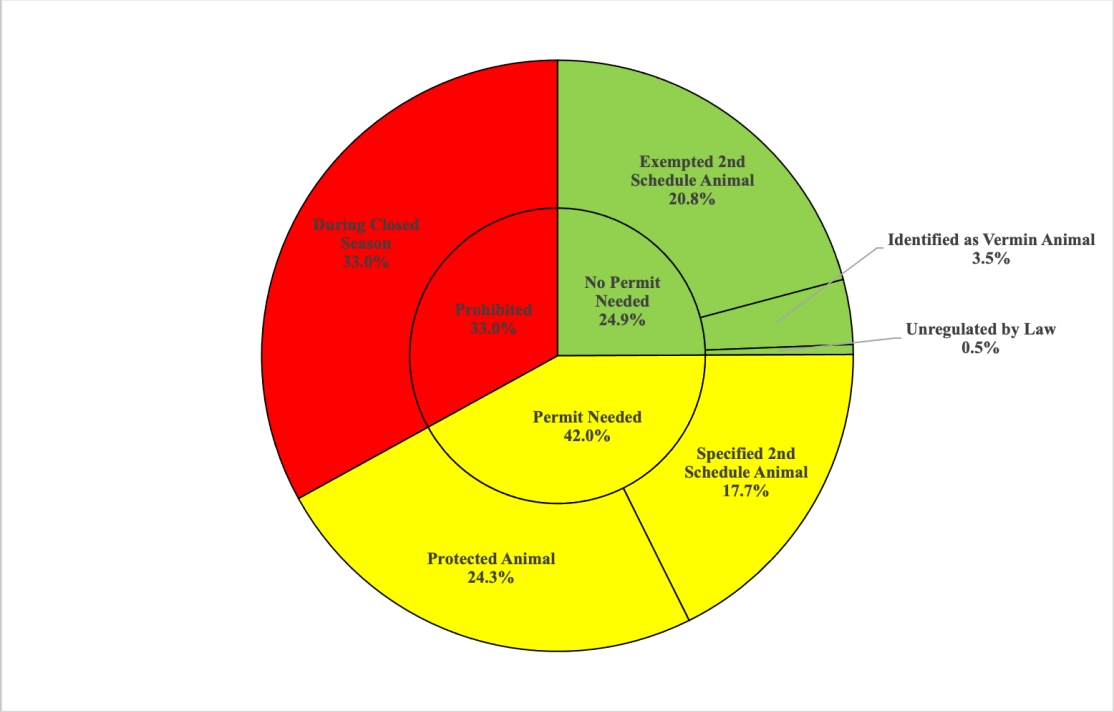
One-hundred and sixty-seven (167) of the 191 identified species and species groups may be kept in private homes provided that special permits are discretionarily issued under the national COWL Act (Figure 12). Another 14 species require no permit at all to be kept in captivity, either because they are legally identified as "vermin" (4), are allowed with no permit as special "cage birds" (7), or are arachnids and centipedes that are not covered by the COWL Act (3). Another 10 species are entirely prohibited from captive possession outside of the hunting season from April 1 to September 30 each year. Two (2) identified species are also protected under law as "environmentally sensitive species" under the EM Act with additional fines for illegal possession, but each may be discretionarily permitted for captivity under the COWL Act as protected animals.

Figure 12: Permitting requirements of 191 terrestrial wild species identified as kept in Trinidad and Tobago.



Available permitting data also allowed estimation of permit compliance on the island of Trinidad, where a mean estimated 23,356 captive wild animals require annually issued permits as "protected animals" and a mean estimated 17,694 animals require annually issued permits as "second schedule animals." Meanwhile, government records for the 2019-2020 survey period indicate that only a small number of homes had been issued permits to keep each category of animals, with 163 protected animal permits and 33 second schedule animal permits issued in 2019, and 97 protected animal permits and 24 second schedule animal permits issued in 2020.

Figure 13: Mean estimated population of 102,127 captive animals by possession requirements under the COWL Act.



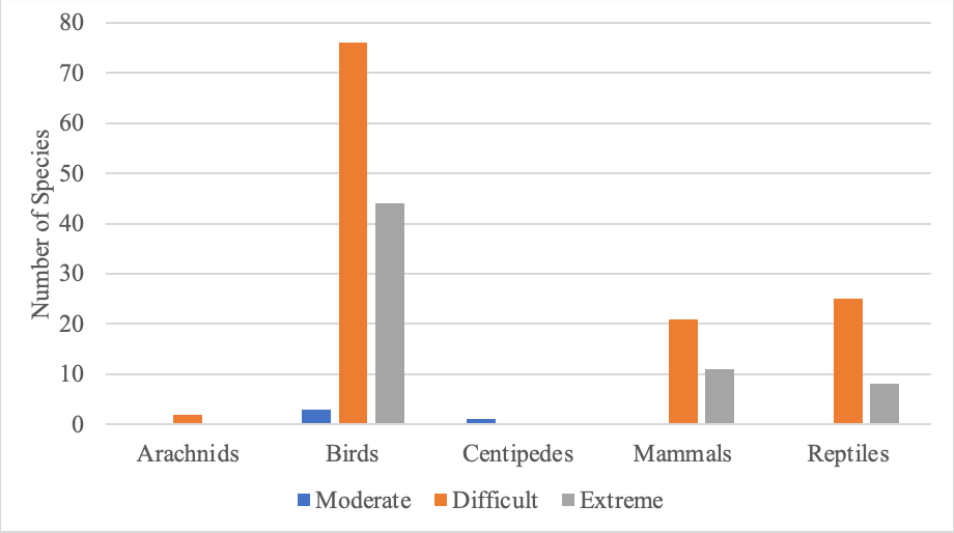
As the most recent permit issuance data was only provided at the permit holder level, and specifically kept species information was missing, the average number of animals per permit type for January 2017 through August 2018 was used to construct estimates of the average number of animals per issued permit, or 4.344 protected animals per permit and an average of 1.571 second schedule animals per permit. Combining these estimates with official issuances of

annual permits for *both* 2019 and 2020 yielded a highly generous estimate of there being 1,219 legally permitted captive wild animals at the time of the household survey. This suggests that 97.0% of captive animals that require permits are possessed without them, equivalent to approximately 39,831 captive animals.

2.6.5. Improper care

A total of 188 of 191 identified species scored as either 'difficult' (125) or 'extreme' (63) under the EMODE methodology to evaluate the suitability of an animal for private captivity (Figure 14). The highest EMODE score obtained by identified kept species was 40 points, which corresponded to seven of the eight identified primate species. Three remaining species scored as 'moderate,' specifically the Amazonian giant centipede, common waxbill, and zebra finch, which notably score lower than other identified species due to having ordinary captive life spans shorter than 10 years. With respect to permitting rules, 13 of the species identified as difficult or extreme require no permit to be kept under law.

Figure 14: EMODE scores of 191 terrestrial wild animal species identified as kept in Trinidad and Tobago.



In relation to estimated captive populations, almost the entire population of captive wild animals corresponds to scores of either difficult or extreme. This is because only one identified

species scoring as moderate—the Amazonian centipede—was reported on the household survey, with a mean estimated population of 554 individuals. On the basis of survey reports, an estimated 93.0% of the mean estimated population of captive animals, or 95,013 animals, was projected to have never been taken to receive veterinary care. Broken down by EMODE score, 88.9% of the mean estimated population of 'extreme' animals is projected to have never been seen by a veterinarian, compared to 97.5% for 'difficult' animals and 100.0% for 'moderate' animals. By comparison, only 40.0% of the mean estimated captive population of dogs and cats was projected to have never been seen by a veterinarian, and mixed breed varieties of these species score as 'easy to moderate.'

2.6.6. Invasive introduction

A total of 13 identified species pose risks or demonstrate the occurrence of invasive species introductions based on their listing in the GISD, their status as introduced to Trinidad and Tobago, or both criteria (Table 6). Four (4) species listed in the GISD have been observed to have been introduced into local ecosystems, while four (4) species are listed in the GISD but have not been introduced into local ecosystems. An additional five (5) species are not listed in the GISD, but have been successfully introduced into natural habitats in the country, offering additional species to be evaluated for their invasive potential. All species identified as threatening or causing invasive introductions to local ecosystems may be kept locally with the issuance of a discretionary permit under the COWL Act, with exception of two species—small Asian mongoose and capybara—which are considered "vermin" under the same act and so do not require possession permits. With respect to captive animal populations, survey respondents reported keeping only one of the species identified as threatening or causing an invasive

introduction, the red-eared slider turtle, and this was found to have a mean estimated captive population of 3,324 individuals.

Table 6: Species posing a risk of invasive introduction in Trinidad and Tobago.

Class	Common Name	Species	GISD Listing	Range
Birds	Common Waxbill	*Estrilda astrild*	✓	Introduced
	Tricoloured Munia	*Lonchura malacca*		Introduced
	Monk Parakeet	*Myiopsitta monachus*	✓	Not introduced
	House Sparrow	*Passer domesticus*	✓	Introduced
	Southern Masked Weaver	*Ploceus velatus*		Introduced
	Ring-necked Parakeet	*Psittacula krameri*	✓	Not introduced
Mammals	Small Asian Mongoose	*Herpestes javanicus*	✓	Introduced
	Capybara	*Hydrochoerus hydrochaeris*		Introduced
	Tufted Capuchin	*Sapajus apella*		Introduced
Reptiles	Red-footed Tortoise	*Chelonoidis carbonarius*		Introduced
	Burmese Python	*Python bivittatus*	✓	Not introduced
	Red-eared Slider Turtle	*Trachemys scripta elegans*	✓	Introduced
	Three-horned Chameleon	*Trioceros jacksonii*	✓	Not introduced

2.6.7. Species endangerment

Thirty-two (33) identified kept species are listed by the IUCN Red List as threatened with extinction (Table 7). Of the identifiable species, the Trinidad piping guan and the Trinidad white-fronted capuchin are both critically endangered and endemic, while another species, the red siskin, is endangered and believed to be locally extirpated. The identified Galapagos tortoise complex meanwhile is composed of extant species listed as Vulnerable (4), Endangered (3), and Critically Endangered (6), indicating that at least one additional threatened species is kept in households. All identified threatened species may be kept in captivity with the issuance of a discretionary permit as “protected animals” under the COWL Act. Meanwhile, the conservation

statuses of eight (8) identified species have not yet been assessed by the IUCN: Amazonian giant centipede, cryptic golden tegu, gibba turtle, red-footed tortoise, pink-toed tarantula, scorpion mud turtle, spot-legged wood turtle, and the Trinidad chevron tarantula.

Table 7: Species kept and at risk of extinction. CR = Critically Endangered, EN = Endangered, VU = Vulnerable.

Class	Common Name	Species	IUCN Status	Range
Birds	Yellow-naped Amazon	*Amazona auropalliata*	EN	Non-native
	Yellow-headed Amazon	*Amazona oratrix*	EN	Non-native
	Vinaceous-breasted Amazon	*Amazona vinacea*	EN	Non-native
	Hyacinth Macaw	*Anodorhynchus hyacinthinus*	VU	Non-native
	Blue-throated Macaw	*Ara glaucogularis*	CR	Non-native
	Military Macaw	*Ara militaris*	VU	Non-native
	Sun Parakeet	*Aratinga solstitialis*	EN	Non-native
	White Cockatoo	*Cacatua alba*	EN	Non-native
	Salmon-crested Cockatoo	*Cacatua moluccensis*	VU	Non-native
	Yellow-crested Cockatoo	*Cacatua sulphurea*	CR	Non-native
	Indigo-winged Parrot	*Hapalopsittaca fuertesi*	EN	Non-native
	Java Sparrow	*Lonchura oryzivora*	EN	Non-native
	Trinidad Piping Guan	*Pipile pipile*	CR	Endemic
	African Gray Parrot	*Psittacus erithacus*	EN	Non-native
	Timneh Gray parrot	*Psittacus timneh*	EN	Non-native
	Crimson-bellied Parakeet	*Pyrrhura perlata*	VU	Non-native
	Red-billed Toucan	*Ramphastos tucanus*	VU	Non-native
	Channel-billed Toucan	*Ramphastos vitellinus*	VU	Native
	Red Siskin	*Spinus cucullatus*	EN	Extirpated
	Scarlet-shouldered Parrotlet	*Touit huetii*	VU	Non-native
Mammals	Guiana Spider Monkey	*Ateles paniscus*	VU	Non-native
	Lion	*Panthera leo*	VU	Non-native
	Tiger	*Panthera tigris*	EN	Non-native
	Giant Otter	*Pteronura brasiliensis*	EN	Non-native
	Cotton-top Tamarin	*Saguinus oedipus*	CR	Non-native
	Lowland Tapir	*Tapirus terrestris*	VU	Non-native
	Trinidad White-fronted Capuchin	*Cebus trinitatis*	CR	Endemic
	White-lipped Peccary	*Tayassu pecari*	VU	Non-native
Reptiles	Russian Tortoise	*Agrionemys horsfieldii*	VU	Non-native
	Yellow-footed Tortoise	*Chelonoidis denticulata*	VU	Native
	Galapagos Tortoise	*Chelonoidis nigra complex*	CR / EN / VU	Non-native
	Yellow-headed Sideneck Turtle	*Podocnemis unifilis*	VU	Native
	Burmese Python	*Python bivittatus*	VU	Non-native

With respect to estimated captive animal populations, 80.0% of the mean estimated captive wild animal population, or 81,701 animals, was categorized as Least Concern. Survey responses were such that just .05% of the mean estimated population, or 472 animals, were categorized as Vulnerable or Endangered, and this population was composed entirely of two species, military macaw and African gray. Meanwhile, 2.8% of the mean estimated population, or 2,831 animals, have not yet been assessed by the IUCN. A total of 15.8% of the mean estimated captive wild animal population, or 16,179 animals, was not able to be categorized by the IUCN Red List due to ambiguous reports by survey respondents. These ambiguous reports likely obscure additional populations of endangered animals. In particular, reports of keeping local tortoises (aka "morrocoys") and capuchin monkeys likely hide populations of yellow-footed tortoises, categorized as Vulnerable, and Trinidad white-fronted capuchin, categorized as Critically Endangered.

2.7. Discussion

A green criminological study of illegal and otherwise harmful wild animal keeping in Trinidad and Tobago indicates that at least 191 species of arachnids, centipedes, birds, mammals, and reptiles were kept in private homes across the country for the period of 2016 through 2021. This collection of species was identified on the basis of multiple research methods and fills a major knowledge gap in Trinidad and Tobago. Previous studies of the traded species in the country established a far smaller range, from 20 species of birds, mammals, and reptiles identified by Mahabir (2019) to approximately 26 species of parrots by Desenne and Strahl (1991) to at most several species identified in other studies (e.g., Suepaul et al., 2019). Similarly, publicly available CITES records indicate that only 39 terrestrial animal species regulated under the treaty have been imported into the country from 2016 to 2020.

The study also fills important global knowledge gaps with respect to the prevalence and size of captive wild animal populations. Research establishing such figures is rare, but available information indicates that Trinidad and Tobago may keep animals at a lower rate than observed in another tropical country in the region, Costa Rica. Where wild animal keeping is projected to occur in 16.9% (±1.9%) of all households in Trinidad and Tobago, Drews (2001) estimated that 23.5% (±2.6%) of Costa Rican households keep wild animals. Meanwhile, wild animal keeping in Trinidad and Tobago appears to occur at higher rates than observed in the United States. The American Veterinary and Medical Association (2018) estimates that just 2.8% of American households keep non-poultry wild and domesticated birds, whereas an estimated 14.4% (±1.8%) of Trinbagonian households keep wild birds alone.

The study also reveals wild animal keeping in Trinidad and Tobago to be particularly harmful, with notable impacts to the rule of law and animal welfare. In Trinidad alone, at least 97.0% of the mean estimated wild animal population requiring permits, equivalent to 39,831 animals, is projected to be held in violation of permitting rules. The data further indicates that captive wild animal keeping is overwhelmingly detrimental to animal welfare, with 188 of 191 identified species identified as difficult or extreme animals for private keeping, and an estimated 95.4% of all captive wild animals are projected to have never received any veterinary care. Wild animal keeping also results in risks of species extinction and invasive introductions. A total of 33 kept species were identified as threatened with extinction, and 13 species were identified as posing risks of invasive introduction, but only two endangered species and one potentially invasive species were reported on the household survey.

The study findings are subject to certain limitations in research method and analytic interpretation, but in ways that trend toward conservatism. While the four methods collectively

identified 191 species, the household survey positively identified only 41 species, though ambiguous reports left open the possible identification of at least 44 additional species. This means that the prevalence rates and population sizes calculated using household survey results do not account for the keeping of 106 other species identified by other methods. Evidence of under-reporting on the household survey is also strongly suggested. Notably, research team members engaged in survey piloting and full implementation observed that some household respondents disclosed wild animal keeping only at the end of a survey and strongly suspected some households do not report their wild animal keeping at all. For instance, in one instance during the piloting stage, the lead researcher learned of a household's parrot keeping only after the survey interview due to another household member offering this information unprompted. Reporting of primates was also particularly low relative to the expectations of the research team and interviewed informants, and it is reasonable to believe there was substantial underreporting as these species are more often subject of local enforcement efforts.

Estimates of captive populations and subpopulations at risk of different harms were also conservatively calculated through the use of an assumption of one animal per species being kept per household. Though this assumption substantially reduced the risk of over-estimation for rarely-kept species, and aligns with prior population estimation by Drews (2001), the approach substantially limits estimation of commonly kept species in Trinidad and Tobago. Notably, the two most commonly kept wild animal species, orange-winged amazons and chestnut-bellied seed finches, were respectively kept at average rates of 1.3 and 2.4 birds per household. In the future, other estimation approaches may be more appropriate in animal keeping studies using household surveys. For instance, the average number of animals kept for a household might be more

appropriate for captive population estimation in cases where a species is reported to be kept by a large number of households, while expert interpolation might be used for rarely reported species.

Outstanding disagreements among biologists as to the appropriate definition of 'domesticated' also posed challenges to identifying a species as wild or domesticated in this study. In particular, at least 23 species identified in the study may qualify as domesticated or 'semi-domesticated,' including budgerigar, six species of cockatoo, Indian peafowl, ball and Burmese python, two species of lovebird, red-eared slider turtle, and zebra finch. Many of these species are commonly bred in captivity and captive bred specimens often exhibit morphological differences from wild individuals. Nevertheless, such species also comprise substantial naturally occurring wild populations, and there are numerous examples of such specimens establishing viable populations in the wild. Given the difficulty of determining a species domestication status, potentially domesticated or semi-domesticated species are specially identified in the species database (see supplementary file). If these species were removed from the study's prevalence and population estimates, then household keeping of wild animals would be estimated to occur in 15.3% (±1.8%) of Trinbagonian households, a mean reduction of 1.6%, and to account for a mean estimated captive population of 90,052 animals, or approximately 12,000 fewer animals.

A key implication of the study is that management reform may be needed to reduce substantial illegal and harmful wild animal keeping. Conservative estimates suggest that the permitting and enforcement system for captive wild animals broadly fails to constrain or regulate household keeping in Trinidad. Given that Tobago has limited personnel for permitting, monitoring, and enforcement, it is reasonable to believe this island's permitting system is facing similar non-compliance issues as well (D. Mahabir, pers. comm., February 7, 2022). Surprisingly, the most commonly kept wild animal across both islands—the Orange-winged

Amazon—is also prohibited from captivity under the COWL Act during a closed season from March through September each year. Meanwhile, current laws do not provide any form of protection for kept arachnids and centipedes, and one such species— the Trinidad chevron tarantula—is both endemic and popular in the international pet trade.

The Trinidad and Tobago permitting system for captive wild animals also appears poorly designed to reduce the harms of improper care, invasive introduction, and species extinction. Effectively all wild animals kept in the country are at risk of improper care and, with the exception of minimum cage sizes for certain species of passerine birds, local law does not establish mechanisms to ensure standards of care. One way to improve this situation would be to require a veterinary certification of good husbandry to accompany all permit applications to the government. All 13 kept species identified as posing risks of invasive species introductions may be legally kept in private homes by way of a discretionary permit, with the exception of two "vermin" that require no permit for captive possession. A more reasonable policy for these species would be to prohibit all ordinary private keeping of potentially invasive species or to establish higher keeping standards to ensure that such animals do not breed in captivity and are unlikely to be able to escape into the wild. Lastly, all the 33 kept species identified as threatened with extinction may be kept in captivity with the issuance of an ordinary discretionary permit under the COWL Act. A more progressive policy might instead establish a higher standard for keepers to prove that such animals have not been illegally acquired and are receiving high-quality care.

The study as a whole also provides an example of how a green criminological study might be conducted to expand upon the paradigm's traditional reliance on qualitative methodologies and to contribute directly to a real-world problem context. Though proponents of

alternative paradigms indicate that green criminology is fundamentally limited (Boratto & Gibbs, 2021; Moreto & Pires, 2018), this study suggests that green criminological research has only been limited in its prior designs and applications and can be developed more comprehensively. Such an implication is in fact consistent with contemporary defenses of green criminology in which proponents argue that the paradigm is fundamentally open-ended in its concepts, methods, and applications (White & Heckenberg, 2014). Meanwhile, the incorporation of the paradigm's core concern with the multidimensionality of harm may have produced a novel contribution to empirical literature. Notably, measures of specific types of illegal acts and animal welfare harms are rather rare in scientific literature (see Baker et al., 2013; Pascual et al., 2021).

Finally, one possible way for green criminologists to overcome critiques of their paradigm might be to formally unite the paradigm with the complementary paradigm of mixed methods research. Such an approach might create a new green criminological variant that integrates both qualitative and quantitative methods in support of relatively pragmatic research (Feilzer, 2010). Such an approach is consistent green criminology's past development to embrace numerous specialized approaches (White & Heckenberg, 2014), as well as the mixed methods research paradigm, which has been described as a 'metaparadigm' capable of uniting any number of other paradigms (Johnson, 2015). Notably, Ivankova and Wingo (2018) have similarly developed a paradigmatic variant mixing mixed methods research with another qualitative-leaning paradigm, action-oriented research, in order to establish more "scientifically sound and transferable results" (p. 978). In such a way, a 'mixed' or 'applied' green criminology might be more formally developed.

2.8. Conclusion

The keeping of wild animals is a poorly understood activity and involves a variety of illegal and extra-legal harms in Trinidad and Tobago and the wider world. In response, green criminological research offers a promising scientific approach to explore these phenomena and consider ways in which they may be addressed through management reform. As applied in Trinidad and Tobago, a green criminology approach reveals harmful wild animal keeping to pose a multi-faceted problem that had been largely hidden from public and scientific communities. In future research, more diverse harms might be considered as part of the analysis, while ecological and animal welfare harms might be explored in greater depth to understand keepers' willingness to obtain at-risk animals and the veterinary services that might improve their captive care. Given the prior lack of research on this topic, this study offers an important baseline understanding of wild animal keeping in Trinidad and Tobago, the Caribbean, and in other biodiverse countries where wild animal keeping is a popular activity.

2.9. Acknowledgments

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2.10. Declaration of Interest

We report there are no competing interests to declare.

APPENDICES

APPENDIX A

Household Survey Instrumentation

The household survey consisted of four core materials: a study information sheet, a questionnaire inclusive of scripts, an animal identification guide, and a key terms guide. An animal identification book was also used and may be obtained by contacting the lead author.

Study Information Sheet

1. You are being asked to take part in a research study on experiences and opinions related to animal ownership and nature. Essentially, we are trying to understand what Trinidadians and Tobagonians like and think about their natural world.
2. This survey is being conducted by the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), and Michigan State University.
3. You are being asked to complete a brief questionnaire with the help of your surveyor today. We anticipate the questionnaire will take up to 30 minutes, depending on how much information you share with us.
4. Your participation is entirely voluntary and you are free to end your participation at any time. There will be no negative consequences for you if either you do not agree or decide later to withdraw or stop while the interview is in progress.
5. You will not be paid for your participation in this study. However, your participation in this study may contribute to the enjoyment of pet animals and improved nature experiences in Trinidad and Tobago.
6. You must be at least 18 years of age to participate.

7. Your participation is held to strict confidentiality, and the information you give will be recorded anonymously. Neither your name, nor any information that can identify you will be shared with anyone or printed anywhere by the survey team. The answers will be recorded in a way that they are never associated with your name or other identifying information.
8. This study has been evaluated by Michigan State University (Study ID #: 00000489) for meeting the standards of ethical research in which survey participants will not be identifiable and there are no apparent significant risks to participation.
9. If you have concerns or questions about this study, you may contact:

   Laura Baboolal, SII representative, Email: laurababoolal19@gmail.com

   Aliya Hosein, CRESTT representative, Email: aliyahosein@gmail.com

   Mr. Mark Gibson, PhD Candidate, Michigan State University. Email: gibso113@msu.edu.

   US Cell/WhatsApp: +1 (202) 308-8993. Trinidad Cell: +1 (868) 467-3829.

   You may also contact the Human Research Protection Program at Michigan State University if you have concerns about this project. US Phone: +1 (517) 355-2180. Email: irb@msu.edu.

Figure 15: Main pages of a survey on animal ownership and nature experiences.

Survey on Animal Ownership and Nature Experiences

Mark Gibson, t: +1 (868) 467-3829 , gibso113@msu.edu

Questionnaire Version 9

ENUMERATOR and REVIEWER INFORMATION		
…… Enumerator's Name	…… Enumerator's Signature	…… Staff Number
…… [DD/MM/YYYY] Date Received by Supervisor	…… Supervisor Name	…… Supervisor Signature

QUESTIONNAIRE INFORMATION			
Municipal ID	**Community Code**	**Enumeration District #**	**Questionnaire Number**
			of

VISITATION INFORMATION							
Household Visit #		**Date**			**Time Arrived**	**Time Left**	**Result Code**
		DD	**MM**	**YYYY**			
Originally Selected Household	1						
	2						
	3						
Replacement Household Describe replacement selection method:_____ _____ _____ _____	1						
	2						
	3						

Results Codes: **1** - Completed **2** - Partially completed **3** -Not at home **4** -Refused **5** -Other

"Other" - **details:** _____

Printing Guidance:

Questionnaire — double-sided, black and white, color for Data Forms examples only.

Animal Code Book, and **Key Terms Guide** — double-sided, black and white, and laminated for repeat use.

Animal Photo Packet — double-sided, full color, and laminated for repeat use.

Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

INTRODUCTION AND INFORMED CONSENT

Verbal Script

SURVEYOR: You do not need to follow the script word-for-word. More importantly, you are expected to discuss the key details of the consent form (underlined) and make active efforts to solicit and respond to questions.

"This part of the survey is designed to ensure you are an informed and consenting survey participant. I will tell you about this survey and try to answer any questions you may have.

To begin, this survey shall explore you and your household's experiences and opinions on animal ownership and the enjoyment of nature. It has been organized by two local organizations[1]: the Centre for the Rescue of Endangered Species of Trinidad and Tobago (or "CRESTT") and Sustainable Innovation Initiatives (or SII). Together, CRESTT and SII are seeking to promote the joys of pet keeping and exploring nature among all Trinidadians and Tobagonians. These organizations are further aided by the technical support of a US-based university, Michigan State University. The study is being financially supported by the United States Fish and Wildlife Service (USFWS) and the United States Agency for International Development (USAID).

Your household was selected randomly with support of the Central Statistical Office of Trinidad and Tobago. You will be asked a series of questions and your answers will be recorded anonymously. This means that I am not going to record your name and address on the survey form, or in any other way that could identify you as the survey respondent. You will receive an information sheet on the survey.

Our aim is to ensure you have a positive experience today. The survey will take up to 30 minutes, depending on how much you want to share with us. You can skip any question you would like, and you can end the interview at any time. I also encourage you to please interrupt me if you do not understand a question. Importantly, this project has been reviewed for ethical practices by Michigan State University. You can contact the lead research, the local partner organizations, or Michigan State University if you have any questions or comments. Contact information is on the information sheet provided.

We do not foresee any risks to your participation and the information you provide will be used to help improve animal welfare and environmental management in Trinidad and Tobago. If the survey produces any notable scientific findings, the anonymous results may be published in academic journals.

Do you understand? ☐ Yes ☐ No

If **YES**: Ensure the participant takes and reviews the information sheet before continuing to the survey questionnaire.

If **NO**: Review the core elements of the consent script and answer their questions until there is a mutual understanding.

INFORMED CONSENT INFORMATION		
Did the participant have any concerns or questions you **could not** immediately address?	☐ Yes	☐ No
If Yes, describe in detail:		

[1] "If the participant asks for more information on CRESTT and SII, you may explain: "CRESTT is active in promoting macaw conservation and pet care, and played a key role in returning native blue and gold macaw populations to Nariva Swamp. SII, meanwhile, is active in ocelot monitoring and environmental education, and recently organized an international conference at UWI for the conservation of wildlife in Latin America and the Caribbean."

1

Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

A. Wildlife Experiences

"To begin we want to understand what sort of wildlife experiences you have had and would like to have in the future."

SURVEYOR:
- Use the associated **Photo ID Guide** for this question.
- Tick all that apply in the Wildlife Experiences Data Form below.

Prompts:
- Which of these animals have you ever personally seen in the wild, like on a hike or river lime?
- Which of these animals have you ever personally seen in captivity, like at the zoo or as a pet?
- If you could pick no more than three from this sheet, which native animals are you most proud to have in Trinidad and Tobago?

#	Wildlife	Wildlife Sightings						Three MOST Proud of
		Wild			Captivity			
1	Agouti	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
2	Blue and Gold Macaw	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
3	Bullfinch	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
4	Green Parrot	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
5	Matte	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
6	Moroccoy	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
7	Ocelot	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
8	Quenk	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
9	Red Howler Monkey	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
10	Scarlet Ibis	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
11	Leatherback Sea Turtle	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐
12	White-fronted Capuchin	☐ Yes	☐ No	☐ Unsure	☐ Yes	☐ No	☐ Unsure	☐

Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

B. Household Animal Ownership

"The following questions seek to better understand you and your household's ownership of animals, including agricultural animals, pets, and working animals"

1. Including yourself, how many adults and minors live in your household today?

# of adults (>18) _____ # of minors (<18) _____

2. At this moment, do you or members of your household own any agricultural animals, pet animals, working animals, or any other animals?

☐ Yes ☐ No

If **Yes**,
- fill in information on Currently Owned Animals in the Data Forms on the next page.

If **No**,
- proceed to Question 3

Data Form - Currently Owned Animals

Prompts: - What animals do you or your other household members currently keep at your home?
- Do you consider them a pet? Work Animal? Agricultural animal? Something else?

	Animal Code	# of Anim	Seen by Vet 1+ times while owned by household			Age of Oldest ["human" years]	Purpose [Assign each animal to only one category]			
							Pet	Work Animal [describe 'D']	Agri - Animal	Other Animal [describe 'D']
DEMO1	52 *Husky*	2	☑Yes 2	☐No__	☐Unk__	5 yrs	☑Yes 2	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
DEMO2	99 *Spider Monkey*	1	☐Yes__	☑No 1	☐Unk__	1 yr	☑Yes 1	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
	Specify if: 16, 52, 99	**Sample Entry 1:** for listing 2 purebred husky dogs that have been seen at least once by a veterinarian.The oldest husky is 5 years old in human years, and both are considered pets. **Sample Entry 2:** for listing 1, 1 year old, pet spider monkey ('Other' animal), never seen by a vet.								
1			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
2			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
3			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____

3

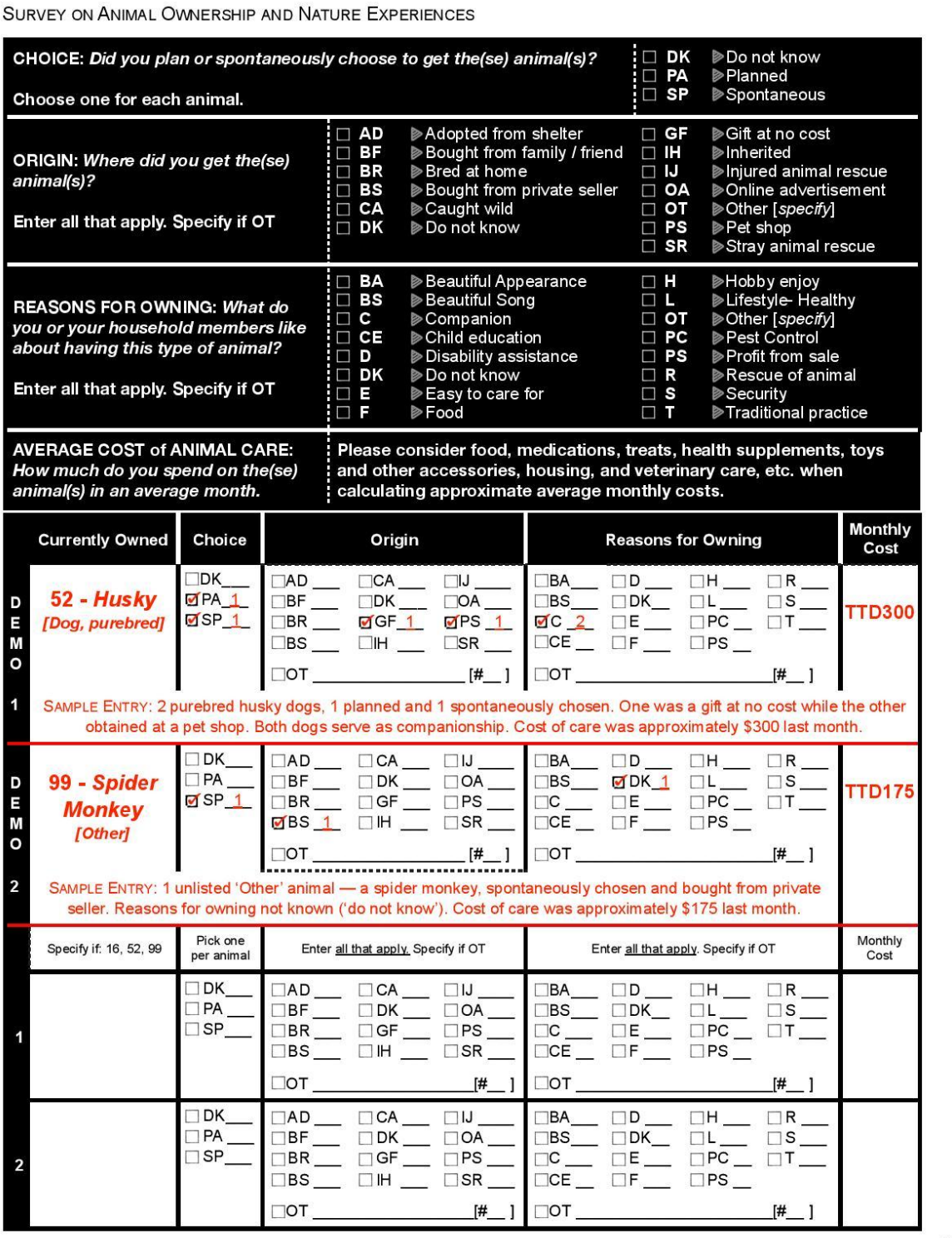
Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

	Animal Code	# of Anim	Seen by Vet 1+ times while owned by household			Age of Oldest ["human" years]	Purpose [Assign each animal to only one category]			
							Pet	Work Animal [describe 'D']	Agri - Animal	Other Animal [describe 'D']
4			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
5			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
6			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
7			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
8			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
9			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
10			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
11			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
12			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
13			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
14			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
15			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
16			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____

4

Figure 15 (cont'd).



SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

CHOICE: ***Did you plan or spontaneously choose to get the(se) animal(s)?***
Choose one for each animal.

☐ DK ▶Do not know
☐ PA ▶Planned
☐ SP ▶Spontaneous

ORIGIN: ***Where did you get the(se) animal(s)?***
Enter all that apply. Specify if OT

☐ AD ▶Adopted from shelter
☐ BF ▶Bought from family / friend
☐ BR ▶Bred at home
☐ BS ▶Bought from private seller
☐ CA ▶Caught wild
☐ DK ▶Do not know
☐ GF ▶Gift at no cost
☐ IH ▶Inherited
☐ IJ ▶Injured animal rescue
☐ OA ▶Online advertisement
☐ OT ▶Other [*specify*]
☐ PS ▶Pet shop
☐ SR ▶Stray animal rescue

REASONS FOR OWNING: ***What do you or your household members like about having this type of animal?***
Enter all that apply. Specify if OT

☐ BA ▶Beautiful Appearance
☐ BS ▶Beautiful Song
☐ C ▶Companion
☐ CE ▶Child education
☐ D ▶Disability assistance
☐ DK ▶Do not know
☐ E ▶Easy to care for
☐ F ▶Food
☐ H ▶Hobby enjoy
☐ L ▶Lifestyle- Healthy
☐ OT ▶Other [*specify*]
☐ PC ▶Pest Control
☐ PS ▶Profit from sale
☐ R ▶Rescue of animal
☐ S ▶Security
☐ T ▶Traditional practice

AVERAGE COST of ANIMAL CARE: ***How much do you spend on the(se) animal(s) in an average month.***
Please consider food, medications, treats, health supplements, toys and other accessories, housing, and veterinary care, etc. when calculating approximate average monthly costs.

	Currently Owned	Choice	Origin	Reasons for Owning	Monthly Cost
DEMO 1	**52 - *Husky*** *[Dog, purebred]*	☐DK ☑PA_1_ ☑SP_1_	☐AD ☐CA ☐IJ ☐BF ☐DK ☐OA ☐BR ☑GF_1_ ☑PS_1_ ☐BS ☐IH ☐SR ☐OT _____ [#__]	☐BA ☐D ☐H ☐R ☐BS ☐DK ☐L ☐S ☑C _2_ ☐E ☐PC ☐T ☐CE ☐F ☐PS ☐OT _____ [#__]	TTD300
1	SAMPLE ENTRY: 2 purebred husky dogs, 1 planned and 1 spontaneously chosen. One was a gift at no cost while the other obtained at a pet shop. Both dogs serve as companionship. Cost of care was approximately $300 last month.				
DEMO 2	**99 - *Spider Monkey*** *[Other]*	☐DK ☐PA ☑SP_1_	☐AD ☐CA ☐IJ ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS ☑BS _1_ ☐IH ☐SR ☐OT _____ [#__]	☐BA ☐D ☐H ☐R ☐BS ☑DK_1_ ☐L ☐S ☐C ☐E ☐PC ☐T ☐CE ☐F ☐PS ☐OT _____ [#__]	TTD175
2	SAMPLE ENTRY: 1 unlisted 'Other' animal — a spider monkey, spontaneously chosen and bought from private seller. Reasons for owning not known ('do not know'). Cost of care was approximately $175 last month.				

	Specify if: 16, 52, 99	Pick one per animal	Enter all that apply. Specify if OT	Enter all that apply. Specify if OT	Monthly Cost
1		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS ☐BS ☐IH ☐SR ☐OT _____ [#__]	☐BA ☐D ☐H ☐R ☐BS ☐DK ☐L ☐S ☐C ☐E ☐PC ☐T ☐CE ☐F ☐PS ☐OT _____ [#__]	
2		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS ☐BS ☐IH ☐SR ☐OT _____ [#__]	☐BA ☐D ☐H ☐R ☐BS ☐DK ☐L ☐S ☐C ☐E ☐PC ☐T ☐CE ☐F ☐PS ☐OT _____ [#__]	

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

3		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
4		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
5		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
6		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
7		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
8		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
9		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
10		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
11		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ___ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

12		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ____ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
13		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ____ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
14		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ____ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
15		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ____ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	
16		☐ DK___ ☐ PA ___ ☐ SP___	☐AD ___ ☐CA ___ ☐IJ ____ ☐BF ___ ☐DK ___ ☐OA ___ ☐BR ___ ☐GF ___ ☐PS ___ ☐BS ___ ☐IH ___ ☐SR ___ ☐OT _____[#__]	☐BA___ ☐D ___ ☐H ___ ☐R ___ ☐BS___ ☐DK__ ☐L ___ ☐S ___ ☐C ___ ☐E ___ ☐PC __ ☐T ___ ☐CE __ ☐F ___ ☐PS __ ☐OT _____[#__]	

3. ONLY IF NO PETS: Is there a particular reason why your household does not keep pets?
[Tick all that apply]

- ☐ Not Applicable
- ☐ Allergies
- ☐ Animal(s) died
- ☐ Complicated laws
- ☐ Cost / Expense
- ☐ Do not know how to re-acquire
- ☐ Lack of time
- ☐ Limited space or fencing
- ☐ No reason
- ☐ Not interested in new pets
- ☐ Pet care is difficult
- ☐ Other _____
- ☐ Pets not allowed by Landlord
- ☐ Safety risk for children
- ☐ Superstition
- ☐ Unable due to disability
- ☐ Unethical to keep

_____ (specify)

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

4. Are there any pet animals that you wish you or your household could own, but are unable?

☐ Yes ☐ No ☐ Unsure

If **YES**: **4a** Briefly describe the pet animals:

Animal	***Specify Details***
☐ Cat [Mixed]	_____
☐ Cat [Pure-Bred]	_____
☐ Dog [Mixed]	_____
☐ Dog [Pure-Bred]	_____
☐ Monkey	_____
☐ Parrot	_____
☐ Snake	_____
☐ Songbird	_____
☐ Turtle	_____
☐ Other -	_____
☐ Other -	_____

If **YES**: **4b** What are the main limitations to you or your household's ownership of pets?
[*Tick all that apply*]

☐ Bothersome to Neighbors	☐ Child Safety	☐ Cost of Pet Care
☐ Cost of Purchasing the Animal	☐ Cost of Veterinary Care	☐ Housing Restrictions
☐ Legality is Uncertain	☐ Limited Space	☐ Time Constraints
☐ Unable to Find	☐ Other _____	
	_____(*specify*)	

5. In the last year, did you or members of your household own any agricultural animals, pet animals, working animals, or any other animals that you no longer own?

☐ Yes	☐ No
If **Yes**, - fill in information on Animals Previously Owned in the Data Forms below	If **No**, - skip Data Forms on Animals Previously Owned - proceed to the next Question.

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

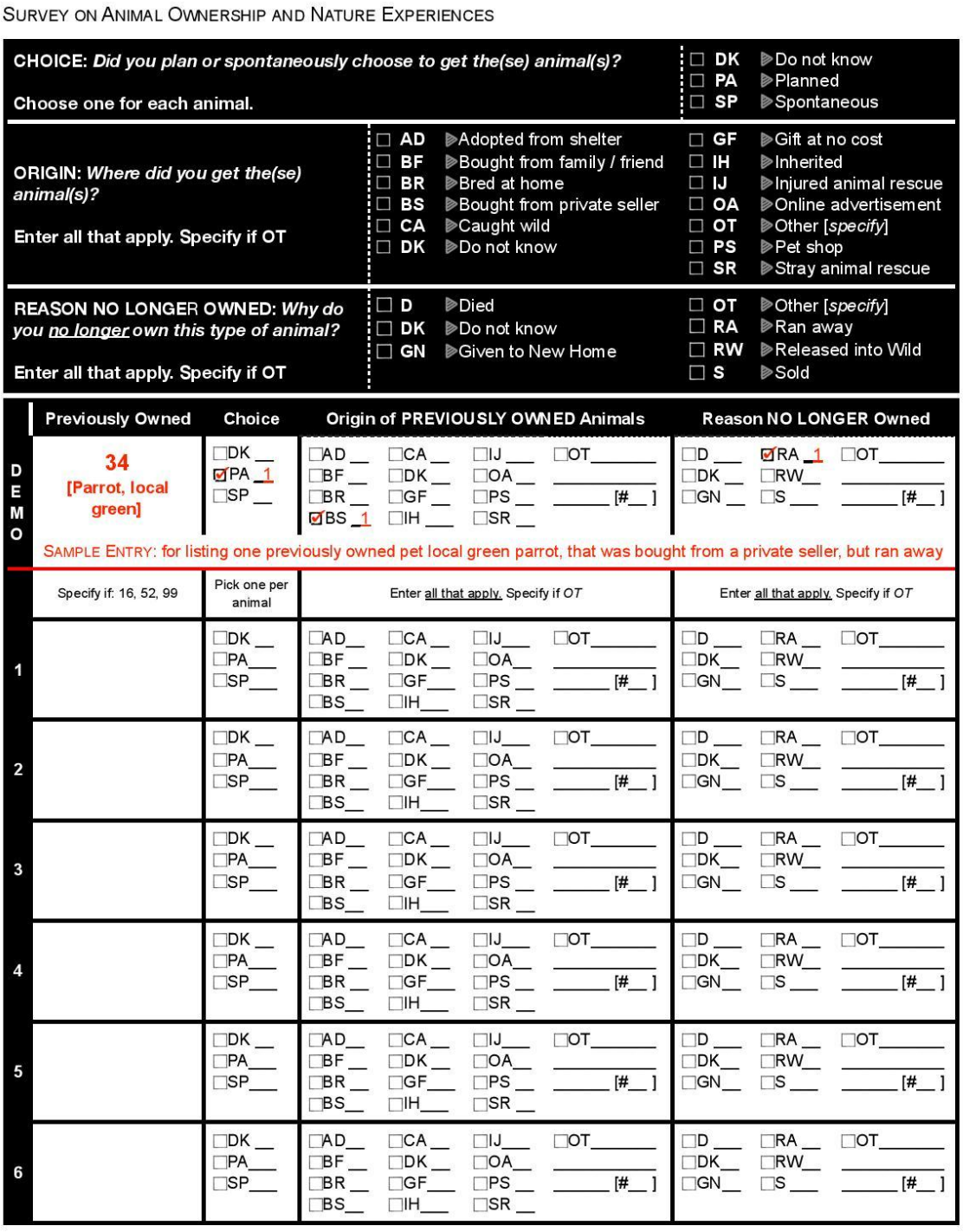
Data Form - Animals Previously Owned in the Last 12 Months

Prompts: - What animals did you or your other household members previously keep at your home in the past 12 months that you no longer own?
- Did you consider them a pet? Work Animal? Agricultural animal? Something else?

	Animal Code	# of Anim	Seen by Vet 1+ times while owned by household			Age of Oldest ["human" years]	Purpose [Assign each animal to only one category]			
							Pet	Work Animal [describe 'D']	Agri - Animal	Other Animal [describe 'D']
DEMO	34 [Parrot, local green]	1	☐Yes__	☑No 1	☐Unk__	2 yrs	☑Yes 1	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
	Specify if 16, 52, 99	**Sample Entry:** for listing one previously owned pet local green parrot, that was never been seen by a veterinarian, and was 2 years old in human years at the time it ran away								
1			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
2			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
3			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
4			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
5			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
6			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
7			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
8			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
9			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____
10			☐Yes__	☐No__	☐Unk__		☐Yes__	☐Yes__ D:_____	☐Yes__	☐Yes__ D:_____

9

Figure 15 (cont'd).



SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

CHOICE: ***Did you plan or spontaneously choose to get the(se) animal(s)?***
Choose one for each animal.

☐ **DK** ▶Do not know
☐ **PA** ▶Planned
☐ **SP** ▶Spontaneous

ORIGIN: ***Where did you get the(se) animal(s)?***
Enter all that apply. Specify if OT

☐ **AD** ▶Adopted from shelter
☐ **BF** ▶Bought from family / friend
☐ **BR** ▶Bred at home
☐ **BS** ▶Bought from private seller
☐ **CA** ▶Caught wild
☐ **DK** ▶Do not know
☐ **GF** ▶Gift at no cost
☐ **IH** ▶Inherited
☐ **IJ** ▶Injured animal rescue
☐ **OA** ▶Online advertisement
☐ **OT** ▶Other [*specify*]
☐ **PS** ▶Pet shop
☐ **SR** ▶Stray animal rescue

REASON NO LONGER OWNED: ***Why do you no longer own this type of animal?***
Enter all that apply. Specify if OT

☐ **D** ▶Died
☐ **DK** ▶Do not know
☐ **GN** ▶Given to New Home
☐ **OT** ▶Other [*specify*]
☐ **RA** ▶Ran away
☐ **RW** ▶Released into Wild
☐ **S** ▶Sold

	Previously Owned	Choice	Origin of PREVIOUSLY OWNED Animals	Reason NO LONGER Owned
DEMO	34 [Parrot, local green]	☐DK ☑PA _1 ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☑BS _1 ☐IH ☐SR	☐D ☑RA _1 ☐OT ☐DK ☐RW ☐GN ☐S [#__]
	SAMPLE ENTRY: for listing one previously owned pet local green parrot, that was bought from a private seller, but ran away			
	Specify if: 16, 52, 99	Pick one per animal	Enter all that apply. Specify if *OT*	Enter all that apply. Specify if *OT*
1		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]
2		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]
3		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]
4		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]
5		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]
6		☐DK ☐PA ☐SP	☐AD ☐CA ☐IJ ☐OT ☐BF ☐DK ☐OA ☐BR ☐GF ☐PS [#__] ☐BS ☐IH ☐SR	☐D ☐RA ☐OT ☐DK ☐RW ☐GN ☐S [#__]

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

	Previously Owned	Choice	Origin of PREVIOUSLY OWNED Animals				Reason NO LONGER Owned		
7		☐DK __ ☐PA___ ☐SP___	☐AD__ ☐BF __ ☐BR __ ☐BS__	☐CA __ ☐DK __ ☐GF___ ☐IH___	☐IJ___ ☐OA__ ☐PS __ ☐SR __	☐OT_____ _____ _____ [#__]	☐D ___ ☐DK__ ☐GN__	☐RA __ ☐RW__ ☐S ___	☐OT_____ _____ _____ [#__]
8		☐DK __ ☐PA___ ☐SP___	☐AD__ ☐BF __ ☐BR __ ☐BS__	☐CA __ ☐DK __ ☐GF___ ☐IH___	☐IJ___ ☐OA__ ☐PS __ ☐SR __	☐OT_____ _____ _____ [#__]	☐D ___ ☐DK__ ☐GN__	☐RA __ ☐RW__ ☐S ___	☐OT_____ _____ _____ [#__]
9		☐DK __ ☐PA___ ☐SP___	☐AD__ ☐BF __ ☐BR __ ☐BS__	☐CA __ ☐DK __ ☐GF___ ☐IH___	☐IJ___ ☐OA__ ☐PS __ ☐SR __	☐OT_____ _____ _____ [#__]	☐D ___ ☐DK__ ☐GN__	☐RA __ ☐RW__ ☐S ___	☐OT_____ _____ _____ [#__]
10		☐DK __ ☐PA___ ☐SP___	☐AD__ ☐BF __ ☐BR __ ☐BS__	☐CA __ ☐DK __ ☐GF___ ☐IH___	☐IJ___ ☐OA__ ☐PS __ ☐SR __	☐OT_____ _____ _____ [#__]	☐D ___ ☐DK__ ☐GN__	☐RA __ ☐RW__ ☐S ___	☐OT_____ _____ _____ [#__]

6. Do you think it is likely that you or someone in your household obtains a new:

6a Agricultural animal in the next 12 months?

☐ Yes ☐ No ☐ Unsure

6b Pet animal in the next 12 months?

☐ Yes ☐ No ☐ Unsure

6c Working animal in the next 12 months?

☐ Yes ☐ No ☐ Unsure

If **Yes,** fill in the the Likely to Own Animals Data Form below

If **No** or **Unsure**, to all the above, (in Q.6)
- skip Data Forms on Likely to Own Animals
- proceed to next Question.

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

Data Form - Likely to Own Animals in the Next 12 Months

Prompts: - What animals would you or your other household members likely own at your home in the next12 months
- Would you consider them a pet? Work Animal? Agricultural animal? Something else?

	Animal Code	Number of Animal(s)	Purpose [Assign each animal to only one category]					
			Pet	Work Animal [*describe 'D'*]		Agri - Animal	Other Animal [*describe 'D'*]	
DEMO	08 [Bullfinch]	1	☑Yes 1	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
	Specify if: 16, 52, 99	**Sample Entry:** for listing one pet bullfinch that will be bought from a pet shop and kept for hobby purposes in the future.						
1			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
2			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
3			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
4			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
5			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
6			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
7			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
8			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
9			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
10			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
11			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____
12			☐Yes __	☐Yes __	D:_____	☐Yes __	☐Yes __	D:_____

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

ORIGIN: Where do you plan to get your animal(s) from? **Enter all that apply. Specify if OT**	☐ **AD** Adopted from shelter ☐ **BF** Bought from family / friend ☐ **BR** Bred at home ☐ **BS** Bought from private seller ☐ **CA** Caught wild ☐ **DK** Do not know	☐ **GF** Gift at no cost ☐ **IH** Inherited ☐ **IJ** Injured animal rescue ☐ **OA** Online advertisement ☐ **OT** Other [*specify*] ☐ **PS** Pet shop ☐ **SR** Stray animal rescue
EXPECTED HOUSEHOLD BENEFITS: ***Why would you or your household members want to have this type of animal*** **Enter all that apply. Specify if OT**	☐ **BA** Beautiful Appearance ☐ **BS** Beautiful Song ☐ **C** Companion ☐ **CE** Child education ☐ **D** Disability assistance ☐ **DK** Do not know ☐ **E** Easy to care for ☐ **F** Food	☐ **H** Hobby enjoy ☐ **L** Lifestyle- Healthy ☐ **OT** Other [*specify*] ☐ **PC** Pest Control ☐ **PS** Profit from sale ☐ **R** Rescue of animal ☐ **S** Security ☐ **T** Traditional practice

	Expected to Own	Expected Origin	Expected Household Benefits
DEMO	**08** **[Bullfinch]**	☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☑PS _1_ _____ [#__] ☐BS__ ☐IH __ ☐SR __	☐BA__ ☐D___ ☑H_1_ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC__ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS__
	SAMPLE ENTRY: for listing one pet bullfinch that will be bought from a pet shop and kept for hobby purposes in the future.		
	Specify if: 16, 52, 99	Enter all that apply. Specify if *OT*	Enter all that apply. Specify if *OT*
1		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
2		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
3		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
4		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
5		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
6		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

	Expected to Own	Expected Origin	Expected Household Benefits
7		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
8		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
9		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
10		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
11		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __
12		☐AD__ ☐CA__ ☐IJ ___ ☐OT_____ ☐BF__ ☐DK__ ☐OA__ _____ ☐BR__ ☐GF__ ☐PS __ _____ [#__] ☐BS__ ☐IH __ ☐SR__	☐BA__ ☐D ___ ☐H ___ ☐R __ ☐OT_____ ☐BS__ ☐DK__ ☐L ___ ☐S __ _____ ☐C ___ ☐E ___ ☐PC __ ☐T __ _____ [#__] ☐CE__ ☐F ___ ☐PS __

7. ONLY IF PETS: Including yourself, how many adults and minors <u>own the pet animals</u> in your household today?

# of adults (>18) _____ # of minors (<18) _____

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

C. Household Characteristics

"Now we want to get a better understanding of your household. I will ask you about the types of nature activities your household engages in, how you identify as a person, and how you might access information"

SURVEYOR: - Begin with the participant, then move to all pet owners, then move to other remaining household members, up to a total of 8 people.

RELATIONSHIP TO PARTICIPANT

☐ ***N1*** ▶Self / Participant ☐ **C** ▶Child ☐ **F** ▶Friend ☐ **Gp** ▶Grand-parent ☐ **P** ▶Parent ☐ **Si** ▶Sibling ☐ **SO** ▶Significant other [*Unmarried*] ☐ **Sp** ▶Spouse [Married] ☐ **OT** ▶Other [specify]

N	Animals owned [*CODES*]	Relationship to Participant	Activities in last 12 months in Trinidad & Tobago	Gender
1	☐ Specify: _____ ☐ N/A	☐ Self /Participant	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
2	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
3	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
4	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
5	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
6	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
7	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
8	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F
9	☐ Specify: _____ ☐ N/A	☐C ☐Si ☐OT _____ ☐F ☐SO _____ ☐Gp ☐Sp _____ ☐P	Fishing / Crabbing ☐ Yes ☐ No ☐ Unsure Hiking / Camping ☐ Yes ☐ No ☐ Unsure Hunting ☐ Yes ☐ No ☐ Unsure Wild meat eating ☐ Yes ☐ No ☐ Unsure	☐ M ☐ F

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

EDUCATION	CIVIL STATUS	EMPLOYMENT	ETHNICITY
☐ N ▶None	☐ C ▶Common Law Rel.	☐ B ▶Business Owner	☐ AF ▶African
☐ P ▶Primary	☐ D ▶Divorced	☐ E ▶Employed	☐ CA ▶Caucasian
☐ S ▶Secondary	☐ M ▶Married	☐ H ▶Homemaker	☐ CH ▶Chinese
☐ T ▶Tertiary / University	☐ Se ▶Separated	☐ R ▶Retiree	☐ EI ▶East Indian
☐ V ▶Vocational / Trade	☐ Si ▶Single	☐ S ▶Student	☐ ID ▶Indigenous
	☐ W ▶Widowed	☐ U ▶Unemployed	☐ MX ▶Mixed ☐ OT ▶Other ☐ PT ▶Portuguese ☐ SY ▶Syrian / Lebanese

N	Age	Education	Civil Status	Employment	Ethnicity
1	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
2	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
3	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
4	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
5	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
6	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
7	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
8	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____
9	☐<18 ☐45-54 ☐18-24 ☐55-64 ☐25-34 ☐65-74 ☐35-44 ☐75+	☐ N ☐ T ☐ P ☐ V ☐ S	☐ C ☐ Se ☐ D ☐ Si ☐ M ☐ W	☐ B ☐ R ☐ E ☐ S ☐ H ☐ U	☐ AF ☐ ID ☐OT: _____ ☐ CA ☐ MX _____ ☐ CH ☐ PT _____ ☐ EI ☐ SY _____

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

RELIGION

☐**AG** ▶Anglican
☐**BS** ▶Baptist, Spiritual Shouter
☐**CA** ▶Catholic
☐**HI** ▶Hindu
☐**MU** ▶Muslim
☐**NO** ▶None
☐**OT** ▶Other
☐**PE** ▶Pentecostal / Evangelical
☐**PR** ▶Presbyterian
☐**SDA** ▶Seventh Day Adventist

MEDIA

Please indicate your household members' preferred ways to access news and entertainment.

N	Religion	Media: Sources of Local News (Tick all that apply)	Facebook User	Favorite Radio Station
1	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
2	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
3	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
4	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
5	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
6	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
7	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
8	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None
9	☐ AG ☐ HI ☐ PE ☐OT_____ ☐ BS ☐ MU ☐ PR _____ ☐ CA ☐ NO ☐ SDA _____	☐ NONE ☐ Guardian ☐ TTT ☐OT_____ ☐ CNC3 ☐ LoopTT ☐ TV6 _____ ☐ Express ☐ Newsday ☐ Unsure _____	☐ Yes ☐ No ☐ Unsure	☐ _____ ☐ Unsure ☐ None

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Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

D. Nature Opinions and Knowledge

"Next, we would like to better understand your opinions and knowledge about animals and nature."

1. Please listen to the following statements and state whether you "Disagree Strongly; Disagree; Neutral / Neither Agree nor Disagree; Agree; Agree Strongly."
Remember that there are no wrong or right answers, and that everyone is different.

1	2	3	4	5
DS	D	N	A	AS
Disagree Strongly	**Disagree**	**Neutral / Neither Agree nor Disagree**	**Agree**	**Agree Strongly**

	Statement	*Please Circle* DS	D	N	A	AS
1	I would rather get a purebred dog than a "pot hound".	1	2	3	4	5
2	I admire a person who can hunt wild animals for food.	1	2	3	4	5
3	I do not think that there is anything wrong with keeping wild animals as pets.	1	2	3	4	5
4	Dogs, birds, and farm animals imported from South America should be stopped because they carry diseases.	1	2	3	4	5
5	Monkeys typically live happy and healthy lives as pets in captivity.	1	2	3	4	5
6	We need stricter hunting rules if future generations are to be able to hunt the same types of animals in Trinidad and Tobago.	1	2	3	4	5
7	I sometimes get upset when I see wild animals in cages at zoos.	1	2	3	4	5
8	I would share information about illegal hunters with local authorities.	1	2	3	4	5
9	Parrots typically live happy and healthy lives as pets in captivity.	1	2	3	4	5
10	The wildlife in my area has decreased and I miss seeing the wildlife.	1	2	3	4	5

Figure 15 (cont'd).

SURVEY ON ANIMAL OWNERSHIP AND NATURE EXPERIENCES

SURVEYOR:	- Use the **Photo ID Guide** for Questions 2 and 3 below. - Please be careful not to teach them the correct answers.

2. To the best of your knowledge, which of the following animals require government possession permits to be kept by regular households?

#	Animal	Knowledge			
1	Blue and Gold Macaws	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
2	Bullfinch	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
3	Tufted / Black Capped Capuchin	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
4	Green Parrot / Orange-Winged Amazon	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
5	Moroccoy / Yellow Footed Tortoise	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
6	Husky Dog	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____
7	Tiger Cat / Ocelot	☐Do Not Know	☐Permit Needed from Government	☐No Permit Needed from Government	☐Other_____ _____

3. In your own opinion, which of the following animals should require possession permits to be kept by regular households?

#	Animal	Opinion				
1	Blue and Gold Macaws	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
2	Bullfinch	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
3	Tufted / Black Capped Capuchin	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
4	Green Parrot / Orange-Winged Amazon	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
5	Moroccoy / Yellow Footed Tortoise	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
6	Husky Dog	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____
7	Tiger Cat / Ocelot	☐No Opinion	☐The Rules Are Fine As They Are	☐A Permit Should Be Required	☐No Permit Should be Required	☐Other_____ _____

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Figure 15 (cont'd).

4. IF HAVE PETS: Finally, are you aware if any of your household's pets require possession permits? We understand this may be sensitive, so we remind you that this is confidential and you can skip this question if you would like.

☐ Not Applicable ☐ Skip Question ☐ Yes ☐ No ☐ Unsure

If Yes, which ones:

_____

(*specify*)

E. Household Income

"The following questions seek to better understand your household income, since this can greatly influence animal ownership and engagement with nature."

SURVEYOR:	- Please carefully explain that this section is ***optional*** and only helps us understand how income affects animal ownership and nature experiences. - Like the rest of the survey, these answers are ***anonymous***.

1. How many rooms are there in your home?
[DO NOT COUNT: bathrooms, garages, hallways, kitchens, or porches]

☐ Decline to answer ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ > 5

2. Does your household have any of the following?

☐ Decline to answer	☐ Desktop computer	☐ Microwave	☐ Refrigerator
	☐ Electricity	☐ Pipe borne water	☐ Television
☐ Air-conditioner	☐ Home Internet-access	☐ Pool [private home]	☐ Washing machine
☐ Cable TV/Satellite	☐ Laptop computer	☐ Pool [shared residential]	☐ Water Storage Tank
☐ Clothes dryer	☐ Leisure boat/Yacht	☐ Radio/Stereo	☐ Vehicle [*private*]

3. How would you describe the type of dwelling unit that your household occupies?

☐ Decline to answer	☐ Rented government	☐ Squatted
☐ Owned fully	☐ Rent to own	☐ Other :_____
☐ Owned with mortgage/loan	☐ Rented private	_____ [*specify*]

Figure 15 (cont'd).

4. Which one of these describes your household income per month? [TTD]
[*PLEASE INCLUDE*: SALARY; INVESTMENT INCOME; SECURITY; & DISABILITY BENEFITS]

☐ Decline to answer	☐ $2,000 - $2,999	☐ $6,000 - $6,999	☐ $10,000 - $14,999
	☐ $3,000 - $3,999	☐ $7,000 - $7,999	☐ $15,000 - $19,999
☐ $0 - $999	☐ $4,000 - $4,999	☐ $8,000 - $8,999	☐ $20,000 or more
☐ $1,000 - $1,999	☐ $5,000 - $5,999	☐ $9,000 - $9,999	

5. How would you best describe your household income compared to other households in Trinidad / Tobago?

☐ Decline to answer
☐ Considerably better off than most households
☐ Slightly better off than most households
☐ No better nor worse than most households
☐ Slightly worse off than most households
☐ Considerably worse off than most households

F. Closing

"Thank you very much for participating today. The information you provided shall be very helpful for the organizing nonprofits -- CRESTT, SII, and Michigan State University -- to better understand and improve upon nature experiences in Trinidad and Tobago."

Do you have any questions you would like to ask?

Figure 15 (cont'd).

Animal Code Book

Amphibians, Aquatics & Insects		
#	Local Common Name	Other Known Names
01	Centipede	
02	Crayfish	
03	Fish, fresh	
04	Fish, salt	
05	Scorpion	
06	Tarantula	

Birds (small)		
#	Local Common Name	Other Known Names
07	Budgie	
08	Bullfinch	
09	Canary	
10	Chat	Nun
11	Cockatiel	
12	Cockatoo	
13	Cravat	
14	Dove	
15	Lovebird	
16	Parakeet [*specify type on data sheets*]	
17	Picoplat	
18	Robin	
19	Saffron finch	
20	Semp	
21	Silver beak	
22	Twa Twa	
23	Zebra finch	

Birds (large)		
#	Local Common Name	Other Known Names
24	Macaw, blue & gold	
25	Macaw, chestnut-fronted	Macaw, Severe
26	Macaw, military	
27	Macaw, red & green	
28	Macaw, red bellied	
29	Macaw, scarlet	
30	Parrot, African grey	
31	Parrot, black capped	Caique
32	Parrot, blue headed	
33	Parrot, festive	
34	Parrot, local green	Parrot, Orange Wing; Lim
35	Parrot, mealy	
36	Parrot, yellow headed	Venez parrot
37	Parrot, yellow shouldered	
38	Pigeon	
39	Toucan	

Farm Animal		
#	Local Common Name	Other Known Names
40	Chicken	Common Fowl
41	Cow	
42	Donkey	
43	Duck	
44	Goat	
45	Horse	
46	Pig	
47	Sheep	

Mammal		
#	Local Common Name	Other Known Names
48	Agouti	
49	Cat	
50	Deer	
51	Dog, mix	
52	Dog, pure [*specify type on data sheets*]	
53	Hamster	
54	Guinea pig	
55	Manicou	Possum
56	Monkey, capuchin	
57	Monkey, howler	
58	Monkey, squirrel	
59	Rabbit	
60	Squirrel	
61	Tiger cat	Ocelot
62	Tattoo	Armadillo

Reptiles		
#	Local Common Name	Other Known Names
63	Caiman	
64	Iguana	
65	Macajuel	Snake, Red Tail Boa
66	Morrocoy	Yellow Foot; Red Foot
67	Snake, anaconda	
68	Snake, rainbow boa	
69	Turtle, red-eared slider	
70	Turtle, scorpion mud	

99	Other _____ [*specify type on data sheets*]

Figure 15 (cont'd).

KEY TERMS GUIDE	
Animal Types and Ownership	
Animal ownership	Holding the rights to control an animal and make final decisions about its care. A person may "mind" an animal at their dwelling, which shall be considered to be owned if the animal receives principal food and shelter from this arrangement. An animal kept for commercial sale is considered to be owned. The three most common purposes for ownership are: agricultural food production, pet-keeping, or work services.
Agricultural animal	An animal kept to make products, like meat, eggs, milk, leather, and fur. Common agricultural animals are chickens, cows, and goats. Some animals that are typically considered to be agricultural in nature may sometimes be considered to be pets instead.
Pet animal	An animal that is kept for the purposes of companionship, entertainment, recreation, and compassion. In Trinidad and Tobago, popular pet animals include dogs, cats, fish, monkeys, parrots, and song birds.
Working animal	An animal that is kept and trained to perform tasks for household members. Common working animals are hunting dogs, guard dogs, donkeys, and horses. Some working animals may also be considered pets by some people.
Household Definition and Characteristics	
CSO definition of Household	A household consists of one or more persons sharing common living arrangements (sleeping most nights of a week) and sharing at least one daily meal within a single dwelling space. In general, a household will comprise a father, mother, children, and relatives living together, but other people, such friends or domestic employees, may be included. It is possible to encounter more than one family constituting a single household once they share common living arrangements.
Additional rules for determining who is and is not in a household	1. It will be seen from the definition of a household and the rules given that one person may comprise a household. Any person living alone in a house or part of a house constitutes a separate household. The concepts of "sharing at least one daily meal" and "sharing common living arrangements" are used as indicators for identifying household membership. 2. Where a person has recently moved in with a group of persons, as long as he/she intends to make his/her home with them and spent the previous night in the household, that person is to be considered as a member of the household. 3. A Boarding House, which caters for less than six (6) boarders/lodgers, is to be classified as a private household. 4. If a building is divided into flats or other separate dwellings, each such separate dwelling constitutes at least one separate household. A tenant or sub- tenant, if he makes his own arrangements for eating, also forms a separate household. 5. If within the institution (non-private dwelling) there are separate quarters for all or any members of the staff, with separate housekeeping arrangements, such quarters form separate dwelling units occupied by private households. For temporary or permanent inmates of large institutions, however, the Supervisor will give special instructions for their enumeration.

1

Figure 15 (cont'd).

KEY TERMS GUIDE	
	6. A domestic employee including her family, if any, who sleeps in the house or in an out-building on the premises is to be listed as a member of the household. However, if the domestic employee maintains separate eating arrangements on the premises, she will constitute an independent household. Additionally, a domestic employee who does not sleep on his/her employer's premises is NOT to be counted as a member of the household where he/she works.
Additional rules for determining who is and is not in a household	7. A boarder or lodger that is a person who eats and sleeps with the household, during most nights of a week, is to be considered a member of that household. 8. A person who rents a room from his/her landlord/landlady and does not share any meals with him/her constitutes a separate household that is a single- person household. 9. A person who sleeps most nights away from his/her family is to be enumerated at the place where he/she usually sleeps. He/she may be a boarder or lodger in a household, or constitute a separate household. However, a person who because of the nature of his/her job (e.g. watchmen, medical personnel, caregivers or shift workers), spends most nights away from his/her home MUST be enumerated at the same place as the other members of his household, that is, at his/her place of usual residence.

APPENDIX B

Instrumentation for Focus Groups with Wild Animal Keepers

Instrumentation used to conduct focus groups with wild animal keepers in Trinidad consisted of three core materials: a study information sheet, a participant information sheet, an animal keeping information sheet, and a topic and question guide differentiated by two taxonomic groups: songbirds and amazon parrots and macaws.

Study Information Sheet

1. You are being asked to take part in a research study on pet ownership in Trinidad and Tobago. Essentially, we are trying to understand what Trinidadians and Tobagonians like and think about their pet animals and how they manage potential challenges.
2. This focus group study is being conducted by the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), and Michigan State University.
3. To understand your impressions, you will be asked to join a focus group on different topics facilitated by a research team member. We anticipate the focus group will take 90 to 120 minutes. This study has been determined to be "exempt" from ethical review by Michigan State University (Study ID #: 00000489), as interview participants will not be identifiable, and there are no apparent significant risks to participation.
4. Your participation is entirely voluntary, and you are free to end your participation at any time. There will be no negative consequences for you if you do not agree or decide later to withdraw or stop while the interview is in progress.

5. You will be paid TT$200 for your travel costs and time donation, and your participation in this study may contribute to the improvement of pet keeping in Trinidad and Tobago.
6. You must be at least 18 years of age to participate.
7. Your participation is held to strict confidentiality, and the information you give will be recorded anonymously. Neither your name nor any information that can identify you will be shared with anyone or printed anywhere by the survey team. The answers will be recorded in a way that they are never associated with your name or other identifying information.
8. If you have concerns or questions about this study, please contact the principal investigator for the project, Mr. Mark Gibson, Ph.D. Candidate, Michigan State University. Email: gibso113@msu.edu. US Cell/WhatsApp: +1 (202) 308-8993. Trinidad Cell: +1 (868) 467-3829.
9. You may also contact the Human Research Protection Program at Michigan State University if you have concerns about this project. US Phone: +1 (517) 355-2180. Email: irb@msu.edu.

Participant Information Sheet

All participants were pre-screened using the following table-based form.

Table 8: A form for the collection of focus group session information.

FOCUS GROUP INFORMATION				
Date	Time	General Location	Animal Theme	Team Member(s)

Table 8 (cont'd).

PARTICIPANT INFORMATION							
Participant Nickname	Gender	Age	Education	Religion	Civil Status	Employment	Ethnicity
	M F						
	M F						
	M F						
	M F						
	M F						
	M F						
	M F						
	M F						
	M F						
	M F						

Animal Keeping Information Sheet

All participants were also pre-screened using the following table-based form and as many sheets as needed:

Table 9: A form for the collection of animal keeping information among focus group participants.

DESCRIPTION OF ALL ANIMALS OWNED							
Animal Type	**#**	**Ever Vet?**	**Ages**	**Choice**	**Origin**	**Reasoning**	**Monthly $**
		Yes__ No__ Unk__	_____ _____ _____	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	

Table 9 (cont'd).

		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	

Choice key: DK=Do not know, PA=Planned, SP=Spontaneous.

Origin key: AD=Adopted from shelter, BF=Bought from family / friend, BR=Bred at home, BS=Bought from private seller, CA=Caught wild, DK=Do not know, GF=Gift at no cost, IH=Inherited, IJ=Injured animal rescue, OA=Online advertisement, OT=Other [specify], PS=Pet shop, SR=Stray animal rescue.

Reasoning key: BA=Beautiful Appearance, BS=Beautiful Song, C=Companion, CE=Child education, D=Disability assistance, DK=Do not know, E=Easy to care for, F=Food, H=Hobby enjoy, L=Lifestyle or healthy, OT=Other [specify], PC=Pest Control, PS=Profit from sale, R=Rescue of animal, S=Security, T=Traditional practice

Topic and Question Guide for Songbird Keepers

A. How Can We Build Community?, ~0-30 mins (30mins total)

Begin the focus group by exploring how songbird enthusiasts might be organized in associations or other groups.

Tour Question: Our goal is to help support as many types of bird lovers as possible. So help us understand: what do you think about how songbird clubs are organized?

Possible Main Questions: Did you ever think you would be a member of a local association or club?

What do you know about the Birding Association of Trinidad and Tobago?

In what ways could the songbird community be improved?

B. Breeding Songbirds, ~30-60 mins (30mins total)

Next shift the interview to explore ways to promote breeding to improve conservation, animal welfare, and reduce disease risk.

Tour Question: We have heard from quite a few people that they would like to promote breeding to conserve songbirds in the wild. Do you think something like breeding training could be useful to you?

Possible Main Questions: How could we launch breeding of songbirds in Trinidad?

How might you think you would benefit from a breeding program?

Do you think songbird keepers would prefer wild-caught or captive-bred bullfinches more?

Would it be possible that this reduces the imports from South

America?

C. Advocacy, ~60-90 mins (30mins total)

Lastly, shift the interview to explore ways to better represent songbird keepers before the government.

Tour Question: We have heard that the government has not always understood or appreciated the hobby of songbird keeping. In what ways might you agree or disagree?

Possible Main Questions: Do you agree with the current law or regulations governing the keeping of songbirds and other local seed eaters?

How could the government better support your community?

Are there any problems affecting the community that would benefit from government support?

D. Close and Questions, ~90-105mins (15 mins total)

Finally, move the interview to a close and allow additional questions from the participants.

Tour Question: Thank you for your participation today. At this point, we turn the session over to you for questions. Is there anything you would like to share or ask?

Topic and Question Guide for Parrot and Macaw Keepers

A. What Makes You an Animal Lover?, ~0-30 mins (30mins total)

Begin the focus group by exploring how bird lovers might be different from other types of pet owners, or people in society even.

Tour Question: Our goal is to reach as many bird lovers as possible. So help us understand: what makes someone a bird lover? Or, who is a bird lover?

Possible Main Questions: Did you ever think you would be a [insert animal] owner? How so?

Do you always "love" your bird or are they sometimes mischievous?

In what ways has having this animal made your life better?

B. Educational Resources and Programming, ~30-60 mins (30mins total)

Next shift the interview to explore ways to improve the keeping of amazon parrots and macaws through the creation of educational resources and programming.

Tour Question: We have some expected funding to create educational resources and programming next year. What would you yourself find useful?

Possible Main Questions: What if there was a website? Could there be useful information there?

What if there were workshops? What would you like them to cover?

Is there any way you could imagine that you could make your parrot/macaw happier?

C. Ethical Sourcing, ~60-90 mins (30mins total)

Lastly, shift the interview to explore ways to increase the rescue and adoption of amazon parrots and macaws through popular guidance on how to obtain pet birds.

Tour Question: We hear from a lot of owners concerns about how they get their birds and where they might go later in life since they live so long. Are you ever worried about these things as well?

Possible Main Questions: Do you know what the health of the wild population may be like?

Who will take care of your bird if something happened to you?

Do you ever think people should avoid wild-caught birds?

parrot/macaw happier?

D. Close and Questions, ~90-105mins (15 mins total)

Finally, move the interview to a close and allow additional questions from the participants.

Tour Question: Thank you so very much for your participation today. At this point, we turn the session over to you for questions. Is there anything you would like to share or ask?

APPENDIX C

Instrumentation for Interviews with Wild Animal Keepers

Instrumentation used to conduct interviews with wild animal keepers in Trinidad consisted of three core materials: a study information sheet, a participant and animal keeping information sheet, a topic and question guide, and table of possible norm violations to facilitate discussion. Interviews were conducted with keepers that kept at least one parrot, primate, songbird, or turtle at the time of the interview.

Study Information Sheet

1. You are being asked to take part in a research study on pet ownership in Trinidad and Tobago. Essentially, we are trying to understand what Trinidadians and Tobagonians like and think about their pet animals and how they manage potential challenges.
2. This interview study is being conducted by the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), and Michigan State University.
3. To understand your impressions, you will be asked to join in an interview on different topics with a research team member. We anticipate the interview will take up to 60 minutes. This study has been determined to be "exempt" from ethical review by Michigan State University (Study ID #: 00000489), as interview participants will not be identifiable, and there are no apparent significant risks to participation.
4. Your participation is entirely voluntary, and you are free to end your participation at any time. There will be no negative consequences for you if you do not agree or decide later to withdraw or stop while the interview is in progress.

5. You will be paid $100 for your travel costs and time donation in this study, and your participation in this study may contribute to the improvement of pet keeping in Trinidad and Tobago.
6. You must be at least 18 years of age to participate.
7. Your participation is held to strict confidentiality, and the information you give will be recorded anonymously. Neither your name nor any information that can identify you will be shared with anyone or printed anywhere by the survey team. The answers will be recorded in a way that they are never associated with your name or other identifying information.
8. If you have concerns or questions about this study, please contact the principal investigator for the project, Mr. Mark Gibson, Ph.D. Candidate, Michigan State University. Email: gibso113@msu.edu. US Cell/WhatsApp: +1 (202) 308-8993. Trinidad Cell: +1 (868) 467-3829.
9. You may also contact the Human Research Protection Program at Michigan State University if you have concerns about this project. US Phone: +1 (517) 355-2180. Email: irb@msu.edu.

Participant and Animal Keeping Information Sheet

All participants were pre-screened using the following table-based form:

Table 10: A form for the collection of animal keeping information among interview participants.

INTERVIEW INFORMATION				
Date	**Time**	**General Location**	**Animal Theme**	**Team Member(s)**

Table 10 (cont'd).

PARTICIPANT INFORMATION							
Participant Nickname	**Gender**	**Age**	**Education**	**Religion**	**Civil Status**	**Employment**	**Ethnicity**
	M F						

DESCRIPTION OF ALL ANIMALS OWNED							
Animal Type	**#**	**Ever Vet?**	**Ages**	**Choice**	**Origin**	**Reasoning**	**Monthly $**
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	
		Yes__ No__ Unk__	__________ __________ _______	DK__ PA__ SP__	____ ___ ____ ___ ____ ___ ____ ___	____ ___ ____ ___ ____ ___ ____ ___	

Screening Codes

Demographics

Education: None - N; Primary - P; Secondary - S; Tertiary/University - T; Vocational - V

Religion: Anglican - AG; Baptist, Spiritual Shouter - BS; Catholic - CA; Hindu - HI; Muslim - MU; None - NO; Other - OT (describe); Pentecostal / Evangelical - PE; Presbyterian - PR; Seventh Day Adventist - SDA

Civil Status: Common Law Rel. - C; Divorced - D; Married - M; Separated - SE; Single - SI; Widowed - W

Employment: Business Owner - B; Employed - E; Homemaker - H; Retiree - R; Student - S;Unemployed - U; Child - C

Ethnicity: African - AF; Caucasian - CA; Chinese - CH; East Indian - EI; Indigenous - ID; Mixed - MX; Other - OT (describe); Portuguese - PT; Syrian /Lebanese - SY

Pets

Choice: Don't Know - DK; Planned - PA; Spontaneous - SP

Origin: Adopted from shelter - AD; Bought from family / friend - BF; Bred at home - BR; Bought from private seller - BS; Caught wild - CA; Do not know - DK; Gift at no cost - GF; Inherited - IH; Injured animal rescue - IJ; Online advertisement - OA; Other - OT (describe); Pet shop - PS; Stray animal rescue - SR

Reasoning: Beautiful Appearance - BA; Beautiful Song - BS; Companion - C; Child education - CE; Disability assistance - D; Do not know - DK; Easy to care for - E; Food - F; Hobby enjoyment - H; Healthy Lifestyle - L; Other - OT(describe); Pest Control - PC; Profit from sale - PS; Rescue of animal - R; Security - S; Traditional practice - T

Topic and Question Guide

A. The Joys of Pet Keeping, ~0-7 mins (7mins total)

Begin the interview by exploring the particular joyful experiences associated with having the animal of interest.

Tour Question: Please tell me more about your [target animal]; what is its/their name and what do you like about having them as pets?

Possible Main Questions: Did you ever think you would be a [target animal] owner? How

so?

How has your experience of pet keeping matched your expectations?

If you could go back, would you have gotten your animal? Why?

In what ways do you think having this pet has changed your life?

B. The Choice to Own, ~7-22 mins (15 mins total)

Next shift the interview to explore the decision-making involved with having such a pet, initially framed in relation to how they learned of and reacted to the obtaining opportunity.

Tour Question: Think about your current [target animal]. Can you tell me the story of how you or your family got this animal?

Possible Main Questions: Was it really a choice at all? Maybe it was sudden and unexpected?

Had you or your family any prior experience keeping this sort of animal?

Why did you pick this animal rather than another?

Did the health of your animal affect your decision?

C. The Choice to Permit, ~22-32 mins (10mins total)

Next shift the interview to explore the decision-making involved with getting a permit for their pet, initially framed in relation to how they learned of and reacted to the permitting opportunity. If they did not know they needed a permit, use this time to explore why they never had learned this before.

Tour Question: Think about your current [target animal]. How did you or your family decide to get, or not get, an official possession permit?

Possible Main Questions: Maybe you are unaware of the permit requirement?

Was the cost of time or effort to contact the government a factor?

Why do you think the Forestry Division has never communicated this information to you?

D. Challenges of Pet Keeping, ~32-52 mins (20mins total)

Next shift the interview to how having the pet animal may be challenging. You will explore this across two different framings: self-perceived challenges and stakeholder-perceived challenges. You will explore this from two perspectives: the pet owner and other pet owners. Remember to explain the different stakeholder perspectives when they are new to a participant.

Tour Question 1: What do you think is challenging about keeping this type of animal? How do you think your experience has compared with others?

Possible Main Questions: What about giving them the right diet?

What did you have to initially learn to be a good owner?

Is there anything you would still like to learn as a pet owner?

Tour Question 2: Other people in society might think there are other challenges to caring an animal like this. How might you respond to some of these people? For instance...

Possible Main Questions: How might you respond to an animal welfare advocate that says the animal cannot be healthy in captivity?

How might you respond to a conservationist that says keeping the animal as a pet somehow hurts the environment?

How might you respond to a game warden that says keeping the animal as a pet somehow risks breaking the law?

How might you respond to a public health inspector that says keeping the animal as a pet somehow risks hurting your health or the health of other animals?

E. Your Behavior in the Future, ~52-57mins (5 mins total)

Next shift the interview to explore their perspectives on how they might seek to change their behavior in the future.

Tour Question: An important interest of ours is that your participation today has been informative for you. Do you think that your experience today might encourage you to learn other new things?

Possible Main Questions: How might you want to become better informed as a pet owner?

Are there any activities you would like to see as part of an education program?

Given the challenges you have learned about today, would you perhaps advise other pet-seekers to act differently?

If someone wanted a similar animal, what would you recommend they do?

F. Close and Questions, ~57-60mins (3 mins total)

Finally, move the interview to a close and allow additional questions from the participants.

Tour Question: Thank you so very much for your participation today. We truly hope that you have enjoyed it and that we all feel that we have learned and shared on important matters today. At this point, we turn the session over to you for questions. Is there anything you would like to share or ask?

Possible Main Questions: Do you feel like there is anything you wish you had shared?

Was anything part of the interview unclear to you?

Table of Norm Violations

Table 11: A table of norm violations used for one-on-one interviewing.

Animal	**Welfare Challenge**	**Conservation Challenge**	**Legal Challenge**	**Public Health Challenge**
Bullfinch	Many bullfinches die in the trade from S. America, especially during the rainy season.	Bullfinches are now difficult to find in the wild, and foreign birds are possibly breeding with remaining local birds.	Almost all bullfinches are imported illegally and many owners do not get the required possession permit.	Imported bullfinches do not undergo quarantine and could bring in diseases that harm poultry and other wild birds.
Green Parrot / Venez Parrot	Many parrots are not properly fed or stimulated in captivity, leading to an early death.	Many Venez parrots escape and thrive in the wild, changing local ecosystems.	Venez parrots are commonly imported illegally, and many owners do not get the required possession permit.	Imported Venez parrots do not undergo quarantine and could bring in diseases that harm poultry and other wild birds.
Husky Dog	Husky dogs are not suited to tropical climates and suffer because of it.	*[2nd welfare challenge]* There are many dogs available for adoption at the pound, so it is unfair to get a purebred.	Many husky dogs are illegally imported from South America and do not undergo the required quarantine.	Illegally imported dogs pose a risk of rabies, distemper, and other communicable diseases.

Table 11 (cont'd).

Macaw	Many macaws are not properly fed or stimulated in captivity, leading to an early death.	Many macaws escape and thrive in the wild, changing local ecosystems.	Many macaws are illegally imported from South America, and many owners do not get the required possession permit.	Imported macaws parrots do not undergo quarantine and could bring in diseases that harm poultry and other wild birds.
Monkey	Many monkeys are not properly fed or stimulated in captivity, leading to an early death.	Many non-native monkeys escape and thrive in the wild, changing local ecosystems.	Many monkeys are illegally imported from South America, and many owners do not get the required possession permit.	Monkeys carry many diseases that can transmit to humans (like tuberculosis) and maturing monkeys may bite or attack their owners.
Red-eared Slider	Many owners of red-eared sliders decide to give up ownership when the turtles are no longer 'cute' or small.	Red-eared sliders are considered one of the most invasive species in the world and greatly harm local ecosystems.	Red-eared sliders should be tightly regulated in Trinidad and Tobago due to invasion concerns, just as they are in their home range in North America.	Red-eared sliders, especially young turtles, distribute salmonella bacteria, and are known to cause outbreaks in other countries.

APPENDIX D

Instrumentation for Interviews with Other Informant Groups

Instrumentation used to conduct interviews with non-keeper informants in Trinidad and Tobago consisted of three core materials: a study information sheet, a topic guide, and set of group-specific question guides for six informant groups: animal breeders, animal welfare advocates, pet shop operators, wildlife conservationists, wildlife traffickers, and veterinarians.

Study Information Sheet

1. You are being asked to take part in a research study on wild animal keeping and trade in Trinidad and Tobago. Essentially, we are trying to understand what stakeholders think about these topics and what issues may be important to them.
2. This study is being conducted by the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), and Michigan State University. This research has been approved by the Ministry of Agriculture, Land, and Fisheries (MALF) and the Tobago Division of Agriculture, Marine Affairs, Marketing and Environment (DAMME).
3. To understand your impressions, you will be interviewed on different topics related to wild animal keeping and trade in Trinidad and Tobago. We anticipate the interview to take up to 30 minutes and it will be recorded through field note taking and, if you agree, an audio recording.
4. This study has been determined to be "exempt" from human subjects review by Michigan State University (Study ID #: 00000489), as interview participants will not be identifiable and there are no apparent significant risks to participation.

5. Your participation is entirely voluntary and you are free to end your participation at any time. There will be no negative consequences for you if you want to stop while the interview is in progress.
6. You will not be compensated for your participation in this study, but your participation may contribute to the improvement of wildlife conservation in Trinidad and Tobago.
7. You must be at least 18 years of age to participate.
8. Your participation is held to strict confidentiality, and the information you give will be recorded anonymously. Neither your name, nor any information that can identify you will be shared with anyone or printed anywhere by the survey team. The answers will be recorded in a way that they are never associated with your name or other identifying information.
9. If you have concerns or questions about this study please contact the principal investigator for the project, Mr. Mark Gibson, PhD Candidate, Michigan State University. Email: gibso113@msu.edu. US Cell/WhatsApp: +1 (202) 308-8993. Trinidad Cell: +1 (868) 467-3829.
10. You may also contact the Human Research Protection Program at Michigan State University if you have concerns about this project. US Phone: +1 (517) 355-2180. Email: irb@msu.edu.

Topic Guide

All interviews are designed to explore X topics associated with wild animal keeping and trade:

1. Wild animal keeping in Trinidad and Tobago
2. Participant's professional and personal relationship to wild animal keeping and trade

3. Conservation concerns
4. Appropriateness of existing wildlife-related laws
5. Effectiveness of government wildlife management
6. Perceptions of compliance with wildlife-related laws
7. Knowledge of wildlife keeping practices

Group-specific Question Guides

The following question guides are provided to support interviewing of six different informant groups: animal breeders, animal welfare advocates, pet shop operators, wildlife conservationists, wildlife traffickers, and veterinarians. These questions are provided as examples only, and the emphasis of each interview should be to explore the core interview topics for both depth and breadth of detail on wild animal keeping and the wildlife trade.

<u>Animal Breeders</u>

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Business Description: How would you describe your business in terms of its history, scale, and what you breed?

Interaction with Wildlife Trade: How does your position relate to the legal and illegal trades in wildlife?

Challenges and Opportunities: What challenges and opportunities do you encounter in obtaining products and marketing to customers?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad/Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot sell?

Regulatory Problems: What issues, if any, need to be addressed in the pet industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad/Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the pet industry?

Gov't Confiscations: What do you think of how the government manages animal confiscation/re-locations/subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers/breeders /

owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What requests, if any, do you receive for prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think customers are educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

Animal Welfare Advocate

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Self Description: How would you describe your career and broader experience in terms of history, animals treated, and issues encountered?

Interaction with Wildlife: In what way have you treated wildlife before?

Challenges and Opportunities: What challenges and opportunities do you encounter in treating or helping animals?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad / Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot own with a wildlife possession permit?

Regulatory Problems: What issues, if any, need to be addressed in the pet Industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad / Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the pet industry?

Gov't Confiscations: What do you think of how the government manages animal confiscation / re-locations / subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers / breeders / owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What requests, if any, do you receive to treat prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think customers are educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

Pet Shop Operators

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Business Description: How would you describe your business in terms of its history and the animals you sell?

Interaction with Wildlife Trade: How does your position relate to the legal and illegal trades in wildlife?

Challenges and Opportunities: What challenges and opportunities do you encounter in obtaining products and marketing to customers?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad / Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot sell?

Regulatory Problems: What issues, if any, need to be addressed in the pet industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad / Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the pet industry?

Gov't Confiscations: What do you think of how the government manages animal confiscation / re-locations / subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers / breeders / owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What requests, if any, do you receive for prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think customers are educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

Wildlife Conservationist

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Self Description: how would you describe your career, current position, and future aspirations?

Interaction with Wildlife Trade: How does your position relate to the legal and illegal trades in wildlife?

Challenges and Opportunities: What challenges and opportunities do you perceive for wildlife management in Trinidad and Tobago?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad / Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot own with a wildlife possession permit?

Regulatory Problems: What issues, if any, need to be addressed in the pet industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad / Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the wildlife trade?

Gov't Confiscations: What do you think of how the government manages animal confiscation / re-locations / subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers / breeders / owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What questions, if any, do you receive from the public and businesses about prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think the public is educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

Wildlife Traffickers

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Business Description: How would you describe your business in terms of its history and the animals you sell?

Interaction with Wildlife Trade: How does your position relate to the legal and illegal trades in wildlife?

Challenges and Opportunities: What challenges and opportunities do you encounter in obtaining products and marketing to customers?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad / Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot sell / breed / own with a wildlife possession permit?

Regulatory Problems: What issues, if any, need to be addressed in the pet industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad / Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the pet industry?

Gov't Confiscations: What do you think of how the government manages animal confiscation / re-locations / subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers / breeders / owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What questions, if any, do you receive from the public and businesses about prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think the public is educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

Veterinarians

A. Wild Animal Keeping

To your knowledge, what species of wild animals are kept in private homes? Amphibians? Birds? Mammals? Reptiles? Spiders? Others?

B. Relationship to Wildlife Trade

Self Description: How would you describe your career and broader veterinary practice in terms of history, animals treated, and issues encountered?

Interaction with Wildlife: In what way have you treated wildlife before?

Challenges and Opportunities: What challenges and opportunities do you encounter in treating animals and obtaining customers?

C. Conservation Concerns

Conservation Concerns: What do you think are the most pressing concerns for wildlife conservation in Trinidad / Tobago?

Over-Hunting: How could the rules around hunting (season, hunting permits) could be improved for long-term wildlife management?

Breeders: Could local breeding be expanded to supply songbirds or other animals?

D. Appropriateness of Existing Laws

Regulatory Knowledge: What can you tell me about the species you can and cannot own with a wildlife possession permit?

Regulatory Problems: What issues, if any, need to be addressed in the pet industry?

Reform Ideas: What regulations/rules, if any, would you like changed or implemented in Trinidad / Tobago?

E. Effectiveness of Management

Gov't Interactions: Please describe the last time you interacted with the Trinidad Forestry Division / Tobago DNRF and what were the outcomes?

Gov't Effectiveness: What do you think of the skills and training of the Trinidad Forestry Division / Tobago DNRF for regulation of the pet industry?

Gov't Confiscations: What do you think of how the government manages animal confiscation / re-locations / subsequent care?

F. Perceptions of Compliance

Industry Compliance: How do you think most pet shops / online sellers / breeders / owners behave in relation to the rules on selling / breeding / owning wildlife?

Consumer Compliance: What requests, if any, do you receive to treat prohibited / problematic wildlife and how do you respond?

Imported Wildlife: Are there any problems that might be associated with the import of wildlife from South America?

G. Wildlife Keeping

Permitting: What can you tell me about the wildlife possession permit process?

Purchasing: Do you think customers are educated on pet care and the permitting process before they purchase wildlife?

Transferring: What do you think people do when they no longer can or want to take care of the animals?

APPENDIX E

Instrumentation for Participant Observation of Captive Wildlife

Instrumentation for participant observations consisted of four core materials that were used variably according to whether an observation was at a physical public location or in an online public space: a study information sheet for on-site ad hoc interviews, a verbal script for ad hoc interviews, a direct observation form, and a social media observation database structure. Unstructured written notes were also kept on observations of social media wildlife sales after the initial formal monitoring period.

Study Information Sheet

1. You are being asked to take part in a participant observation study on captive wildlife in Trinidad and Tobago. Essentially, we are trying to understand how ordinary Trinidadians and Tobagonians experience wildlife in captivity.
2. This survey is being conducted by the Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT), Sustainable Innovation Initiatives (SII), and Michigan State University.
3. You are being asked to share your understandings and cultural impressions on the public place or event at which are you present today. We anticipate the discussion will take up to 15 minutes, depending on how much information you share with us.
4. Your participation is entirely voluntary and you are free to end your participation at any time. There will be no negative consequences for you if either you do not agree or decide later to withdraw or stop while the interview is in progress.

5. You will not be paid for your participation in this study. However, your participation in this study may contribute to the enjoyment of pet animals and improved nature experiences in Trinidad and Tobago.
6. You must be at least 18 years of age to participate.
7. Your participation is held to strict confidentiality, and the information you give will be recorded anonymously. Neither your name, nor any information that can identify you will be shared with anyone or printed anywhere.
8. This study has been evaluated by Michigan State University (Study ID #: STUDY00003142) for meeting the standards of ethical research in which study participants will not be identifiable and there are no apparent significant risks to participation.
9. If you have concerns or questions about this study, you may contact:

   Laura Baboolal, SII representative, Email: laurababoolal19@gmail.com

   Aliya Hosein, CRESTT representative, Email: aliyahosein@gmail.com

   Mr. Mark Gibson, PhD Candidate, Michigan State University. Email: gibso113@msu.edu. US Cell/WhatsApp: +1 (202) 308-8993. Trinidad Cell: +1 (868) 467-3829.
10. You may also contact the Human Research Protection Program at Michigan State University if you have concerns about this project. US Phone: +1 (517) 355-2180. Email: irb@msu.edu.

Verbal Script

"A value of this research team is to ensure you are an informed and consenting participant in social research. I will tell you about the participant observations and interviews on captive wildlife that we are conducting and try to answer any questions you may have.

To begin, this study is seeking to understand "normal" experiences of captive wildlife in Trinidad and Tobago. It has been organized by two local organizations: the Centre for the Rescue of Endangered Species of Trinidad and Tobago (or "CRESTT") and Sustainable Innovation Initiatives (or SII). Together, CRESTT and SII are seeking to promote the joys of pet keeping and exploring nature among all Trinidadians and Tobagonians. These organizations are further aided by the technical support of a US-based university, Michigan State University.

Your business/event/person has been asked to participate based on your public marketing/visitation here today. Your participation is voluntary, you may choose not to participate at all, or you may refuse to participate in certain procedures or answer certain questions or discontinue your participation at any time without consequence.

You will be asked to share what you know about the place and event and your cultural interpretation, and your answers will be recorded anonymously. This means that I am not going to record your name, or any other information that could identify you. You will receive an information sheet on the study. Again, I note that this participation is voluntary.

Our aim is to ensure you have a positive experience today. The observation/interview will take up to 15 minutes, depending on how much you want to share with us. You can skip any question or topic that you would like, and you can end the observation/interview at any time. I also encourage you to please ask questions if there is anything that you do not understand. Importantly, this project has been reviewed for ethical practices by Michigan State University.

You can contact the lead researcher, the local partner organizations, or Michigan State University if you have any questions or comments. Contact information is on the information sheet provided.

We do not foresee any risks to your participation and the information you provide will be used to help improve animal welfare and environmental management in Trinidad and Tobago. If the survey produces any notable scientific findings, the anonymous results may be published in academic journals.

Do you voluntarily agree to participate in this research?" [Ensure verbal response indicating Yes or No]

Direct Observation Form

Date:

Time:

Location Description:

Researchers Present:

Subject/Purpose:

Annotation Date:

Author:

Photos Taken: Y / N

Basic Description:

What

Who

Where

When

Why

How

Other

Relationship to Wildlife Trade:

Educational Role

Engagement Role

Enforcement Role

Future Actions/Considerations:

Methodological Note:

Analytical Note:

Social Media Database Structure

The social media database is structured as a two-tab worksheet google doc. The first tab is for the recording of observed data on public Facebook groups and pages using the following fields:

Name

Type [Public Group / Public page]

Web Link

Date Evaluated for Entry

Name of Evaluator

Number of Members/Likes (at time of evaluation)

Approximate # of Post Per Day (at time of evaluation)

Approximate # of Posts Asking or Offering Wildlife For Sale in Last Two Years

Date Founded

Date Evaluated For Removal

Name of Evaluator

Reasoning for Removal [Changed to Private / Ended / Other]

Additional Notes

The second tab in the database is for the recording of observed data in each group and on each page using the following fields:

Date Recorded

Name of Recorder

Source

Content Type [Post/Share/Parallel Post/Comment/Other]

If Other Content Type, Describe

Weblink to Content

Date Posted

Time Posted

Content Entry ID

Posting Event ID

Content Text

# of Likes

Shares

Species Involved

Animals Involved - Precise

Animals Involved - Minimum

Animals Involved - Maximum

Price Requested

Price Offered

Photos

Videos

of Comments (where relevant)

Likes - Angry

Likes - Haha

Likes - Plain "Like"

Likes - Sad

Likes - Wow

Describe If Evidence of Community Monitoring

Describe Other Observations

Date Reviewed

Name of Reviewer

Notes on Changes

REFERENCES

REFERENCES

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CHAPTER 3

'WE ALL KNOW IT'S INHUMANE': THE AWARENESS AND JUSTIFICATION OF GREEN HARMS AMONG TRINIDADIAN SONGBIRD KEEPERS

> It is our argument that much delinquency is based on what is essentially an unrecognized extension of defenses to crimes, in the form of justifications for deviance that are seen as valid by the delinquent but not by the legal system or society at large.
>
> —Sykes & Matza (1957, p. 666)

3.1. Authorship and Intended Publication

This manuscript and the underlying research have been produced by the dissertation researcher (MG) as lead author and Lauren Ali (LA) as a co-author. Each has contributed to this current manuscript draft as described using the Contributor Roles Taxonomy (https://credit.niso.org/) (Table 12).

The manuscript has been developed for submission to *Deviant Behavior*, a criminological journal with the aim of exploring all aspects of deviant behavior. Notably, this journal previously published one of the first and still few examples of Neutralization Theory used to understand wildlife's illegal hunting (Eliason & Dodder, 1999). The journal has also published numerous articles employing Neutralization Theory to understand diverse phenomena. The manuscript has been developed according to the target journal's submission guidelines, except for certain content and formatting required for a cohesive thesis and to fulfill the formatting guidelines of the MSU Graduate School.

Table 12: Contributor roles in the production of Chapter 3.

Role	MG	LA
Conceptualization	✓	✓
Data Curation	✓	✓
Formal Analysis	✓	✓
Funding Acquisition	✓	
Investigation	✓	
Methodology	✓	✓
Project Administration	✓	
Resources	✓	
Software		
Supervision	✓	
Validation	✓	✓
Visualization		
Writing – original draft	✓	
Writing – review & editing	✓	✓

3.2. Abstract

This study explores how persons neutralize feelings of guilt and shame when keeping wild-caught songbirds in the Southern Caribbean island of Trinidad. Using a novel norm-specific Neutralization Theory framework, key informant interviews (n=16) and focus group discussions (n=25) were conducted to explore songbird keepers' harm awareness, normative commitment,

and verbal justifications for four harms of particular green criminological concern: breaking wildlife laws, damaging ecosystems, endangering public health, and injuring animals. Most participants were aware of these 'green harms' as ordinary occurrences and felt that such harms were wrong. Participants offered 17 verbal justifications that they used to neutralize their negative feelings, including: Appeal to Higher Loyalties, Claim of Entitlement, Condemnation of the Condemners, Denial of Injury, and Denial of Responsibility. The findings offer insights for the development of Neutralization Theory, the expansion of green criminology to explore harm neutralization among key offender groups, and the design of wildlife trade reduction projects on the basis of Neutralization Theory research.

Keywords: animal welfare, conservation, public health, neutralization theory, green criminology

3.3. Introduction

The keeping of songbirds, or musical perching birds, is a popular yet often harmful practice across the world (Mirin & Klinck, 2021). Harms associated with the songbird trade include animal suffering and mortality (e.g., Jepson & Ladle, 2005), introductions of invasive species (e.g., Nijman et al., 2021), extinctions of species (e.g., Nijman et al., 2018), transmissions of zoonotic diseases (e.g., Matias et al., 2016), and violations of laws and regulations (e.g., de Oliveira et al., 2020). Nevertheless, there exists little scientific information on the specific practice of songbird keeping (Mirin & Klinck, 2021), which is also consistent with a lack of research regarding harmful wildlife consumption more generally (MacMillan & Challender, 2014; Thomas-Walters et al., 2021). This lack of wildlife consumption research further presents serious challenges to implementing consumer demand reduction projects that are increasingly employed internationally by nonprofit organizations (Veríssimo & Wan, 2019).

In response, a study was conducted to explore how Neutralization Theory, a social psychological theory for the occurrence of norm violating, 'deviant' behavior, could be used to explain the harmful keeping of songbirds on the island of Trinidad, which partly composes the country of Trinidad and Tobago in the southeastern Caribbean. This "product-specific" study corresponds with one of four product segments that were collectively analyzed, with the other three being parrots and macaws, primates, and red-eared slider turtles. This study and the encompassing research initiative were designed to build upon the work of Eliason (2003, 2004), which used Neutralization Theory to explain poaching by hunters in the United States, as well as contemporary commentary on how to better develop and apply Neutralization Theory through comparative analysis across actors, behaviors, and countries (Maruna & Copes, 2005). This study also contributes to green criminology, or the study of harms and crimes involving the environment and non-human sentient beings (White & Heckenberg, 2014), as this paradigm has traditionally failed to engage with problems in applied settings (Gibbs et al., 2009).

3.4. Neutralization Theory in Practice and Theory

Neutralization Theory emerged in the mid-20th century on the basis of work by Cressey (1953) and Sykes and Matza (1957). It holds that persons engage in behaviors violating their internalized norms through socially shared cognitive processes to reduce guilt and shame and enable 'deviant' behavior. The theory was developed as an alternative to a subcultural theory of deviance which held deviant behavior to be instead caused by persons holding non-mainstream norms. Since its founding, Neutralization Theory has gone on to be widely used to explore and explain the occurrence of diverse forms of deviance, including elder mistreatment (Tomita, 1990), genocide (Anderson, 2017), sexual assault (Bohner et al., 1998), and shoplifting (Cromwell & Thurman, 2003). To date, Neutralization Theory has been used to understand the

illegal hunting of wildlife (Eliason 2003, 2004) and illegal culling (Enticott, 2011). However, it appears to have not yet been applied to harmful wildlife consumption, such as wild animal keeping.

A core concept in Neutralization Theory is the 'neutralization technique,' a distinct, norm-neutralizing mental justification that may be verbally elicited through questioning. Sykes and Matza (1957) initially put forward a list of five techniques: Denial of Responsibility, Denial of Injury, Denial of the Victim, Appeal to Higher Loyalties, and Condemnation of Condemners. The list of possible neutralization techniques has grown substantially since the mid-20th century, such that some researchers argue for more structured taxonomies (Fritsche, 2002; Kaptein & Helvoort, 2019). New additions to the traditional list include: Change of Locus of Control offered by Uba and Chatzidakis (2016); Claim of Individuality and Claim of Relative Acceptability offered by Henry and Eaton (1999); Defense of Necessity offered by Minor (1981); Defense of Victimization offered by Bryant and colleagues (2018); Denial of Negative intent offered by Moss (1989); the Denial of the Necessity of the Law, Claim of Normality, and Claim of Entitlement offered by Coleman (1994); the Metaphor of the Ledger offered by Klockars (1974); and the Naturalness Argument (Bateson, 1989).

Neutralization Theory is notable for yielding practical insights into the design of more complex theories and intervention programs. Notably, Neutralization Theory has been broadly integrated with other theories to produce nuanced theoretical frameworks explaining diverse criminological phenomena, including Control Theory (Costello, 2000), Rational Choice Theory (Clarke & Cornish, 1985, p. 160), and Strain Theory (Beasley, 2014), which in turn have supported intervention design. For instance, Cornish and Clarke (2003) draw upon Neutralization Theory to argue for the 'removal of excuses' as a key 'rational choice' crime prevention

technique to be used by policing agencies. The theory may also inform the design of restorative justice programs by requiring an offender to take full responsibility for their wrongdoing (Braithwaite, 1999), as well as cognitive behavioral therapies in which therapists seek to reduce pro-criminal behaviors in offenders to reduce recidivism (Banse et al., 2013).

Despite its relative popularity, certain aspects of Neutralization Theory may require additional development. Some criminologists argue that the theory may best serve as a theory of continuation, rather than initiation, of deviant behavior (Cromwell & Thurman, 2003; Hirschi, 1969, p. 208; Maruna & Copes, 2005). Meanwhile, other researchers see an opportunity to expand Neutralization Theory's scope to account for both mainstream and subcultural norms (Colvin & Pisiou, 2018; Topalli, 2005). This suggests that normative commitment and harm awareness should be carefully evaluated when studying neutralizations. Finally, Maruna and Copes (2005) argue that studies using Neutralization Theory have often failed to produce insightful and robust findings because of a lack of comparative research. They suggest that it is "unremarkable… that people who do disreputable things use neutralizations to account for them" and that future studies might "investigate the nature of neutralization use in contrasting situations, circumstances, contexts, and cultures" (p. 284-285).

3.5. Reducing Harmful and Illegal Wildlife Consumption

The reduction of consumer demand is considered a fundamental approach to reducing harmful and illegal trades in wildlife (t Sas-Rolfes et al., 2019; USAID, 2017). Demand reduction projects have increased substantially since the 1970s, but a majority have been implemented only in Asia and the United States and usually in relation to a narrow range of species (Veríssimo & Wan, 2019). Additionally, there exist key gaps in understanding related to the technical design of demand reduction projects. For instance, Greenfield and Veríssimo

(2019) find key gaps between best practice and actual practice in the design of social marketing-based demand reduction projects for elephant ivory and rhino horn. Other researchers raise important questions as to whether demand reduction projects should emphasize the development of alternative consumer choices, persuasive messaging, or increased regulatory capacity and effort (Drury, 2009; Saypanya et al., 2013; Schneider, 2008).

More profoundly, projects to reduce consumer demand for wildlife are hindered by a lack of theory and empirical research on consumers (MacMillan & Challender, 2014; Thomas-Walters et al., 2021). As noted by Thomas-Walters and colleagues, "[o]nly a few studies have specifically looked at motivations" among wildlife consumers (p. 485), even as they and other researchers offer conceptual frameworks to comprehensively consider motivations (see Phelps et al., 2016). Others argue that norms, values, and beliefs should be better considered to understand consumer decision-making (Sanchez-Mercado et al., 2021; Veríssimo et al., 2020). More varied studies also suggest that consumers' relative wealth and lack of awareness of harms could lead them to purchase certain wildlife products (Drury, 2011; Kellert, 1980; Moorhouse et al., 2017; Wilkie et al., 2005).

In this context, Neutralization Theory may offer meaningful opportunities to expand the state of knowledge of harmful wildlife consumption and, in turn, yield insights for the design of demand reduction projects. For instance, it is possible that the identification of neutralizations could inform consumer marketing messages, much like existing applications of Neutralization Theory to facilitate the 'removal of excuses' in situational crime prevention projects (Cornish & Clarke, 2003). Additionally, the popularity of some neutralizations could indicate the need for regulatory reforms, such as when offenders employ neutralizations like 'Claim of Normality' and 'Condemnation of the Condemners.' One study of neutralizations by poachers (Eliason, 2004)

also suggests that some persons may be unaware of the consequences of their actions, specifically the violation of hunting laws. This suggests that 'harm awareness' may be another important construct to consider when evaluating the use of neutralization techniques.

Given existing critiques, the application of Neutralization Theory to understand harmful and illegal behaviors associated with wildlife consumption may benefit from integration with the normative perspectives within green criminology. This emerging paradigm has been specially developed to examine an extensive range of harms involving the natural world, non-human species, and the human communities that depend upon them (Goyes, 2017; White & Heckenberg, 2014), but contemporary critics suggest that the paradigm is not yet sufficiently action-oriented (Gibbs et al., 2009).

Broadly, the green criminology paradigm holds that what is harmful will greatly depend upon one's normative perspective or 'ecophilosophy' (Halsey & White, 1998), and its primary ecophilosophies of concern have been identified as: anthropocentrism, which holds humanity and its interests to be most important; biocentrism, which holds non-human life to be of equal importance and standing as humanity; and ecocentrism, which holds the integrating systems of life to be more important than any one species. Meanwhile, there is ample evidence that wildlife trade researchers have traditionally explored the violation of ecocentric norms (i.e., do not harm ecosystems), while taking a narrow view of anthropocentric norms (i.e., do not break laws) and ignoring violations of biocentric norms (i.e., do not harm animals) (Baker et al., 2013; Roe et al., 2020). Thus, a green criminological expansion of Neutralization Theory may align with calls for more comparative applications, while promoting the use of green criminology in applied settings.

3.6. Harmful Songbird Keeping in Trinidad and Tobago

The keeping of songbirds is a particularly popular activity in Trinidad and Tobago. The most commonly kept species—the chestnut-bellied seed finch (*Sporophila angolensis*)—is estimated to be the second most popular kept wild species in a country where one in six homes engages in wild animal keeping (see Chapter 2). In total, there are at least 34 species of songbirds kept in the country (see Chapter 4), which are kept for the enjoyment of their songs and aesthetics. Additionally, for some species, these core motives are further complemented by keepers' interests in competitive social recreation and financial gain (F. Abdool, personal communication, June 10, 2021; Alves et al., 2013; Dai et al., 2021; Mirin & Klinck, 2021; Nguyen, 2021; R. MacFarlane, personal communication, February 19, 2018).

The Trinbagonian songbird trade also appears to result in a range of harms common in songbird trades elsewhere, including animal suffering and mortality (e.g., Jepson & Ladle, 2005), introductions of invasive species (e.g., Nijman et al., 2021), extinctions of species (e.g., Nijman et al., 2018), and transmissions of zoonotic diseases (e.g., Matias et al., 2016), and violations of laws and regulations (e.g., de Oliveira et al., 2020). Various reports of local species declines and extirpations and illegal hunting and trade may be found in gray literature (ffrench, 1976; Sookdeo, 2015; TTFNC, 1984). Local news articles also highlight that many songbirds are killed in trafficking and are typically kept in undersized cages (e.g., Braxton-Benjamin, 2020; Wilson, 2020). Trinidadian naturalists also report that some non-native imported songbird species have now been introduced into the wild, notably the common waxbill (*Estrilda astrild*) and tricolored munia (*Lonchura malacca*) (N. Lallsingh, personal communication, August 28, 2021), the former of which is considered an invasive species by the IUCN's Global Invasive Species Database (GISD). Finally, one relatively recent study has found a novel pox virus in songbirds

trafficked from Venezuela to Trinidad (Suepaul et al., 2019), while local regulators highlight that such songbirds are often sick with transmissible diseases (MacFarlane, personal communication, February 19, 2018).

3.7. Methods

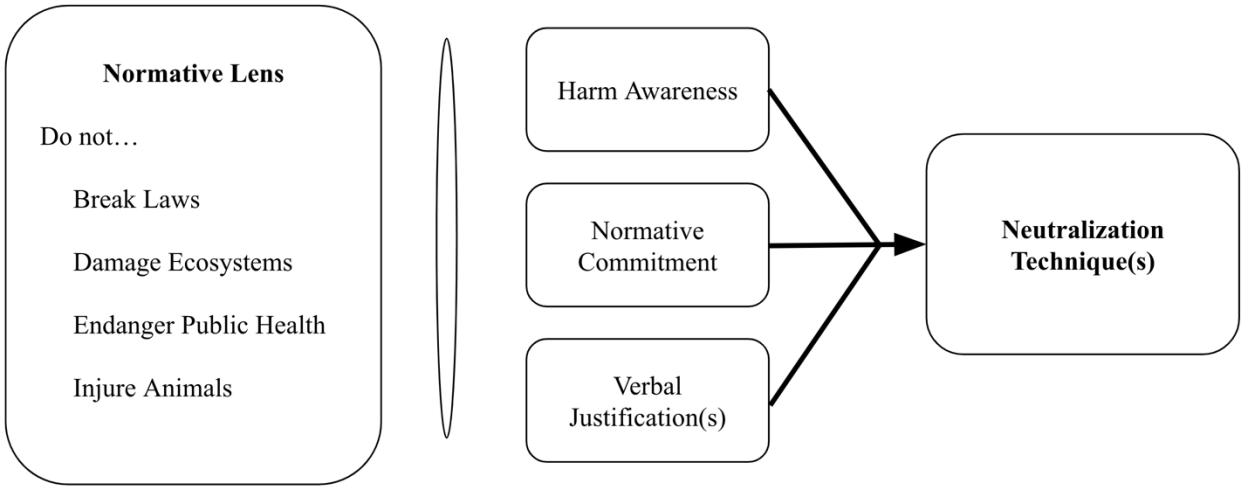
Primary research with Trinidadian songbird keepers was conducted from September 2019 to March 2020. This research constituted one of four components of research into the enabling psychologies of Trinidadian wild animal keepers, with the other components corresponding to keepers of parrots (*Amazona spp.*) and macaws (tribe Arini), New World monkeys (infraorder Platyrrhini), and Red-eared Slider turtles (*Trachemys scripta elegans*). These other components shall be explored in separate counterpart articles.

3.7.1. Theoretical framework

A modified theoretical framework for the analysis of neutralization techniques was employed in the course of this study in order to acknowledge and build upon existing critical commentary in two specific ways (Figure 16). First, this framework innovatively considers deviant behavior in relation to the violation of four norms: do not break laws, do not damage ecosystems, do not endanger public health, and do not injure animals. In this way, the framework permits novel comparative analysis depending upon the particular norm being explored by the researcher and participant or participants. The laws of importance in this study were local rules requiring government approval for animal importations and permits for the possession of songbirds. The ecosystem harms of importance are the decline and extirpation of local species and the introduction of non-native species into the wild. The public health harms of importance are the spread of zoonotic diseases and their possible introduction into local animal populations

and agricultural operations. The animal injuries of importance are neglect and early mortality caused by poor care by keepers and others in the trade.

Figure 16: An expanded theoretical framework for analysis of neutralization techniques.



Second, this framework holds that one or more neutralization techniques are used when three conditions are met. The first condition is that an individual is aware of the harms of their behaviors and the behaviors of others that enable them. The second condition is that an individual believes that such harms should not ordinarily occur or result directly or indirectly from their actions. Thus, if a keeper does not believe that behavior is harmful, that a harmful behavior has occurred, or that harmful behavior is wrong, then they would not need to specially neutralize feelings of guilt and shame. The third condition is that a person is able to offer a distinct verbal justification to explain their behavior. Thus, if the two other conditions are met, and an individual provides a justifying statement to in some way exculpate themselves, they are using one or more neutralization techniques. However, if an individual only admits to feeling guilty for their behavior, then they are not engaging in neutralization.

3.7.2. Key informant interviews and focus group discussions

Songbird keepers were recruited through social media on the Facebook and Instagram accounts of the Nurture Nature Campaign (www.nurturenaturett.org) and through the placement

of fliers at approximately 50 community centers across the island. Participants were invited to participate in either a focus group or interview if they kept at least one species of seed finches (*Sporophila spp.*). In total, 25 individuals participated in four focus discussion groups and 16 individuals participated in one-on-one key informant interviews.

Focus groups and interviews were semi-structured and followed respective topic and question guides (see Chapter 2, Appendices B and C).[8] Each guide was designed to explore a range of topics to allow the interviewer to explore the key concepts of the study's theoretical framework through both direct and follow-up questioning. The interview guide included a special section on keepers' ethical challenges inclusive of a special role-playing game. In this game, the interviewer assumed four different identities: animal welfare advocate, game warden, public health official, and wildlife conservationist, in order to explore each participant's possible justifications for why their behaviors do not violate the study's four norms.

Facilitators and interviewers were specially trained to elicit verbal justifications through role-playing and asking about a range of possible norm-violating behaviors that commonly occur in the keeping and trade of songbirds. Given the wide range of potential justifications, 15 classic and modern neutralization techniques were used to train and sensitize the interviewers (see Appendix A). The techniques were selected based on experiences of preliminary informal interviews with songbird keepers and the dissertation researcher's prior experience of conducting focus group discussions with parrot keepers in Trinidad (Chu Foon et al., 2018).

All interviews were conducted at public locations (such as coffee shops or park benches) in areas outside of the hearing range of other persons. In contrast, focus groups were conducted at specially organized weekend events at local schools. Before initiation of each interview and

[8] Please note that future publication of this report will make these method descriptions available to readers online or within the manuscript. However, for the sake of brevity, this material is not duplicated in this dissertation.

focus group, informed consent was obtained through discussion and review of a study information sheet. All interviews and focus groups were also conducted anonymously and no personally identifiable information was ever stored in a way that could be connected with a given individual. Interview and focus group participants were also asked to provide information on their demographics, the type and quantity of animals kept in their home, and other facets of animal keeping behaviors to determine harm occurrence. All participants received honoraria as partial compensation for their investment of time and travel costs. Interview participants received compensation of TT$100 (~US$15) and focus group participants received compensation of TT$200 (~US$30). Interviews were conducted by the dissertation researcher, MG, and four research assistants, AH, DJ, LB, and NV.

Each focus group lasted 102 mins on average and each one-on-one interview lasted 62 mins on average. The interview and focus group methodology was subject to ethical review by the Michigan State University (MSU) Institutional Review Board (IRB), which determined that it posed minimal or no risk to research participants (STUDY00000489).

3.7.3. Content analysis

All interviews and focus groups were audio recorded and transcribed for content analysis using NVivo software (Kaefer et al., 2015). Transcripts were coded in three cycles by the dissertation researcher, MG, and two research assistants, LA and NV. In the first cycle, LA, MG, and NV used a prepared codebook inclusive of definitions, application rules, and examples to code segments of text specifically related to the concepts of 'harm awareness,' 'norm commitment,' and 'justifications' in relation to the theoretical framework's four normative lenses. In the second cycle, LA and MG sub-coded the identified segments for greater detail using an expanded codebook (Appendix B) in which: 'harm awareness' was sub-coded as 'harm

aware,' 'harm unaware,' and 'unknown harm awareness'; 'normative commitment' was sub-coded as 'norm committed,' 'norm challenging,' 'norm ignorant,' and 'unknown commitment.' 'Justification' was sub-coded into a modified list of 18 possible neutralization techniques on the basis of interviewing and first-cycle coding experiences.

In the third coding cycle, LA and MG reviewed codes with the assistance of code-specific inter-rater reliability scores. Codes with an initial aggregate Cohen's Kappa coefficient score below .5 were reviewed for recoding by both LA and MG in two rounds of review. In the first round, LA and MG reviewed low agreement codes independently. Codes that continued to score below .5 were reviewed and discussed collectively until agreement above .5 could be obtained. The resulting average aggregate Kappa for all norms after the initial round of coding was .39, and this was raised to .90 after the two rounds of code-specific review (Table 13).

Table 13: Average kappa scores for all sub-codes by norm.

Norm	**Round 0**	**Round 1**	**Round 2**
Do Not Break Wildlife Laws	.29	.70	.87
Do Not Damage Ecosystems	.43	.66	.88
Do Not Endanger Public Health	.50	.75	.95
Do Not Injure Animals	.33	.70	.88
Average	.39	.70	.90

3.8. Results

The results of the study are presented below according to the demographic and animal keeping profile of the participants and their reported awareness of consequences, commitment to norms, and use of up to 17 justifications for the violation of four norms: do not break laws, do not damage ecosystems, do not endanger public health, and do not injure animals (Table 14).

3.8.1. Participating keeper profile

The 41 participants in the study were predominantly male (87.8%). Ages ranged from 18 to 67, with an average age of 36 years (s=±11). A majority of participants had attained secondary degrees (51.2%), followed by completion of tertiary degrees (43.9%) and vocational degrees (4.9%). Participants reported affiliation with a range of perspectives on faith, specifically: Protestant Christian (41.5%), Hindu (22.0%), Muslim (14.6%), Catholic (12.2%), and no formal

Table 14: Use of justifications for violation of four norms by 41 songbird keepers.

Justification Technique	Do Not Break Laws	Do Not Endanger Public Health	Do Not Harm Animals	Do Not Harm Ecosystems	Any Norm
Appeal to Higher Loyalties	63.4%	0.0%	26.8%	0.0%	70.7%
Change of Locus of Control	29.3%	2.4%	2.4%	19.5%	51.2%
Claim of Normality	48.8%	7.3%	24.4%	0.0%	48.8%
Claim of Entitlement	22.0%	65.9%	53.7%	17.1%	78.0%
Claim of Individuality	19.5%	19.5%	19.5%	0.0%	36.6%
Claim of Relative Acceptability	17.1%	0.0%	2.4%	0.0%	19.5%
Condemnation of the Condemners	56.1%	7.3%	19.5%	48.8%	78.0%
Defense of Necessity	43.9%	0.0%	12.2%	0.0%	46.3%
Defense of Victimization	2.4%	0.0%	0.0%	0.0%	2.4%
Denial of Injury	2.4%	4.9%	58.5%	17.1%	63.4%
Denial of Necessity of the Law	41.5%	2.4%	19.5%	19.5%	43.9%
Denial of Negative Intent	9.8%	0.0%	4.9%	17.1%	29.3%
Denial of Responsibility	31.7%	36.6%	22.0%	46.3%	65.9%
Justification by Comparison	2.4%	0.0%	4.9%	2.4%	7.3%
Justification by Postponement	24.4%	0.0%	0.0%	0.0%	24.4%
Metaphor of the Ledger	0.0%	0.0%	0.0%	2.4%	2.4%
The Naturalness Argument	0.0%	0.0%	2.4%	2.4%	4.9%
Any Technique	82.9%	82.9%	80.5%	75.6%	87.8%

religion (9.8%). A relative majority of the sample was married (36.6%) or common law married (12.2%), followed by single (39.0%), divorced (9.8%), and separated (2.4%). A majority of participants are employed (87.8%), followed by pursuing academic degrees (4.9%), unemployed (4.9%), and retired (2.4%). A relative majority of the sample was of East Indian descent (46.3%), followed by mixed (34.1%), and African descent (19.5%).

Interview and focus group participants collectively reported keeping 286 songbirds, consisting of: 251 chestnut-bellied seed finches (*Sporophila angolensis*), 34 gray seedeaters (*Sporophila intermedia*), and one Trinidad canary (*Sicalis flaveola*). This yielded an average of 7.0 songbirds per person. Participants also reported keeping 40 dogs and a range of other wild animals, including 101 parrots representing at least 10 species and four New World monkeys representing at least three species. The three reported songbird species all require government issued possession permits to be held in captivity. They are considered "least concern" for their global extinction risk by the International Union for Conservation of Nature (IUNC) (https://www.iucnredlist.org) and score as "difficult" for ordinary keepers to care for under the EMODE methodology (https://emodepetscore.com). Participants indicated that only 7.0% of their songbirds had ever been seen by a veterinarian, compared to 62.5% of their dogs.

3.8.2. Breaking wildlife laws

Participants indicated broad awareness of legal violations in relation to songbird keeping and strong commitment to a norm of not breaking laws. Participants reported being aware that their kept songbirds are almost exclusively sourced through illegal importation from South America. For instance, one participant explained, "We all know the birds are coming in illegally, we all know it's inhumane, but yet, there is a demand and there is a market" [P010], while another remarked, "we have a dependency on the black market" [P013].

Participants also acknowledged awareness that they should, but generally do not, have government issued possession permits for their kept songbirds. In one focus group, the interviewer's question about permit holding provoked laughter, followed by a range of justifications:

MG: Do you all have permits for your birds?
Group: [Laughter]
MG: You're laughing. Alright, what's the situation?
P022: Yes, I know, I know. But I don't have the knowledge of where I do go and register
my bird…
P018: I don't know. I don't have the encouragement, sometimes you will ask someone [a government official] and they will just read your message and just not reply.
P019: The only time that someone from the wildlife unit could stop you is if you are walking your bird [in public].

In fact, only two participants in the entire study indicated holding valid permits for their songbirds, and this appeared related to having personal connections at the issuing government office. As one explained, "one man at Forestry is my friend, and he puts it through" [P037]. Another indicated he had a permit because "my cousin is working in Forestry," but he expressed that he had already violated its terms by explaining, "I only have a license with three [songbirds allowed] and I have four [now]" [P034].

In spite of broad awareness of illegality, participants also repeatedly indicated a desire to comply with the law, suggesting strong commitment to a norm of legal compliance. With respect to illegal importation, participants hoped that one day their illegal supply might be regulated in some way such as: "How we getting it is illegal, which I think needs to be fixed or rectified" [P031]. Another participant added: "It's hard for us. It's the only source! So, if we could get a legal way of it coming in, it would be a lot better" [P005]. Similarly, most participants expressed that having a permit for their songbirds would be a good thing. One indicated that, "We branded

as criminals" [P011], while others shared that they had made attempts to apply with no government follow-up, such as, "I signed up for it [the permit] but they never call me back" [P027] and "I applied and they never come... I wait six months, so I went and reapplied" [P026].

A total of 34 out of 41 participants variably provided 15 justifications that likely constitute neutralizations of a norm to not break laws governing songbird keeping (Table 14). The three most commonly employed justifications were Appeal to Higher Loyalties, Claim of Normality, and Condemnation of the Condemners. Approximately half or more of all participants used these justifications. The Appeal to Higher Loyalties was often expressed by framing a more paramount need for there to be an available supply of songbirds, legal or illegal. For instance, one participant explained: "If the government come around saying you can't be minding [illegally imported] birds, there will be a civil uprising. This is our pastime" [P010]. Another added, "I don't like how it is being done, but at the same time, how am I going to get a supply of birds?" [P028].

Claim of Normality was typically indicated by explaining how *all* songbirds are unfortunately sourced through illegal importation and that almost *no one* has a permit (see above). Many participants had adopted a perspective that, "There is no system currently in Trinidad where you could actually get the bird legally" [P021]. Participants further explained that it "just felt really normal" [P001] and they would seek permits "maybe if the law is enforced" [P014]. Participants further justified the normalcy of illegal songbird keeping by condemning politicians and government agencies responsible for border patrol and permit issuance. One participant noted, "we have government ministers that keep these birds, that know the laws about these birds" [P012] while another highlighted that the government is not strictly enforcing permit issuance. "Nothing really is being enforced because the government isn't giving

money for printing permits" [P036] and "they are short-staffed, number one. They have no vehicle, number two. But that is not my concern. My concern is that you get up off your ass and do your work" [P024].

3.8.3. Damaging ecosystems

Participants indicated broad awareness of substantial declines in local species of songbirds and strong commitment to a norm of protecting ecosystems. Participant's awareness of local species' population declines was principally related to the currently popular chestnut-bellied seed finch, or "bullfinch," such as: "in Trinidad there were many bullfinches before" [P040] and "you see a local bullfinch now and it's like seeing god" [P009]. Participants with ostensibly more years of experience reported having seen declines in a range of songbird species. For instance: "Where we come from in the southern areas, you use to have picos [gray seedeaters], you used to have chat [Lesson's seedeaters and lined seedeaters], silver beaks [yellow-bellied seedeaters], robins [ruddy-breasted seedeater], and you don't see them now" [P011].

Highlighting the decline in Trinidadian bullfinches, many participants reported price premiums for local bullfinches on the market, with two participants in a focus group indicating that "a local bullfinch just fetches a price around TT$25,000 [~US$3,600]" [P006] and "if you buying the normal bird, maybe TT$200 [~US$30]" [P034]. Some participants also speculated that there may be bullfinch population declines in Guyana as prices for such birds are increasing, though they also reported that international demand elsewhere may be driving the increase: "now the Guyanese [bullfinch] is getting [expensive] like a local, but this is because they are sending them more to New York now" [P041].

In spite of broad awareness of species population declines, participants also expressed a desire to see such populations rebound. Most commonly, participants advocated for a breeding and release program supported by the government to repopulate wild populations, such as "We see they can diminish, and what the government should do is start a breeding program" [P036] and "I would like to see a breeding program to build up the birds in the wild" [P028]. Nevertheless, commitment to a norm against damaging ecosystems through songbird population declines was most commonly expressed in terms of their instrumental value to the songbird keeping community. As one participant explained, "If we want our sport to continue, we need to have a breeding program. The breeding stock currently comes from pet shops, but it is a limited resource here" [P008]. Another added, "We really want to deal with conservation, so let us come together to move forward" [P009].

A total of 31 out of 41 participants variably provided 10 justifications that likely constitute neutralizations of a norm to not damage ecosystems through songbird keeping (Table 14). The two most commonly employed justifications were Denial of Responsibility and Condemnation of the Condemner. Approximately half of all participants used these justifications, often in conjunction with each other. Participants acknowledged that local trapping of songbirds has contributed to declines in local populations but argued that the government was responsible for continued illegal trapping. For instance, participants remarked that, "There is no control system, because you have people waiting, the poachers" [P005] and "They need to beef up [enforcement], people are catching them [songbirds] normal" [P014].

More commonly, however, participants attributed responsibility for songbird population declines to pesticides for agriculture and mosquito control, such as: "The farmers spray these seeds with chemical pesticides and a lot of birds are lost that way" [P022] and "People say over

capturing [caused a decline], but what happened is aerial spraying for mosquitos." Another participant explained:

> The reasons why we are in the position of the local bullfinch becoming extinct, and it's not only the bullfinch, but breeds like picoplat and robin…some is over catching, but the main reason for the bird population dying is agriculture. The sprays, the insecticides that some of these farmers use, that plays an integral part in reducing the bird population. [P012]

This "spraying" narrative often included concerns that it was up to the government to prevent ecosystem impacts, such as: "I feel the Ministry of Health have a serious part to play with that spray [for mosquitos]" [P034] and "They are spraying chemicals that are going to kill the birds…well, you know the government are the ones in the power, they should venture into preservation" [P017].

3.8.4. Endangering public health

Participants indicated broad awareness of disease transmission in relation to songbird keeping and strong commitment to a norm of not endangering public health. Most participants acknowledged awareness of illegally imported birds being infected with a range of communicable illnesses, such as: "Those birds come in with all kinds of diseases" [P036] and "They bring disease when they coming in" [P029]. They further highlighted that songbirds both acquire and transmit communicable diseases as a result of the wildlife trade: "Sometimes they stay overnight [in a net] and the mosquitos bite them and this gives them the sickness" [P002] and "the water and feeds they [traffickers] are giving these birds are contaminated with bird feces" [P012]. Among the diseases identified by the participants were: coccidiosis, a parasitic intestinal infection; avian pox, a viral infection; and avian mites, a parasitic dermatological infection. All of these diseases may be transmitted from one bird species to another.

Many participants further reported that acquiring new birds was a risky endeavor. One participant explained: “It is a serious risk when they take a bird out of the pet shop. If a bird falls ill within your home and you have other surrounding birds…it could be devastating” [P021]. Some participants also indicated that other songbird keepers will release sick birds rather than make the effort to treat it back to health, which further promotes transmission, such as: “I think a lot of people let release sick birds” [P013] and “There are plenty who have a sick bird and let it go back into the wild. I do it already, but then I did not know the danger in that” [P040].

In spite of broad awareness of public health endangerment, participants also expressed a desire to reduce such risks for themselves and the animals. This expression was often made in relation to a desire for illegal imports to be regulated, such as: “I think every bird owner would look forward to the opportunity where they are able…to legally purchase a bird and bring it into the country…that is property quarantined and healthy [P017].” Another participant added, “I feel like we should have stricter laws in place…they should be kept in quarantine for long or for one month to make sure” [P001]. One participant also expressed concern for reducing a not yet realized risk of more harmful disease transmission: “Bird diseases could spread to humans, so I do see it as a major issue” [P033].

A total of 34 out of 41 participants provided eight justifications that likely constitute neutralizations of a norm to not endanger public health through songbird keeping (Table 14). The most commonly employed justification was Claim of Entitlement, of which approximately two-thirds of all participants used this justification. This justification was evidenced by participants reporting that they take special precautions and give special care to avoid serious disease risks. For example, one participant explained: “Just like a doctor we diagnose, rule out certain symptoms, so you try something that works” [P013]. Others explained their treatment protocols

for sick birds: “I give it one drop of the rough skin lemon in its water, which gives it some electrolytes to fight whatever it has” [P023] and “You have a cold, our remedy might be lime, garlic, salt, and honey, and they mix that up and give to the [sick] bird too” [P002].

The next most common justification was Denial of Responsibility, but only slightly more than one-third of participants gave this justification. For instance, one participant remarked that the responsibility for disease transmission lay with the traffickers: “If it were not illegal, you don’t have to pack it [a songbird shipment] like that…and you can have a bigger cage that you bringing them in, you will have a lower percentage of birds dying from disease” [P008]. Another added, “They only get sick when they coming from South America” [P029].

3.8.5. Injuring animals

Participants indicated broad awareness of animal suffering and mortality in relation to songbird keeping and strong commitment to a norm of not injuring animals. Participants’ awareness of animal suffering was particularly pronounced in relation to the illegal importation of wildlife, such as: “How they have to bring it in is cruelty to the birds” [P007], “they will fit like 10 birds in a cornflakes box, so it's stressful on the birds, but the people transporting it don’t care” [P003], “They will have maybe 100, 200, sometimes 800 birds, and it’s not a big cage…very few birds survive that” [P002], and “hundreds of them in this small thing, that’s why some of them does die” [P032]. Participants commonly reported that a 100% mortality event often resulted if the Coast Guard interfered with songbird trafficking: “Sometimes the Coast Guard coming to meet them [traffickers] and they just dumping it...they dump a whole cage in the sea” [P025].

Participants indicated awareness of animal suffering and mortality as a result of neglect and poor husbandry. For instance, one participant shared, “You have some people with birds and

when you watch the cage, the bottom of the cage is high with shit. That filth is going to get that bird sick" [P023]. Another remarked, "[it] don't make sense getting the bird if you can't take care of it, so it's a problem that everyone have bird now, they into it just for the money" [P014]. Other participants also acknowledged that songbirds are relatively difficult to keep alive even under good conditions. One focus group reflected broadly upon the birds that have died in their care:

> P038: They real easy to die.
> P035: Yeah, if they get stressed out so much, they die. If they get, like, if they had a neighbor start a fire or some kind of thing, and smoke, they die.
> P039: Same, same with usually dying. Because sometimes the Jack Spaniard [a wasp] does come and they will just take them [sic, kill a bird].

Despite broad awareness of animal suffering and mortality, participants also expressed a desire to see songbirds live free of such harms. Reflecting on situations where keepers give poor care, participants explained that they found them to be completely unacceptable, making such exclamations as: "[T]hat is madness" [P024], "I feel sick, sick" [P020], and "It trips me out" [P026]. Most participants also reported that they themselves want to treat their birds well, such as "[the songbird] is in a loving home, so that makes me feel a bit better" [P001] and "I do it for the love of the animals" [P029].

A total of 33 out of 41 participants provided 14 justifications that likely constitute neutralizations of a norm to not harm animals through songbird keeping (Table 14). The most commonly employed justifications were Claim of Entitlement and Denial of Injury, which were respectively employed by approximately one-half or more of all participants. These justifications were evidenced by participants believing they have special knowledge and commitment to meet their birds' care needs, such as "Not how I is doing it…whenever we get birds we treat them right" [P028] and "Most of these guys only care about the money, not like us who love the birds" [P041]. Others indicated that they also have access to expert knowledge to treat unhealthy birds

and prevent serious issues, for instance: “Yeah, I carry him by my cousin [when I] seeing he puffing up and not really flying and thing” and “I don’t need to go to the vet because of my experience and the research that I have done” [P012].

3.9. Discussion

A study of 41 songbird keepers was conducted to qualitatively explore the applicability of Neutralization Theory to explain how persons engage in the harmful keeping of songbirds in Trinidad in the southeastern Caribbean. The findings indicate a majority of research participants are aware that songbird keeping results in legal violations, substantial declines in wild bird populations, zoonotic disease transmissions, and suffering and mortality in captive animals. The findings further indicate that a majority of these participants are committed to norms to prevent and reduce such negative harms. In line with Neutralization Theory, participants provided a range of justifications to reduce feelings of guilt and shame that might arise from the disjuncture between participants’ awareness of consequences and commitment to regulating norms. Accepting that participants were honest in their described commitment to norms, the study indicates a conceptually diverse set of techniques employed among the participants.

Out of 41 participants, 36 participants demonstrated use of 17 justifications to neutralize their known or potential violations of as many as four norms. On average, the most popular justification was Claim of Entitlement, but this was only relatively most popular among participants to account for endangering public health and injuring animals. Other justifications were observed to be more popular as ways to account for specific norm violations, notably Appeal to Higher Loyalties, Claim of Normality, Condemnation of the Condemners, Denial of Injury, and Denial of Responsibility. For instance, Claim of Normality was not used at all in relation to ecosystem harms, while it was a relatively popular justification for violating laws.

Some justifications were not generally popular, but were important to justifying specific norm violations. For instance, Justification by Postponement was used by approximately a quarter of all participants to neutralize legal violations, but not to account for any other violations.

The variable use of neutralization techniques to account for different norm violations yields important insights for Neutralization Theory and its study. Theoretically, it suggests that the theory should be expanded to account for distinct types of norms that a deviant individual might seek to neutralize. Without such distinctions, it is possible that studies of neutralizations will overlook normative commitment as an important mediating factor. For instance, Eliason (2003, 2004) studied neutralizations among illegal hunters and did not differentiate between types of norm violations. However, without consideration of the commitment to a particular norm, such studies possibly conflate neutralizations of legal violations with neutralizations of other harms, such as damaging ecosystems. Such a possibility is suggested by the variable use of justifications across the participants. Thus, the findings suggest that methodological innovations are needed to clearly differentiate between different types of harms and normative commitments. The role-playing game used in the interviews permitted a novel separation of normative considerations and may be one technique to develop for the improved practice of elicitation interviewing.

A key limitation of the findings is that it provides only qualitative information and leaves important knowledge gaps with respect to the entire community of songbird keepers in Trinidad and Tobago. In the future, quantitative studies using scalar questions (e.g., Shields & Whitehall, 1994) should be used to allow for improved comparability of harm awareness, norm commitment, and justification use within and across larger communities. A larger, questionnaire-based survey may yield results representative of the entire community of songbird keepers in

Trinidad and Tobago. Importantly, such quantitative information could help prioritize strategies for intervention projects.

For instance, should the justifications of Denial of Responsibility, Claim of Normality, and Condemnation of the Condemners also be popular across all songbird keepers, local demand reduction may require enforcement reforms. These collectively suggest that there are serious structural issues at play and that any social marketing campaign would need to be paired with enforcement reforms. Notably, participants' accounts identify a range of potential reforms, including improving permitting services and border control. This insight is consistent with emerging perspectives that social marketing should be integrated with more traditional approaches to wildlife demand reduction (Wallen & Daut, 2017).

Additionally, should the Claim of Entitlement also prove popular across the community, it would suggest that a social marketing effort could be developed to reframe songbird keeping as a privilege rather than a right. Approximately half of all participants used this justification to neutralize the injury of animals, yet almost none of the participants had taken their birds to a veterinarian even once. Following common social marketing practices (e.g., Saypanya et al., 2013), a message like "A pet songbird is a privilege, not a right" might be incorporated into billboards, bumper stickers, posters, and radio advertisements to promote broad public discussion and cognitive reframing in potential and current songbird keepers.

Finally, this study provides a response to at least one critique of green criminology as a limited paradigm for the study of harms involving the natural world, non-human species, and the human communities that depend upon them. In particular, the study's qualitative exploration of songbird keepers' neutralizations offers insights for the design of tailored intervention projects to reduce local demand for songbirds, which belies existing critiques that green criminology is

limited in its practical applications (Gibbs et al., 2009). Additionally, this study suggests that Neutralization Theory, which has been critiqued for its own imperfect development (Maruna & Copes, 2005) could be given new utility in applied settings with a comparative harm approach.

3.10. Conclusion

The keeping and trade of songbirds is a relatively harmful activity both globally and locally in the country of Trinidad and Tobago. The study indicates that at least some songbird keepers in Trinidad are well-informed as to harms of songbird keeping and trade and must carefully justify their behaviors to neutralize the norms to which they are committed. However, by examining their justifying accounts, it may be possible to develop strategies to invalidate them and promote guilt and shame for increased avoidance among potential keepers and increased desistance among current keepers. In such a way, it may be possible to end, rather than neutralize, the keeping and trade of songbirds for improved legal compliance, public health, animal welfare, and ecosystem sustainability.

3.11. Acknowledgments

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3.12. Declaration of Interest

We report there are no competing interests to declare.

APPENDICES

APPENDIX A

Neutralization Techniques Identified for Training and Coding

A total of 18 neutralization techniques were employed in the study. Fifteen of these techniques were initially employed in the training of interviewers. This initial set of neutralization techniques was selected based on the experience of the lead researcher, MG, and two research assistants, AH and LB, who had previously engaged in focus group research with wild animal keepers in Trinidad (Chu Foon et al., 2018). An additional three neutralization techniques were later included in the content analysis based on the interviewers' and coders' experiences. These neutralizations are detailed below.

Table 15: Neutralization techniques identified for study through preliminary and primary research.

Nature of Inclusion	Technique	Description	Source Literature
Training & Coding	Appeal to Higher Loyalties	Behavior is justified in service to one's family, friends, or other duties	Sykes and Matza (1957)
Coding	Change of Locus of Control	Behavior is justified as making a change to their behavior would not reduce the resulting harms	Uba & Chatzidakis (2016)
Training & Coding	Claim of Entitlement	Behavior is justified given a special entitlement provided to the individual or their particular social grouping	Coleman (1994)

Table 15 (cont'd).

Training & Coding	Claim of Individuality	Behavior is justified given the individual's more important expression of individuality	Henry & Eaton (1999)
Training & Coding	Claim of Normality	Behavior is justified due to widespread violation of the given norm (i.e., everybody else is doing it)	Coleman (1994)
Training & Coding	Claim of Relative Acceptability	Behavior is justified as there are many people who do far worse things in society	Henry & Eaton (1999)
Training & Coding	Condemnation of the Condemners	Behavior is justified given that people who would condemn such behavior exhibit worse behaviors	Sykes and Matza (1957)
Training & Coding	Defense of Necessity	Behavior is justified as necessary to prevent a greater harm	Minor (1981)
Training & Coding	Defense of Victimization	Behavior is justified as a response to one's own victimization, either as an individual or member of a particular social grouping.	Bryant et al. (2018)
Training & Coding	Denial of Injury	Behavior is justified because it was without harmful consequence, hence there is no victim.	Sykes and Matza (1957)
Coding	Denial of Negative Intent	Behavior is justified as acceptable due to a lack of harmful intent	(Moss, 1989)

Table 15 (cont'd).

Training & Coding	Denial of Responsibility	Behavior is justified because it is caused by forces beyond one's control, such as by accident, mistake, or acts of god.	Sykes and Matza (1957)
Training & Coding	Denial of the Necessity of the Law	Behavior is justified because the law itself is not fair or just.	Coleman (1994)
Training & Coding	Denial of the Victim	Behavior is justified because the victim deserved such harm, hence there is no illegitimate act.	Sykes and Matza (1957)
Training & Coding	Justification by Comparison	Behavior is justified as it is less harmful than other behavior in which they would have otherwise engaged	Cromwell & Thurman (2003)
Training & Coding	Justification by Postponement	Behavior is justified as the person had not yet fully considered the consequences of their behavior	Cromwell & Thurman (2003)
Training & Coding	Metaphor of the Ledger	Behavior is justified given one's other good deeds or admirable character attributes	Klockars (1974)
Coding	Naturalness Argument	Behavior is justified because the consequences correspond with the natural order of the world	Bateson (1989)

These neutralization techniques were available as reference materials for interviewers along with the following sensitizing text:

Neutralization theory suggests that people who act illegally or unethically are still committed to the rules and norms of society. However, these people make exceptions for their unacceptable animal ownership behaviors with internalized logic chains called neutralization techniques.

Neutralization techniques allow individuals to excuse or justify their unacceptable behavior without developing a guilty conscience or negative self-image.

Neutralization theory implies that prior disruption of neutralization techniques through education and other means would reduce illegal and unethical behavior.

APPENDIX B

Codebook for Analysis of Neutralizations of Green Harms

A codebook for the analysis of neutralizations of green harms was developed and applied by MG and LA, with additional support from a research assistant, NV. These codes were applied through the use of NVivo software.

Table 16: A codebook for the analysis of neutralizations of green harms.

Neutralization Analysis of Wild Animal Keepers			The analysis of normative commitment, harm awareness, and justifications associated with the keeping of a target species, organized by norm.		
Code Level 1	Code Level 2	Code Level 3	Code Definition	Rule for Application	Example
Do Not Injure Animals			Any description or discussion of the interviewee's views on the occurrence and prevention of injury to animals.	The text describes the keeper's views on physical and mental harms which a target animal may experience in the wildlife trade and/or when kept as a pet.	
	Commitment		Any description of whether or not the interviewee believes in and practices internalized rules for behavior to prevent injury to animals.	The text describes the keeper's personal beliefs and internalized rules about animal welfare, including those which are supportive of animal welfare, those which are not supportive of animal welfare, and the absence of personal beliefs and internalized rules about animal welfare.	

Table 16 (cont'd).

		Norm Adherent	Any description or discussion of the interviewee as believing in and practicing internalized rules for behavior to prevent harm to animals.	The text describes the keeper as having personal beliefs and internalized rules which support animal welfare.	"I love animals, I worry about them being hurt and want to help them. It's nice seeing them in the wild."
		Norm Challenging	Any description or discussion of the interviewee as believing in and practicing internalized rules that challenge external norms to prevent harm to animals.	The text describes the keeper as having personal beliefs and internalized rules which do not align with external norms to prevent harm to animals. The keeper's own norms provide a challenge to the norm of preventing harm to animals.	"It's an acceptable business practice."
		Norm Ignorant	Any description or discussion of the interviewee as lacking awareness and/or internalized rules for behavior to promote animal welfare.	The text describes the keeper as having no clear personal beliefs and internalized rules about animal welfare. The text describes the keeper as unaware of animal welfare issues.	"I never heard about that before."
		Unknown	Any description or discussion of the interviewee's belief and/or practice of internalized rules for behavior to promote animal welfare which is ambiguous and therefore cannot be placed in the other Commitment categories.	The text describes the keeper as having personal beliefs and internalized about animal welfare which are not clearly in support, not in support, or ignorant.	

Table 16 (cont'd).

	Harm Awareness		Any description of the interviewee's awareness or lack of awareness that animals experience physical injury, mental suffering or shortened lives in the wildlife trade and/or when kept as pets.	The text describes whether or not the keeper is aware that wild animals which are traded as pets experience suffering or mortality at various stages of the trade, including capture, transport, storage, sale, and pet keeping.	
		Harm Aware	Any description of the interviewee's awareness that animals experience physical injury, mental suffering, or shortened lives in the wildlife trade and/or when kept as pets.	The text describes the keeper's awareness that wild animals which are traded as pets experience suffering or mortality at various stages of the trade. These stages include capture, transport, storage, sale, and pet keeping.	"By the time you get the animal it has already suffered."
		Harm Unaware	Any description of the interviewee's lack of awareness that animals experience physical injury, mental suffering, or shortened lives in the wildlife trade and/or when kept as pets.	The text describes the keeper's lack of awareness that wild animals which are traded as pets experience suffering or mortality at various stages of the trade. These stages include capture, transport, storage, sale, and pet keeping.	"I didn't know how they get them."
		Unknown	Any description of the interviewee's awareness or lack of awareness that animals experience physical injury, mental suffering, or shortened lives in the wildlife trade and/or when kept as pets is ambiguous.	The text describes the keeper's awareness or lack of awareness that wild animals which are traded as pets experience suffering or mortality at various stages of the trade, but in such a way that it is unclear whether the keeper is aware or unaware. The stages of the trade include capture, transport, storage, sale, and pet keeping.	

Table 16 (cont'd).

	Justifications		Any description provided by an interview participant that justifies behavior contrary to animal injury prevention, regardless of whether they commit to the norm, are aware of animal injuries, or acknowledge their own guilt	The text describes the justification that the keeper uses to explain their participation in activities or systems that cause harms to captive wild animals	
		Appeal to Higher Loyalties	Any description of how the keeper's beliefs and concerns about animal injury prevention are superseded by obligations to personal loyalties to subgroups of which the person is a member.	The text describes the keeper as acknowledging problems with the way a target animal is obtained or kept, but this concern is secondary to the keeper's obligations or loyalties to a group to which they belong (e.g., family, sporting association, hobbyist group). Applies where the offender is the interviewee and/or when the offender is someone known to the interviewee within the same group.	"I don't like to see birds in cages and think they should be free, but my dad has them in a little cage and I can't make him be any different."
		Change of Locus of Control Argument	Any description of the keeper's belief that one or a few people changing their behavior will not make a difference to animal injury prevention and/or reduction.	The text describes the keeper as believing that refraining from engaging in a harmful action has no meaningful effect on the reduction of harm against animals since harmful actions are so common.	"It doesn't matter if I stop or you stop. Once everybody buying these animals it will continue."
		Claim of Entitlement	Any description of the keeper's belief that animal injury prevention is secondary to a special entitlement provided to the individual or their particular social grouping.	The text describes the keeper's view that they possess special traits that excuse actions that are illegal or otherwise unacceptable.	"I have done my research and I know what I am doing, not like other people who just get the animal and don't know what to do with it, and am the one the animal is bonded to."

Table 16 (cont'd).

		Claim of Individuality	Any description of the keeper's belief that the perpetrator's expression of individuality is more important than animal injury prevention.	The text describes the keeper as believing their love or desire for an animal supersedes legal and moral reasons to refrain from purchasing or keeping the target animal.	"I know you not supposed to keep them, but I wanted one so much so I bought him. They cannot take him away from me."
		Claim of Normality	Any description of the keeper's belief that injury to animals is acceptable due to widespread violation of the laws and/or norm supporting animal injury prevention (i.e., everybody is doing it).	The text describes the keeper as viewing harmful petkeeping practices as acceptable by virtue of being commonplace.	"Everyone in my village has a parrot. We have always fed them bread and milk and and they normal."
		Claim of Relative Acceptability	Any description of the keeper's belief that the deprioritization of animal injury prevention is acceptable because there are many people who do far worse things in society.	The text describes the keeper as finding harmful petkeeping practices acceptable because they think the harm is relatively minor compared to other societal ills.	"I don't keep my animals in small cages and I think I feed them well, and I know some other people's animals are much worse off."
		Condemnation of the Condemners	Any description of the keeper as viewing organizations that may engage in or promote animal injury prevention, particularly those that regulate wildlife and/or pet keeping, as incompetent, corrupt, unfair, or engaging in worse behavior.	The text describes the keeper shifting focus from the offender to the motives and behavior of those who disapprove of harm against animals (e.g., as hypocrites, corrupt, stupid, brutal, spiteful). Under these circumstances the rewards of conformity are based on luck or connections, the law-abiding are reduced in social stature, and the deviance of the offender is eclipsed by the transgressions of the norm enforcers.	"The police are corrupt, taking bribes, selling and dumping animals. Forestry is corrupt and incompetent. The zoo is not good enough."

Table 16 (cont'd).

		Defense of Necessity	Any description of the keeper's belief that actions contrary to animal injury prevention are justified by certain circumstances, therefore the offender does not have to feel guilty or ashamed although their actions might be considered wrong usually.	The text describes the keeper as viewing their actions as necessary to the wellbeing of the target animal, even though the actions may be illegal or morally questionable.	"The animal was suffering so I had to buy it to rescue it."
		Defense of Victimization	Any description of the keeper's belief that actions contrary to animal injury prevention are considered to be acceptable as a response to one's own victimization, either as an individual or member of a particular social grouping.	The text describes the keeper as viewing actions that cause harm to animals as an acceptable response to institutional or social factors that place the keeper at a disadvantage.	"I tried to get the permit, but the process was very unclear and Forestry never came to my house, so I didn't try with my other animals. They made me feel like a criminal. People are afraid their animals will be taken away, that is why they do not even try."
		Denial of Injury	Any description of the keeper's belief that actions contrary to animal injury prevention cause no real harm, and are a victimless crime.	The text describes the keeper committing actions that cause harm to animals, but the keeper denies the validity of that harm. Reinforced when society agrees with the offender.	"We let it go. I think it could look after itself, find food and thing."
		Denial of Necessity of the Law	Any description of the keeper's belief that actions contrary to animal injury prevention are acceptable because the law itself is not fair or just.	The text describes the keeper's view that the laws that govern pet keeping are unfair, unjust, or otherwise inappropriate.	"The permitting system is impossible. You are supposed to get a permit before you have the animal but you need an animal to get the permit. It makes no sense."

Table 16 (cont'd).

		Denial of Negative Intent	Any description of the keeper's belief that actions that are contrary to animal injury prevention are considered acceptable due to a lack of malicious intent.	The text describes the keeper's claim that harmful actions that they or someone else committed were morally acceptable since the action was not intended to cause harm. Acts may be described as committed for the enjoyment of the perpetrator without malice.	"I just wanted one to train it to dance like in the videos, I wouldn't have gotten it if I had known how they catch them."
		Denial of Responsibility	Any description of the keeper's belief that the perpetrator is helpless against external forces that cause them to act in ways contrary to animal injury prevention, therefore the perpetrator is not responsible for the resulting harms.	The text describes the keeper as claiming a lack of control over a situation that led to or involves the keeper having the target animal either illegally or in substandard conditions.	"I didn't bring an illegal animal into Trinidad, it just came to my house, it was already in the country."
		Denial of the Victim	Any description of the keeper's belief that harm caused by acting in ways contrary to animal injury prevention are a justified form of retaliation or punishment.	The text describes the keeper as believing that the animal deserves harm in retaliation to something the animal has done, therefore the harm is justified.	
		Justification by Comparison	Any description of the keeper's belief that acting in ways contrary to typical animal injury prevention is justified because it is less harmful than alternative behaviors they would have engaged in.	The text describes the keeper as viewing their ownership of the animal as a better option to alternative behaviors that would be more harmful to animals."	"If I did not have this animal, I think I would have gotten another that is less suited for captivity."

Table 16 (cont'd).

		Justification by Postponement	Any description of the keeper having nothing substantial to say about acting in ways contrary to animal injury prevention because the person has chosen to not yet think about the harms of their actions.	The text describes the keeper as thinking only of their own desire for the target animal and neglecting to consider the repercussions of their actions in the obtaining or keeping of the target animal. May be done willfully or thoughtlessly.	"I had heard there might be a problem with having a baby monkey, so I just didn't think about it. I knew if I did I wouldn't get the monkey."
		Metaphor of the Ledger	Any description of the keeper's belief that a person's good actions can outweigh their bad ones, therefore acting in ways contrary to animal injury prevention is acceptable given the perpetrator's other good deeds and/or admirable character attributes.	The text describes the keeper acknowledging their own failures as a pet keeper, either with a past pet or current pet. The text also describes the keeper as attempting to balance and/or atone for those failures by offering enhanced care to a current or future pet.	"I feel really bad that it died, but I got a new one and I am going to look after this one properly, to make up for what happened."
		Naturalness Argument	Any description of the keeper's belief that acting in ways contrary to animal injury prevention is acceptable because the harms resulting from the actions conform to what the individual believes is the natural order of the world.	The text describes the keeper as believing that some things that might be considered harmful to animals are a natural part of life and/or the world, therefore they see no need to prevent these harms.	"The birds can fly here from Venezuela anyway, so it's not a big deal if people bring them and let them go. There is room for them in the forest."
Do Not Damage Ecosystems			Any description or discussion of the interviewee's views on the prevention of anthropogenic damages to ecosystems.	The text describes the keeper's views on harms that may happen to ecosystems due to the wildlife trade and/or wild animals being kept as pets.	

Table 16 (cont'd).

	Commitment		Any description of whether or not the interviewee believes in and practices internalized rules for behavior to prevent damages to ecosystems.	The text describes the keeper's personal beliefs and internalized rules about ecosystem harms, including those that oppose ecosystem harms, those that support ecosystem harms, and the absence of personal beliefs and internalized rules about ecosystem harms.	
		Norm Adherent	Any description or discussion of the interviewee as believing in and practicing internalized rules for behavior to prevent damages to ecosystems.	The text describes the keeper as having personal beliefs and internalized rules that support the prevention of ecosystem harms.	"I love nature. Trinidad and Tobago has a lot of biodiversity and it's important to protect it."
		Norm Challenging	Any description or discussion of the interviewee as believing in and practicing internalized rules that challenge external norms to prevent damages to ecosystems.	The text describes the keeper as having personal beliefs and internalized rules that do not align with external norms to prevent ecosystem harms. The keeper's own norms provide a challenge to the norm of preventing ecosystem harms.	"Saying it is wrong for animals from different places to mix is like saying it is wrong for people from different places to mix."
		Norm Ignorant	Any description or discussion of the interviewee as lacking awareness and/or internalized rules for behavior to prevent damages to ecosystems.	The text describes the keeper as having no clear personal beliefs and internalized rules about ecosystem harms. The text describes the keeper as unaware of issues surrounding ecosystem harms.	"I never heard about invasive species before."

Table 16 (cont'd).

		Unknown	Any description or discussion of the interviewee's belief and/or practice of internalized rules for behavior related to ecosystem damages that is ambiguous and therefore cannot be placed in the other Commitment categories.	The text describes the keeper as having personal beliefs and internalized about animal welfare that are not clearly in support, not in support, or ignorant.	
	Harm Awareness		Any description of the interviewee's awareness or lack of awareness that the wildlife trade and/or keeping wild animals as pets leads to damages to ecosystems.	The text describes whether or not the keeper is aware that the trade and keeping of wild animals as pets cause harm to ecosystems as a result of excessive removal or non-native translocation.	
		Harm Aware	Any description of the interviewee's awareness that the wildlife trade and/or keeping wild animals as pets leads to species declines or introductions in ecosystems.	Any description of the interviewee's lack of awareness that the wildlife trade and/or keeping wild animals as pets leads to damages to ecosystems.	"The red-eared sliders are feisty, they take all the space and food from the gallop if you let them."
		Harm Unaware	Any description of the interviewee's lack of awareness that the wildlife trade and/or keeping wild animals as pets leads to damages in ecosystems.	The text describes the keeper's lack of awareness that the trade and keeping of wild animals as pets results in species declines or introductions in ecosystems.	"Those monkeys are not from here? I always see them so I thought they were."

Table 16 (cont'd).

		Unknown	Any description of the interviewee's awareness or lack of awareness that the wildlife trade and/or keeping wild animals as pets leads to damages to ecosystems.	The text describes the keeper's awareness or lack of awareness that the wildlife trade and/or keeping wild animals as pets leads to species declines or introductions in ecosystems, but in such a way that it is unclear whether the keeper is aware or unaware.	
	Justifications		Any description provided by an interview participant that justifies behavior contrary to ecosystem damage prevention, regardless of their commitment to the norm or awareness of the harms	The text describes the justifications, rationalizations, and/or neutralizations which the keeper uses to excuse their participation in activities or systems which harm ecosystems.	
		Appeal to Higher Loyalties	Any description of how the keeper's beliefs and concerns about ecosystem damage prevention are superseded by obligations to personal loyalties to subgroups of which the person is a member.	The text describes the keeper as acknowledging problems arising from ecosystem harms, but this concern is secondary to the keeper's obligations or loyalties to a group to which they belong (e.g., family, sporting association, hobbyist group. Applies where the offender is the interviewee and/or when the offender is someone known to the interviewee within the same group.	"Everybody in the community knows they coming from Venezuela, but where else are we supposed to get bullfinches?"
		Change of Locus of Control Argument	Any description of the keeper's belief that one or a few people changing their behavior will not make a difference to ecosystem damage prevention and/or reduction.	The text describes the keeper as believing that refraining from engaging in a harmful action has no meaningful effect on ecosystem harm reduction since harmful actions are so common.	"If it's only me who not doing it, and everyone else letting their turtles go, then it doesn't matter. They will be out there."

Table 16 (cont'd).

		Claim of Entitlement	Any description of the keeper's belief that ecosystem damage prevention is secondary to a special entitlement provided to the individual or their particular social grouping.	The text describes the keeper's view that they possess special traits that excuse actions that result in ecosystem harm.	"I can do what I want with my own land."
		Claim of Individuality	Any description of the keeper's belief that the perpetrator's expression of individuality is more important than ecosystem damage prevention.	The text describes the keeper as believing their desire to engage in a practice that results in ecosystem harm supersedes legal and moral reasons to refrain from the harmful practice.	"I have been keeping birds for over 20 years."
		Claim of Normality	Any description of the keeper's belief that harm to animals is acceptable due to widespread violation of the laws and/or social norm supporting ecosystem damage prevention (i.e., everybody is doing it).	The text describes the keeper as viewing practices that are harmful to ecosystems as acceptable by virtue of being commonplace.	"Everybody catches birds, so why would I feel bad."
		Claim of Relative Acceptability	Any description of the keeper's belief that the deprioritization of ecosystem damage prevention is acceptable because there are many people who do far worse things in society.	The text describes the keeper as finding ecosystem harm acceptable because they think the harm is relatively minor compared to other societal ills.	"You cut the tree to get the bird, that is normal."

Table 16 (cont'd).

		Condemnation of the Condemners	Any description of the keeper as viewing organizations that may engage in or promote ecosystem damage prevention, particularly those that regulate wildlife and/or pet keeping, as incompetent, corrupt, unfair, or engaging in worse behavior.	The text describes the keeper shifting focus from the offender to the motives and behavior of those who disapprove of harm against ecosystems (e.g., as hypocrites, corrupt, stupid, brutal, spiteful). Under these circumstances the rewards of conformity are based on luck or connections, the law abiding are reduced in social stature, and the deviance of the offender is eclipsed by the transgressions of the norm enforcers.	"They want to fine people but it's themself hunting the animals and mashing up the forest. They too hypocritical."
		Defense of Necessity	Any description of the keeper's belief that actions contrary to ecosystem damage prevention are justified by certain circumstances, therefore the offender does not have to feel guilty or ashamed although their actions might be considered wrong usually.	The text describes the keeper as viewing their actions as necessary to the wellbeing of the ecosystem, even though the actions may be illegal or morally questionable.	"They have been hunted out in the wild, the only way they will survive is if people keep them."
		Defense of Victimization	Any description of the keeper's belief that actions contrary to ecosystem damage prevention are considered to be acceptable as a response to one's own victimization, either as an individual or member of a particular social grouping.	The text describes the keeper as viewing actions that cause harm to ecosystems as an acceptable response to institutional or social factors that place the keeper at a disadvantage.	"But what else am I going to do? You know how many times I try to get in touch with the right people and they ignore me?"

Table 16 (cont'd).

		Denial of Injury	Any description of the keeper's belief that actions contrary to ecosystem damage prevention cause no real harm, and are a victimless crime.	The text describes the keeper committing actions that cause harm to ecosystems, but the keeper denies the validity of that harm. Reinforced when society agrees with the offender.	"It not hurting anything to have those foreign macaws living here. It have room for them in the forest."
		Denial of Necessity of the Law	Any description of the keeper's belief that actions contrary to ecosystem damage prevention are acceptable because the law itself is not fair or just.	The text describes the keeper's view that the laws that govern the extraction of local wildlife and/or the introduction of imported wildlife are unfair, unjust, or otherwise inappropriate.	"They want to fine you just for having a few imported animals? That is madness."
		Denial of Negative Intent	Any description of the keeper's belief that actions which are contrary to ecosystem damage prevention are considered acceptable due to a lack of malicious intent.	The text describes the keeper's claim that harmful actions that they or someone else committed were morally acceptable since the action was not intended to cause harm. Acts may be described as committed for the enjoyment of the perpetrator without malice.	"I just bought it cuz I wanted it, I wasn't trying to do anything bad."
		Denial of Responsibility	Any description of the keeper's belief that the perpetrator is helpless against external forces that cause them to act in ways contrary to ecosystem damage prevention, therefore the perpetrator is not responsible for the resulting harms.	The text describes the keeper as claiming a lack of control over a situation that led to or involves the keeper participating in systems or events that cause ecosystem harms.	"I couldn't help it when the monkey ran away, it knocked over the cage and get out."
		Denial of the Victim	Any description of the keeper's belief that harm caused by acting in ways contrary to ecosystem damage prevention are a justified form of retaliation or punishment.	The text describes the keeper as believing that harms against the ecosystem are justified retaliation for a real or imagined harm to the perpetrator.	"He said the monkey came and mash up his garden, so now he leaves poison for any animal that comes."

Table 16 (cont'd).

		Justification by Comparison	Any description of the keeper's belief that acting in ways contrary to typical ecosystem damage prevention is justified because it is less harmful than alternative behaviors they would have engaged in.	The text describes the keeper as viewing the ecosystem harms in which they participate as a better option compared to alternative behaviors which would be more harmful.	"If I had not caged them, they would be in the wild spreading non-local genes."
		Justification by Postponement	Any description of the keeper having nothing substantial to say about acting in ways contrary to ecosystem damage prevention because the person has chosen to not yet think about the harms of their actions.	The text describes the keeper as thinking only of their own desire and neglecting to consider the repercussions of their actions that result in ecosystem harm. May be done willfully or thoughtlessly.	"I know they say something about it, but I never thought about what happens when they take all those birds from the forest."
		Metaphor of the Ledger	Any description of the keeper's belief that a person's good actions can outweigh their bad ones, therefore acting in ways contrary to ecosystem damage prevention is acceptable given the perpetrator's other good deeds and/or admirable character attributes.	The text describes the keeper acknowledging their own failures to prevent ecosystem harm. The text also describes the keeper as attempting to balance and/or atone for those failures by improving their behavior.	"When I was small I used to go and buy the turtles and let them go. Now I know they are invasive so I try to catch them and keep them instead."
		Naturalness Argument	Any description of the keeper's belief that acting in ways contrary to ecosystem damage prevention is acceptable because the harms resulting from the actions conform to what the individual believes is the natural order of the world.	The text describes the keeper as believing that some things that might be considered harmful to ecosystems are a natural part of life and/or the world, therefore they see no need to prevent these harms.	"Animals have always come here from Venezuela, this is the same thing. It is how it works here."

Table 16 (cont'd).

Do Not Break Wildlife Laws			Any description or discussion of the interviewee's views on illegal activities associated with wild animal keeping.	The text describes the keeper's views on harms that may happen due to the illegal wildlife trade and/or the illegal keeping of wild animals as pets.	
	Commitment		Any description of whether or not the interviewee believes in and practices internalized rules for behavior to prevent engaging in illegal activities.	The text describes the keeper's personal beliefs and internalized rules about breaking the law, including those that are supportive of engaging in illegal activities, those that are not supportive of engaging in illegal activities, and the absence of personal beliefs and internalized rules about engaging in illegal activities.	
		Norm Adherent	Any description or discussion of the interviewee as believing in and practicing internalized rules for behavior to prevent engaging in illegal activities.	The text describes the keeper as having personal beliefs and internalized rules to prevent engaging in illegal activities.	"Well of course you should break the law."
		Norm Challenging	Any description or discussion of the interviewee as believing in and practicing internalized rules that challenge external norms to prevent engaging in illegal activities.	The text describes the keeper as having personal beliefs and internalized rules that do not align with external norms to prevent engaging in illegal activities. The keeper's own norms provide a challenge to the norm of preventing engaging in illegal activities.	"That law is foolish, so why should I follow it?"
		Norm Ignorant	Any description or discussion of the interviewee as lacking awareness and/or internalized rules for behavior to prevent engaging in illegal activities.	The text describes the keeper as having no clear personal beliefs and internalized rules about engaging in illegal activities. The text describes the keeper as unaware of legal issues associated with their actions.	"I didn't know that it was illegal."

Table 16 (cont'd).

		Unknown	Any description or discussion of the interviewee's belief and/or practice of internalized rules for behavior to prevent engaging in illegal activities that is ambiguous and therefore cannot be placed in the other Commitment categories.	The text describes the keeper as having personal beliefs and internalized rules about engaging in illegal activities that are not clearly in support, not in support, or ignorant.	
	Harm Awareness		Any description of the interviewee's awareness or lack of awareness that wild animals are illegally traded and/or kept as pets.	The text describes whether or not the keeper is aware that wild animals are illegally traded and/or kept as pets.	
		Harm Aware	Any description of the interviewee's awareness that wild animals are illegally traded and/or kept as pets.	The text describes the keeper's awareness that wild animals are illegally traded and/or kept as pets.	"You have to get the permits otherwise you are not supposed to have them."
		Harm Unaware	Any description of the interviewee's lack of awareness that wild animals are illegally traded and/or kept as pets harmed in the wildlife trade and/or when kept as pets.	The text describes the keeper's lack of awareness that wild animals are illegally traded and/or kept as pets.	"I never heard about no permit."
		Unknown	Any description of the interviewee's awareness or lack of awareness that wild animals are illegally traded and/or kept as pets that is ambiguous.	The text describes the keeper's awareness or lack of awareness that wild animals are illegally traded and/or kept as pets, but in such a way that it is unclear whether the keeper is aware or unaware.	

Table 16 (cont'd).

	Justifications		Any description provided by an interview participant that justifies illegal behavior, regardless of their commitment to the norm or awareness of the harms	The text describes the justifications, rationalizations, and/or neutralizations that the keeper uses to excuse their participation in illegal activities or systems associated with wildlife trafficking and illegal pet keeping.	
		Appeal to Higher Loyalties	Any description of how the keeper's beliefs and concerns about participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping are superseded by obligations to personal loyalties to subgroups of which the person is a member.	The text describes the keeper as acknowledging problems with participating in wildlife crime, but this concern is secondary to the keeper's obligations or loyalties to a group to which they belong (e.g., family, sporting association, hobbyist group). Applies where the offender is the interviewee and/or when the offender is someone known to the interviewee within the same group.	"I told my mom about the permit but she never tried to get it. The monkey is part of our family though so it's not like we would want to take the risk that they might take him away."
		Change of Locus of Control Argument	Any description of the keeper's belief that one or a few people changing their behavior will not make a difference to attenuating illegal activities or systems associated with wildlife trafficking and illegal pet keeping.	The text describes the keeper as believing that refraining from engaging in an illegal action has no meaningful effect on wildlife crime reduction since wildlife crimes are so common.	"So many people does be buying and selling these animals illegally, what difference it go make if a few people don't buy as long as other people still doing it?"

Table 16 (cont'd).

		Claim of Entitlement	Any description of the keeper's belief that eschewing illegal activities or systems associated with wildlife trafficking and illegal pet keeping is secondary to a special entitlement provided to the individual or their particular social grouping.	The text describes the keeper's view that they possess special traits that excuse actions that are illegal or otherwise unacceptable.	"I does move real good with the police where I living. They done see all my birds and never tell me nothing."
		Claim of Individuality	Any description of the keeper's belief that the perpetrator's expression of individuality is more important than eschewing illegal activities or systems associated with wildlife trafficking and illegal pet keeping.	The text describes the keeper as believing their love or desire for an animal supersedes legal reasons to refrain from purchasing or keeping the target animal.	"Nobody could take my bird from me. I love it. It would be cruel to confiscate it."
		Claim of Normality	Any description of the keeper's belief that participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping is acceptable due to widespread violation of the laws and/or social norm supporting animal injury prevention (i.e., everybody is doing it).	The text describes the keeper as viewing wildlife crime as acceptable by virtue of being commonplace.	"Real people don't have a permit, so why would I get in trouble for that."

Table 16 (cont'd).

		Claim of Relative Acceptability	Any description of the keeper's belief that participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping is acceptable because there are many people who do far worse things in society.	The text describes the keeper as finding illegal wild pet keeping and trafficking acceptable because they think the harm is relatively minor compared to other societal ills.	"It have murder and robbery happening every day, how people supposed to care about a few animals coming in."
		Condemnation of the Condemners	Any description of the keeper as viewing organizations that may combat illegal activities or systems associated with wildlife trafficking and illegal pet keeping as incompetent, corrupt, unfair, or engaging in worse behavior.	The text describes the keeper shifting focus from the offender to the motives and behavior of those who disapprove of wildlife crime (e.g., as hypocrites, corrupt, stupid, brutal, spiteful). Under these circumstances the rewards of conformity are based on luck or connections, the law abiding are reduced in social stature, and the deviance of the offender is eclipsed by the transgressions of the norm enforcers.	"The police are corrupt."
		Defense of Necessity	Any description of the keeper's belief that illegal activities or systems associated with wildlife trafficking and illegal pet keeping are justified by certain circumstances, therefore the offender does not have to feel guilty or ashamed although their actions might be considered wrong usually.	The text describes the keeper as viewing the offender's illegal actions as necessary to the wellbeing of the target animal or the keeper, even though the actions may be illegal.	"I know it's illegal, but I had to buy the animal otherwise it would have suffered."

Table 16 (cont'd).

		Defense of Victimization	Any description of the keeper's belief that participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping are considered to be acceptable as a response to one's own victimization, either as an individual or member of a particular social grouping.	The text describes the keeper as viewing wildlife crime as an acceptable response to institutional or social factors that place the keeper at a disadvantage.	"When you go ask about the permit they telling you all kind of thing to make you feel like a criminal, and you worry they going to take your animal. That is why I never went back."
		Denial of Injury	Any description of the keeper's belief that illegal activities or systems associated with wildlife trafficking and illegal pet keeping cause no real harm, and are victimless crimes.	The text describes the keeper committing wildlife crime, but the keeper denies the validity of that harm. Reinforced when society agrees with the offender.	"It's not hurting anyone to have these animals."
		Denial of Necessity of the Law	Any description of the keeper's belief that illegal activities or systems associated with wildlife trafficking and illegal pet keeping are acceptable because the law itself is not fair or just.	The text describes the keeper's view that the laws that govern pet keeping are unfair, unjust, or otherwise inappropriate.	"They want to take away people's animals after they've had them for so long, it's not right."
		Denial of Negative Intent	Any description of the keeper's belief that illegal activities or systems associated with wildlife trafficking and illegal pet keeping are considered acceptable due to a lack of malicious intent.	The text describes the keeper's claim that illegal actions that they or someone else committed were morally acceptable since the action was not intended to cause harm. Acts may be described as committed for the enjoyment of the perpetrator without malice.	"I wasn't trying to do anything wrong, I just wanted a pet."

Table 16 (cont'd).

		Denial of Responsibility	Any description of the keeper's belief that the perpetrator is helpless against external forces which cause them to participate in illegal activities or systems associated with wildlife trafficking and illegal pet keeping, therefore the perpetrator is not responsible for the resulting harms.	The text describes the keeper as claiming a lack of control over a situation which led to or involves the keeper having the target animal illegally.	"I didn't break any law, they just dropped the parrot by my house and I took it."
		Denial of the Victim	Any description of the keeper's belief that harms caused by illegal activities or systems associated with wildlife trafficking and illegal pet keeping are a justified form of retaliation or punishment.	The text describes the keeper as believing that the animal deserves illegal harm in retaliation to something the animal has done, therefore the harm is justified.	"When my mother saw how the monkey mash up the kitchen she beat it. Well, he never do that again."
		Justification by Comparison	Any description of the keeper's belief that participation in illegal activities or systems associated with wildlife trafficking and illegal pet keeping is justified because it is less harmful than alternative behaviors they would have engaged in.	The text describes the keeper as viewing their illegal ownership of the animal as a better option compared to alternative behaviors which would be more harmful.	"I know that man does bring them illegally, but if I did not buy them, he might be selling guns."

Table 16 (cont'd).

		Justification by Postponement	Any description of the keeper having nothing substantial to say about illegal activities or systems associated with wildlife trafficking and illegal pet keeping because the person has chosen to not yet think about the harms of their actions.	The text describes the keeper as thinking only of their own desire for the target animal and neglecting to consider the repercussions of their actions in the illegal obtaining or keeping of the target animal. May be done willfully or thoughtlessly.	"I know they say something about it, I wasn't thinking about that when I bought it."
		Metaphor of the Ledger	Any description of the keeper's belief that a person's good actions can outweigh their bad ones, therefore participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping is acceptable given the perpetrator's other good deeds and/or admirable character attributes.	The text describes the keeper acknowledging their own failures as the keeper of an illegal pet, either with a past pet or current pet. The text also describes the keeper as attempting to balance and/or atone for those failures by making efforts to obtain the appropriate legal permissions (e.g., permits) for a current or future pet.	"Well, I had my first one for 15 years with no permit, but when I found out about it I tried to get it, and I got it for this one too. The main thing is I looking after them properly, they happy."
		Naturalness Argument	Any description of the keeper's belief that participating in illegal activities or systems associated with wildlife trafficking and illegal pet keeping is acceptable because the harms resulting from the actions conform to what the individual believes is the natural order of the world.	The text describes the keeper as believing that some things which might be considered wildlife crimes are natural part of life and/or the world, therefore they see no need to prevent these harms.	"People have pets, that's just how it is. All this regulation is nonsense."

Table 16 (cont'd).

Do Not Endanger Public Health			Any description or discussion of the interviewee's views on the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper's views on harms to public health which may result from the wildlife trade and/or keeping wild animals as pets.	
	Commitment		Any description of whether or not the interviewee believes in and practices internalized rules for behavior to prevent the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper's personal beliefs and internalized rules to prevent the endangerment of public health, including those which are supportive of preventing endangering public health, those which are not supportive of preventing endangering public health, and the absence of personal beliefs and internalized rules about endangering public health.	
		Norm Adherent	Any description or discussion of the interviewee as believing in and practicing internalized rules to prevent the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper as having personal beliefs and internalized rules to prevent endangering public health.	"I keep the new ones separate from the others, until I'm sure they are ok."

Table 16 (cont'd).

		Norm Challenging	Any description or discussion of the interviewee as believing in and practicing internalized rules that challenge external norms to prevent the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper as having personal beliefs and internalized rules which do not align with external norms to prevent endangering public health. The keeper's own norms provide a challenge to the norm of preventing endangering public health.	"I always playing with them and they eat from my hand and I never get sick yet."
		Norm Ignorant	Any description or discussion of the interviewee as lacking awareness and/or internalized rules for behavior to prevent the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper as having no clear personal beliefs and internalized rules about endangering public health. The text describes the keeper as unaware of public health issues associated with their actions.	"Zoonoses? That is my first time hearing about that."
		Unknown	Any description or discussion of the interviewee's belief and/or practice of internalized rules for behavior to prevent the endangerment of public health caused by the wildlife trade and/or keeping wild animals as pets, which is ambiguous and therefore cannot be placed in the other Commitment categories.	The text describes the keeper as having personal beliefs and internalized rules about endangering public health that are not clearly in support, not in support, or ignorant.	
	Harm Awareness		Any description of the interviewee's awareness or lack of awareness that public health is endangered by the wildlife trade and/or keeping wild animals as pets.	The text describes whether or not the keeper is aware that diseases are transmitted as a result of the wildlife trade and/or keeping wild animals as pets.by the wildlife trade and/or keeping wild animals as pets.	

Table 16 (cont'd).

		Harm Aware	Any description of the interviewee's awareness that public health is endangered as a result of the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper's awareness that public health is endangered as a result of the wildlife trade and/or keeping wild animals as pets.	"I have heard about the monkeys and how they can give sicknesses to humans."
		Harm Unaware	Any description of the interviewee's lack of awareness that public health is endangered as a result of the wildlife trade and/or keeping wild animals as pets.	The text describes the keeper's lack of awareness that diseases are transmitted as a result of the wildlife trade and/or keeping wild animals as pets.	"I never knew that red eared sliders carry salmonella."
		Unknown	Any description of the interviewee's awareness or lack of awareness that public health is endangered as a result of the wildlife trade and/or keeping wild animals as pets, but in a way that is ambiguous.	The text describes the keeper's awareness or lack of awareness that diseases are transmitted as a result of the wildlife trade and/or keeping wild animals as pets, but in such a way that is unclear whether the keeper is aware or unaware.	
	Justifications		Any description provided by an interview participant that justifies endangering public health, regardless of their commitment to the norm or awareness of the consequence	The text describes the justifications, rationalizations, and/or neutralizations that the keeper uses to excuse public health risks caused by their participation in the harmful wildlife trade.	

Table 16 (cont'd).

		Appeal to Higher Loyalties	Any description of how the keeper's beliefs and concerns about endangering public health are superseded by obligations to personal loyalties to subgroups of which the person is a member.	The text describes the keeper as acknowledging problems with public health risks caused by participating in the harmful wildlife trade, but this concern is secondary to the keeper's obligations or loyalties to a group to which they belong (e.g., family, sporting association, hobbyist group). Applies where the offender is the interviewee and/or when the offender is someone known to the interviewee within the same group.	"Maybe I should have kept it away until I knew it wasn't sick, but she wanted it so much I couldn't wait."
		Change of Locus of Control Argument	Any description of the keeper's belief that one or a few people changing their behavior will not make a difference in the endangerment of public health.	The text describes the keeper as believing that refraining from endangering public health by participating in the harmful wildlife trade has no meaningful effect on the reduction of public health risk since wildlife crimes are so common.	"I keep don't my parrot out by just anybody, but what difference that making when my neighbor's chickens always in my yard. Diseases could pass."
		Claim of Normality	Any description of the keeper's belief that endangering public health is acceptable due to widespread violation of the laws and/or social norm supporting animal injury prevention (i.e., everybody is doing it).	The text describes the keeper as viewing public health risks caused by participating in the harmful wildlife trade as acceptable by virtue of being commonplace.	"Nobody quarantines their birds, so its normal."

Table 16 (cont'd).

		Claim of Entitlement	Any description of the keeper's belief that reducing the risk to public health is secondary to a special entitlement provided to the individual or their particular social grouping to keep animals.	The text describes the keeper's view that they possess special traits that excuse actions that endanger public health or are otherwise unacceptable.	"I read about it, so even though I got him when he was a baby when he reached the right age I know to take him for his vaccinations."
		Claim of Individuality	Any description of the keeper's belief that the perpetrator's expression of individuality as a keeper is more important than reducing the risk to public health.	The text describes the keeper as believing their love or desire for an animal supersedes the public health risks posed by purchasing or keeping the target animal.	"Well, if he getting sick I getting sick too. I cannot do without him."
		Claim of Relative Acceptability	Any description of the keeper's belief that endangering public health is acceptable because there are many people who do far worse things in society.	The text describes the keeper as finding public health risks acceptable because they think the harm is relatively minor compared to other societal ills.	"Why people worried about that when there are bigger things to worry about?"
		Condemnation of the Condemners	Any description of the keeper as viewing organizations that may combat public health risks as incompetent, corrupt, unfair, or engaging in worse behavior.	The text describes the keeper shifting focus from the offender to the motives and behavior of those who disapprove of public health risks caused by the wildlife trade (e.g., as hypocrites, corrupt, stupid, brutal, spiteful). Under these circumstances the rewards of conformity are based on luck or connections, the law abiding are reduced in social stature, and the deviance of the offender is eclipsed by the transgressions of the norm enforcers.	"They only want you to have to quarantine your pets so that they can charge you and take your money."

Table 16 (cont'd).

		Defense of Necessity	Any description of the keeper's belief that public health risks are justified by certain circumstances, therefore the offender does not have to feel guilty or ashamed although their actions might be considered wrong usually.	The text describes the keeper as viewing the offender's endangerment of public health as necessary to the wellbeing of the target animal or the keeper.	"Oh yes, he is so spoiled that he eats from the same plate as me. If he doesn't he won't eat."
		Defense of Victimization	Any description of the keeper's belief that the public health risks they produce are acceptable due to one's own victimization, either as an individual or member of a particular social grouping.	The text describes the keeper as viewing endangering public health as an acceptable response to institutional or social factors that place the keeper at a disadvantage.	"I am not a bigshot, I try my best but there is no other way for me to do this."
		Denial of Injury	Any description of the keeper's belief that public health risks cause no real harm and are victimless crimes.	The text describes the keeper committing acts that pose public health risks, but the keeper denies the validity of that harm. Reinforced when society agrees with the offender.	"When he was sick, I put the other one with him for company, to make him feel better."
		Denial of Necessity of the Law	Any description of the keeper's belief that public health risks are acceptable because the law itself is not fair or just.	The text describes the keeper's view that the laws that govern quarantine or other procedures associated with wild pet keeping are unfair, unjust, or otherwise inappropriate.	"They don't need any quarantine, it only stresses the animals."
		Denial of Negative Intent	Any description of the keeper's belief that public health risks associated are considered acceptable due to a lack of malicious intent.	The text describes the keeper's claim that actions posing a public health risk that they or someone else committed were morally acceptable since the action was not intended to cause harm. Acts may be described as committed for the enjoyment of the perpetrator without malice.	"I didn't know about how many die coming here, I just liked the pretty song."

Table 16 (cont'd).

		Denial of Responsibility	Any description of the keeper's belief that the perpetrator is helpless against external forces that cause them to participate in activities or systems that endanger public health, therefore the perpetrator is not responsible for the resulting harms.	The text describes the keeper as claiming a lack of control over a situation that led to or involves the public health risks posed by the target animal.	"When she came, she was sneezing. It wasn't my fault that was just how she came."
		Denial of the Victim	Any description of the keeper's belief that the endangerment of public health risks is a justified form of retaliation or punishment.	The text describes the keeper as believing that the public health risks posed by or to the target animal is a deserved retaliation to a perceived insult or slight, therefore the harm is justified.	"It sounds cruel, but better all the animals die than come here and infect my animals."
		Justification by Comparison	Any description of the keeper's belief that public health risks are justified because they are less harmful than alternative behaviors they would have engaged in.	The text describes the keeper as viewing the public health risks caused by ownership of the target animal as a better option compared to alternative behaviors that would be more harmful.	"I know there is a risk that monkeys could get people sick, but having him saved my life from drugs which had a higher disease risk to me."
		Justification by Postponement	Any description of the keeper having nothing substantial to say about public health risks because the person has chosen to not yet think about the harms of their actions.	The text describes the keeper as thinking only of their own desire for the target animal and neglecting to consider the public health risks associated with the illegal obtaining or keeping of the target animal. May be done willfully or thoughtlessly.	"I just bought it, I did not think it could be sick until after."

Table 16 (cont'd).

		Metaphor of the Ledger	Any description of the keeper's belief that a person's good actions can outweigh their bad ones, therefore participating in activities or systems that cause public health risk is acceptable given the perpetrator's other good deeds and/or admirable character attributes.	The text describes the keeper acknowledging their own failures in endangering public health as the keeper of an illegal pet, either with a past pet or current pet. The text also describes the keeper as attempting to balance and/or atone for those failures by making efforts to reduce the public health risks involved with a current or future pet.	"One time, one of my birds got sick and it spread and 11 died. Since then, I always quarantine and give them the best vitamins."
		Naturalness Argument	Any description of the keeper's belief that the endangerment of public health is acceptable because the harms resulting from the actions conform to what the individual believes is the natural order of the world.	The text describes the keeper as believing that some things that might be considered public health risks are a natural part of life and/or the world, therefore they see no need to prevent these harms.	"You have to learn a lot to take care of them, they can get all kinds of illnesses, but that is just a normal part of it.

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CHAPTER 4

AN ASSESSMENT OF THE HARMFUL SONGBIRD TRADE IN TRINIDAD AND TOBAGO AND THE WIDER WORLD

> In spite of official limitations, many people openly flout the law by trapping out of season, using bird-lime for trapping, and keeping birds in too small a cage. Along with the constant encroachment on habitat, the unchecked trapping of male finches, both *Sporophila* and *Oryzoborus*, will undoubtedly result in the complete extinction in Trinidad within a decade or so of all of these species, except perhaps *S. minuta*.
>
> —ffrench (1973, p. 429)

4.1. Authorship and Intended Publication

This manuscript and the underlying research have been produced by the dissertation researcher (MG) as lead author and by multiple co-authors: Lauren Ali (LA), Kristin Hart (KH), Priya Hithnarine (PH), Déserée Noel (DN), Nigel Noriega (NN), Gisanne Ramjit (GR), and Niamh Vaughan (NV). Each has contributed to this current manuscript draft as described using the Contributor Roles Taxonomy (https://credit.niso.org/) (Table 17).

The manuscript has been developed for publication as a 'wildlife trade assessment,' which is a special type of gray literature policy report commonly produced by non-governmental organizations in seeking to reduce harmful wildlife trades (e.g., Charity & Ferreira, 2020; Environmental Justice Foundation, 2022; Rossi, 2018; TRAFFIC North America, 2009). This current version is intended as a mid-stage draft and the report's final publication will require the writing of front matter, additional review and editing by co-authors, graphic design and additional photos for reader engagement, and additional development to ensure the satisfaction of any funding organization. It is also possible to develop this report to cover a larger segment of the wildlife trade in Trinidad and Tobago, such as all traded wild birds or the entire pet wildlife trade. It would also be possible to include other analyses and results, such as an 'actions and

strategies' analysis now being conducted by Sustainable Innovation Initiatives (SII) with the local stakeholder communities.

Table 17: Contributor roles in the production of Chapter 4.

Role	MG	LA	KH	PH	DN	NN	GR	NV
Conceptualization	✓					✓		✓
Data Curation	✓	✓	✓	✓	✓		✓	✓
Formal Analysis	✓	✓	✓		✓		✓	✓
Funding Acquisition	✓					✓		
Investigation	✓				✓			✓
Methodology	✓					✓		
Project Administration	✓	✓				✓		
Resources	✓					✓		
Software								
Supervision	✓	✓				✓		
Validation	✓	✓	✓			✓	✓	✓
Visualization	✓					✓		
Writing – original draft	✓							
Writing – review & editing	✓					✓		✓

Currently, this report is drafted to be published by SII, a registered 501(c)3 non-profit organization in the United States dedicated to the sustainable development of tropical forest regions and which is majority managed by Trinidadian nationals. SII also serves as a founding

and leading organization in the Nurture Nature Campaign, a multi-NGO coalition united to end the harmful pet wildlife trade in Trinidad and Tobago (www.nurturenaturett.org). This report may be alternatively branded as a report published by the Nurture Nature Campaign itself or by a collaborating international organization, depending upon interest and resources.

4.2. Acknowledgments

This report was made possible with the valuable contributions and support of many persons and organizations. Particular thanks are due to the United States Fish and Wildlife Service (USFWS) and the United States Agency for International Development (USAID) for providing primary funding for underlying research and coalition-building (grant no. F18AP00936) and the Windward Islands Research and Education Foundation (WINDREF) at St. George's University for administering this initial funding. Additional thanks are given to the non-governmental coalition supporting the Nurture Nature Campaign (www.nurturenaturett.org), which seeks to end the harmful pet wildlife trade in Trinidad and Tobago. This coalition group consists of 13 leading civil society organizations operating in Trinidad and Tobago and the Southern Caribbean (see Appendix A).

The School of Criminal Justice at Michigan State University (MSU) also played a catalyzing role by supporting the lead author in obtaining funding for this project and developing this report as part of a multi-manuscript dissertation thesis. Special appreciation is also owed to the leadership and operational team at the Forestry Division (FD) at the Ministry of Agriculture, Land, and Fisheries (MALF) of Trinidad and Tobago. The data and project support provided by the FD and broader MALF have been essential to making this report a reality. In particular, the authors would like to thank: Denny Dipchansingh, Conservator of Forests, Trinidad; Darren Henry, Conservator of Forests of Tobago (acting); Romano MacFarlane, wildlife biologist of the

FD Wildlife Section (retired); David Mahabir, wildlife biologist of the FD Wildlife Section; Courtenay Park, Conservator of Forests, Trinidad (retired); Senator Clarence Rambharat, Minister of the MALF; Steve Seepersad, Senior Game Warden; Richard Sorillo, Head Game Warden, and William Trim, Conservator of Forests, Tobago (retired).

Finally, we thank several additional individuals and their organizations for providing expert support. Faraaz Abdool and the Trinidad and Tobago Bird Status and Distribution Committee (TTBSDC) of the Trinidad and Tobago Field Naturalists' Club (TTFNC) provided essential supporting information on native songbird populations. The Birding Association of Trinidad and Tobago (BATT), and its president Christian Singh, have likewise offered nuanced and balanced information on issues and concerns among Trinbagonian songbird keepers. Various experts in Colombia, Guyana, and Venezuela have also served as essential sources of information and guidance in understanding the songbird trade in these countries, including: Adriana Lucia Santa Méndez, Director of Forests in the Colombian Ministry of Environment and Sustainable Development; Lemuel Cromwell, Director of Monitoring and Compliance with the Guyana Wildlife Conservation and Management Committee (WCMC); and Frank Espinoza with the Venezuelan Union of Ornithologists.

4.3. Introduction

This assessment of the harmful songbird trade occurring in Trinidad and Tobago and the wider world has been produced in support of the Nurture Nature Campaign, a coalition of 13 local and regional non-governmental organizations (NGOs) seeking to end the harmful pet wildlife trade in Trinidad and Tobago (www.nurturenaturett.org). It has specifically been developed as an activity of Sustainable Innovation Initiatives (SII), the managing organization of the Nurture Nature Campaign. The songbird trade was selected for specialized reporting due to it

representing a relatively large component of the entire pet wildlife trade in Trinidad and Tobago and for presenting substantial harms of concern to diverse stakeholders.

Research supporting this assessment was conducted in Trinidad and Tobago from August 2018 through December 2021 using the green criminology paradigm (White & Heckenberg, 2014) and mixed methods research paradigm (Creswell & Plano Clark, 2017). Through this progressive and integrative approach, two research questions were explored to better understand the keeping and trade of pet wildlife in Trinidad and Tobago and its trade partners. In this process, the songbird component of the pet wildlife trade was determined to be particularly high-volume, high-value, and harmful to animal welfare, biodiversity conservation, public health, and the rule of law. As a result, this report corresponds to two research *sub*-questions associated with songbird keeping and trade:

1. What songbirds are kept and traded as pets in Trinidad and Tobago?
2. How are the songbird trade and its harms organized in Trinidad and Tobago and trade-linked countries?

These sub-questions and encompassing research questions were explored through the use of tailored, best-available analytic frameworks for the analysis of traded wildlife and their trade chains. These frameworks were, in turn, used to structure and interpret data from 10 research methods: direct observation, focus group discussion, government records review, household surveying, key informant interviewing, literature review, news media review, social media observation, software-supported qualitative analysis, and taxonomic legal inventory. The use of multi-methods is consistent with contemporary wildlife trade assessment practices (e.g., Charity & Ferreira, 2020). Additionally, the authors determined that this number and diversity of methods was necessary to overcome the lack of trade-specific government records in Trinidad

and Tobago and trade-linked countries. The review of government records foundationally supports many wildlife trade reports (e.g., UNODC, 2020, p. 9), but this method depends upon data produced under the Convention on the International Trade in Endangered Species (CITES) and national regulation of legal wildlife trades. Meanwhile, the songbird trade under study is almost entirely unregulated under CITES, and multiple research methods suggest near-universal non-compliance with associated laws in Trinidad and Tobago.

The remainder of this report is organized into five additional sections covering: background information on the report and trade under study (Section 4.4), the research methodology (Section 4.5), the results associated with each research question (Sections 4.6 & 4.7), and concluding remarks and recommendations to reduce, mitigate, and possibly end the harmful keeping and trade of songbirds in Trinidad and Tobago (Section 4.8).

4.4. Background

Background information is provided in this section on: 1) the purposes of the Nurture Nature Campaign, 2) the practice of wildlife trade assessment, 3) the global harmful songbird trade, and 4) songbird keeping and trade in Trinidad and Tobago. An important theme throughout this presentation of information is the project and report's incorporation of 'multidimensional harm analysis,' which is a core component of contemporary green criminology (Goyes, 2019). The methodology section further describes the broader green criminological paradigm (Section 4.5.1).

4.4.1. The Nurture Nature Campaign

The Nurture Nature Campaign was developed as part of an initial research and coalition-building project oriented to ending the harmful and often illegal wildlife trade in Trinidad and Tobago. This initial project was undertaken by the Windward Islands Research and Education

Foundation (WINDREF) in 2018-2020 with the additional support of: the Caribbean Program of the U.S. Fish and Wildlife Service (USFWS) and the U.S. Agency for International Development (USAID); the Centre for the Rescue of Endangered Species in Trinidad and Tobago (CRESTT); Sustainable Innovation Initiatives (SII); researchers and advisors with Michigan State University (MSU) and the Oxford Martin Programme on the Illegal Wildlife Trade; and supporting graduates of the Conservation Leadership in the Caribbean (CLiC) Program.

The coalition-building conducted during the initiation project ultimately led to the signing of a memorandum of understanding (MoU) in April 2020 between 13 NGOs based in Trinidad and Tobago (see Appendix A). SII serves as the coalition's managing NGO and currently administers a continuation grant from the USFWS and USAID to launch a social marketing campaign to reduce local demand for harmfully-traded pet wildlife. This social marketing campaign launched in January 2021 as the Nurture Nature Campaign. SII has also secured small donor funding to provide technical support for enforcement capacity-building and reform of captive wildlife management. These activities are also conducted as part of the Nurture Nature Campaign with coalition-member support. This report, meanwhile, is produced in fulfillment of the Nurture Nature Campaign's mission to produce research for problem-solving.

Notably, the Nurture Nature Campaign and its initiation project have been founded on the principles of green criminology (see Section 4.6). As a result, the research underlying this report was oriented to exploring a diversity of potential 'green crimes and harms' involved in the wildlife trade, while coalition-building sought to build new linkages between NGOs variably concerned by threats to animal welfare, biodiversity conservation, and public health. The campaign's social marketing and technical support are also oriented to reducing these threats as created by the pet wildlife trade in Trinidad and Tobago.

4.4.2. Wildlife trade assessment

Wildlife trades and their harmful effects have been a scientific and policy concern since at least the 1960s (Milner-Gulland, 2018). As a result of these decades of concern, there now exists an extensive body of literature on at least some wildlife trades, including both gray literature reports (e.g., Charity & Ferreira, 2020; TRAFFIC North America, 2009; Wyler & Sheikh, 2013) and scientific articles (Baker et al., 2013; Milner-Gulland, 2018; 't Sas-Rolfes et al., 2016). This literature broadly indicates that wildlife trades are problematic at national, regional, and global scales (Bush et al., 2014; Gong et al., 2009; IPBES, 2020, p. 23-24; Spee et al., 2019) because they typically violate national and international laws ('t Sas-Rolfes et al., 2019) and cause a wide range of other harms. These other harms include the death and suffering of animals (Weston & Memon, 2009), invasive species introductions (Lockwood et al., 2019), species extinctions (Nijman et al., 2021), and zoonotic disease transmissions (Craft, 2015).

Nevertheless, numerous gaps in wildlife trade research and knowledge have been identified in recent decades. Four notable gaps in wildlife trade research and knowledge relate to:

a) the co-occurrence of harms to animal welfare and public health with harms to biodiversity and the rule of law (Baker et al., 2013; Bezerra-Santos et al., 2021);
b) the occurrence of wildlife trades in certain countries and regions (Sinclair et al., 2018; Symes et al., 2018; UNODC, 2020, p. 32-33);
c) the nature and organization of unregulated wildlife trades in "uncharismatic" wildlife (Marguiles et al., 2019; Veríssimo & Wan, 2019; Wang et al., 2021); and
d) the use of standard terminologies and formal analytic frameworks (Pascual et al., 2021; Phelps et al., 2016; ICCWC, 2012).

Recent research also suggests that contemporary wildlife trade assessment literature may be deficient with respect to the analysis and development of wildlife trade reduction strategies (Salazar et al., 2019; Sánchez-Mercado et al., 2021; USAID, 2017).

Given these gaps and the project's underlying commitment to green criminology, a specially designed methodology was used to explore the pet wildlife trade in Trinidad and Tobago. This methodology is distinctly 'green criminological in two core aspects. First, tailored versions of best-available frameworks and methods were employed to conduct a comprehensive mixed methods analysis of kept and traded wildlife, associated regulatory systems, and associated trade chains inclusive of both traditional and non-traditional notions of harm. Second, this report has been specially designed to document and recommend action on a relatively under-studied wildlife trade notable for its harms to animal welfare, biodiversity, public health, and the rule of law.

4.4.3. The global songbird trade

The keeping and trading of birds for the quality of their songs are ancient and closely-bound practices that today span at least forty countries, including major emerging economies like Brazil, China, and India (Dennis, 2014; Mirin & Klinck, 2021). The primary motivation driving this practice is the keeping of birds for their vocalizations and aesthetic appearance. Other commonly supporting motivations include breeding, financial income, household ornamentation, personal companionship, socialization, and sport (de Oliveira et al., 2020; Mirin & Klinck, 2021; Shepherd et al., 2020). Nevertheless, knowledge of songbird trades across the globe is limited due to biases oriented towards biological and conservation science. For instance, Mirin & Klinck (2021) conducted a review of songbird trade literature from 1990 to 2020 and concluded that research for education and outreach is particularly limited and that "[p]atterns in the research to

date reflect a conservation approach that prioritizes wildlife over the human context around conservation issues" (p. 15).

Despite a lack of trade information, many wildlife trade experts and songbird researchers agree that songbird trades pose a range of harms. The keeping and trade of many songbird species have been deemed to be highly unsustainable, to the extent that many experts decry an "Asian Songbird Crisis" (e.g., Marshall et al., 2020), while researchers in Latin America and the Caribbean report concerning declines in songbirds due to trapping (e.g., BirdsCaribbean, 2021; de Oliveira et al., 2020; Hanks, 2005; Regueira & Bernard, 2012). Though less often studied, the songbird trade is also noted to result in serious issues of animal abuse, especially within gray literature (e.g., Franzen, 2013; Maron, 2019; Platt, 2021). Research on the transmission of diseases through songbird keeping and trade is particularly limited, but experts worry that captive songbirds can spread diseases to wild songbirds (e.g., Freischlad, 2018). Finally, a wide range of literature on songbird keeping and trade highlights that it often occurs in violation of national and international laws (e.g., Miller et al., 2019; Regueira et al., 2012).

Some kept and traded species are protected under international and national laws. With respect to international law, CITES regulates a relatively small number of songbird species (Mirin & Klink, 2021) and with varying degrees of compliance and enforcement (Shepherd et al., 2020). With respect to national laws, no comprehensive review has yet been conducted to understand legislation and regulations governing songbird keeping and trade, but various sources indicate that trapping restrictions, sales licensing, and possession permits are commonly used (Maron, 2022; Regueira et al., 2010; Shepherd et al., 2020). 'Positive lists' of approved species are also sometimes used (e.g., Trinidad and Tobago), and some experts advocate for their use as an essential instrument in the regulation of pet wildlife (Toland et al., 2020).

As a result of the complex harms caused by the global songbird trade, some governmental and non-governmental organizations are now seeking to change the state of international laws. In particular, the CITES Secretariat and member states are now reviewing what is known about the most unregulated global songbird trade for additional policy action (see CITES Secretariat, 2020) and the Asian Songbird Trade Specialist Group (ASTSG) of the International Union for Conservation of Nature (IUCN) today acts to research and advocate for songbird conservation now at imminent risk of extinction (see IUCN, 2022a).

4.4.4. Songbird keeping and trade in Trinidad and Tobago

The keeping and trade of songbirds for the quality of their song and aesthetic appearance is a long-standing practice in Trinidad and Tobago (18DegreesNorthTV, 2019) as well as other nearby Caribbean and South American societies including Brazil (Sick, 1993), Colombia (Goodman, 2019), French Guiana (de Saint-Sernin & Dit Cosque, 2015), Guyana (Mentore, 2013), and Suriname (Kurmanaev, 2021). By some accounts, this practice traces back to the indentured Asian servants brought to these countries during 19th-century colonial rule (Gupta, 2014). Despite its long cultural practice, there appears to be little information on the current state of songbird keeping and trade in Trinidad and Tobago or trade partners (e.g., Cullen, 2005). For instance, in the course of this research, the authors have been unable to find any official governmental or scientific estimates of songbird trade volumes, traded species, or formal assessments of wild populations in Trinidad and Tobago. Notably, the lack of information on songbird keeping and trade in Trinidad and Tobago would be consistent with a general lack of research on songbird trades globally (Mirin & Klinck, 2021).

Despite a general lack of official information, contemporary news media describe an expansive songbird trade (e.g., Venezuela Investigative Unit, 2020), while wildlife

conservationists in Trinidad and Tobago have decried a harmful local trade in songbird species since at least the 1970s. Notably, Richard ffrench, author of *A Guide to the Birds of Trinidad and Tobago* (1973), long ago predicted that widespread illegal trapping for songbird species would lead to their local extirpation (see epigraph) and further urged the authorities to act: "The authorities should act before it is too late, by totally protecting all finches and providing adequate enforcement" (p. 429).

This concern for illegal and excessive trapping was subsequently taken up the Trinidad and Tobago Field Naturalists' Club (TTNFC), which in 1984 submitted a reform proposal to the government of the Republic of Trinidad and Tobago (GORTT) to "save these birds from extinction" (TTFNC, 1984, p. 50). In contemporary times, TTFNC and other conservationists continue to advocate for songbird protection (e.g., Abdool, 2020; Sookdeo, 2015), even as they note that many songbird species have now disappeared from the country. For instance, Abdool (2020) writes on the state of local songbird populations in *Casual Birding in Trinidad & Tobago* (p. 567):

> Historically, fourteen members of the seedeater family were found within T&T. Presently, only five remain. The cagebird trade within T&T was recognized by visiting ornithologists in the last century as a potential cause of extirpation for this entire family of birds. Decades later, that prophecy has come to pass. The larger seedeaters went first, such as Lesson's, Lined, Grey, and Slate-coloured Seedeaters, as well as the Chestnut-bellied Seed-Finch. Once those species were gone, trappers targeted the smaller and then widespread Ruddy-breasted Seedeater (now limited to extremely small, transient populations in specific locations).

Within the last decade, the government of the Republic of Trinidad and Tobago (GORTT) has publicly acknowledged the decline in local songbird species (GORTT, 2015) and, in 2016, instituted permitting requirements for the most popular songbird species (MALF, 2022). Nevertheless, since that time, a funded population assessment to support additional failed to be conducted, and the permitting system has only been implemented among a small handful of

songbird keepers (see GORTT, 2015; R. MacFarlane, personal communication, February 19, 2018).

In recent years, community concerns associated with songbird keeping in Trinidad and Tobago have also grown to include harms to animal welfare and public health. For instance, local news media has recently begun to push limited articles decrying the trade in songbirds and other wildlife often leaves songbirds sick or dying (e.g., Wilson, 2020). Local wildlife managers and veterinarians highlight the substantial risks posed by traded songbirds and other birds, including the possible transmission of Newcastle Disease (R. MacFarlane, personal communication, February 19, 2018) and at least one novel pox virus (Suepaul et al., 2019). Finally, various news articles highlight that the trade in songbirds and other living wildlife is part of a much larger South America-Caribbean contraband trade, including drugs, guns, and sex slaves (e.g., Franklin, 2018; Venezuela Investigative Unit, 2020).

4.5. Methodology

The research underlying this research report was conducted to answer two action-oriented research questions from August 2018 through December 2021 in order to stimulate and support problem-solving to reduce, end, or otherwise mitigate a harmful trade in pet wildlife in Trinidad and Tobago. These research questions were:

1. What wildlife are kept and traded as pets in Trinidad and Tobago?
2. How are the pet wildlife trade and its harms organized in Trinidad and Tobago and trade-linked countries?

The central concept of ‘wildlife’ is defined as ‘any undomesticated species of life,’ while the central concept of ‘pet’ is defined as ‘any non-human species kept in captivity for human enjoyment.’ Using these definitions, these research questions were explored through a program

of study founded in the green criminology and mixed methods research paradigms. Specifically, for each question, an analytic strategy was developed and implemented using best-available and customized analytic frameworks that incorporate multidimensional harm analysis. These strategies were also variably supported by 10 research methods.

Exploration of the research questions permitted segmentation of the pet wildlife trade in Trinidad and Tobago according to relatively stable 'pet product' sub-trades: parrots and macaws, primates, other mammals, reptiles, and songbirds. Comparative evaluation further suggests that the songbird trade segment could be relatively 'high harm.' In particular, the authors note that there are expert reports of songbird population declines both in Trinidad and Tobago and the wider Southern Caribbean (see Section 4.4.4), which suggests that IUCN Red Listings for some species may need to be upgraded to 'endangered' for some wild populations. Additionally, the songbird trade in Trinidad and Tobago and the wider Southern Caribbean account for substantial trade volumes. Notably, the factors of 'endangered' and 'substantial volumes' are considered by CITES when it decides whether or not to conduct a formal Review of Significant Trade (Sinovas et al., 2017, p. 67).

As a result of the research team's internal trade assessment, this report on the harmful songbird trade was prioritized for development. Thus, this report has been crafted to respond to two "songbird-specific" research sub-questions:

1. What songbirds are kept and traded as pets in Trinidad and Tobago?

2. How are the songbird trade and its harms organized in Trinidad and Tobago and trade-linked countries?

These research sub-questions and their encompassing research questions were explored through a mix of primary and secondary research conducted from August 2018 through

December 2021 using the green criminology paradigm (White & Heckenberg, 2014) and mixed methods research paradigm (Creswell & Plano Clark, 2017). Using these two paradigms, the research team proceeded according to a convergent mixed methods design consisting of two analytic strategies and supporting frameworks with data from the application of 10 research methods. The remainder of this section presents information on green criminology, mixed methods research, and the research design.

4.5.1. Green criminology

Green criminology is an emerging scientific paradigm for the study of crimes and harms involving the natural world, non-human species, and the human communities that depend upon them (Goyes, 2019; White & Heckenberg, 2014). The origins of this paradigm lie in the emergence of non-traditional 'green' concerns among criminologists in the 1990s (Beirne et al., 2018). This paradigm has been selected as the primary guiding approach for the conduct of research on pet wildlife keeping and associated trade in Trinidad and Tobago and other linked countries. As the paradigm continues to develop rapidly, and sometimes divergently, in its theory and application (Boratto & Gibbs, 2021; Goyes, 2019; Moreto & Pires, 2018; White & Heckenberg, 2014), a complete and nuanced description of green criminological practice is not offered here. Instead, a generalized pluralistic description is provided that aligns with the philosophical perspective of dialectical pluralism (Johnson, 2017).

By adopting a pluralistic definition of green criminology, many approaches to green criminology may peacefully coexist and be co-developed in research. This approach is implicit in the work of many green criminologists (e.g., Goyes, 2019; White & Heckenberg, 2014), yet admittedly eschewed by other "green" criminologists (e.g., Boratto & Gibbs, 2021; Moreto &

Pires, 2018). Therefore, building upon the work of Goyes (2019), green criminology may be pluralistically described for dialectical integration using three operational tenets:

(1) Green criminology is a scientific paradigm used within the field of criminology.

(2) Green criminology is concerned with how human action and agency cause legal and illegal harms involving the natural world, non-human species, and the human communities that depend upon them.

(3) Green criminology expands traditional categories of victim to include ecosystems, natural environments, and non-human species.

The most common characteristics of research applying these tenets may be further described as including both multidimensional harm analysis and multiple scales of analysis (Goyes, 2019, p. 6-7).

The research underlying this report was green criminological in that it honored these tenets and characteristics in the design of research, including in strategy development, framework development, and methods applications. The research was further aligned with dialectical pluralism and oriented to paradigm development by integrating green criminology with mixed methods research. The mixed methods research paradigm is itself a scientific paradigm that may be used pluralistically to improve the quality of social scientific research (Creswell & Clark, 2017; Johnson, 2017).

4.5.2. Mixed methods research

Mixed methods research is a contemporary scientific paradigm for the use and integration of a range of research methods to better understand complex phenomena (Biddle & Schafft, 2015; Creswell & Clark, 2017). This paradigm traces its origins to the latter half of the twentieth century (Denzin, 1970; Jick, 1979). From an instrumental perspective, the purposes of mixed

methods research are to improve social scientific research by supporting several features of high-quality research: *complementarity*, or to enhance or elaborate upon results; *development*, or to use one method to develop another; *expansion*, or breadth and range in research; *initiation*, or contradiction and new perspectives in results; and, *triangulation*, or convergence, corroboration, and correspondence of results (Greene et al., 1989).

The mixed methods research paradigm has been selected as a supporting paradigm for the conduct of research on pet wildlife keeping and associated trade in Trinidad and Tobago and other linked countries. It was selected on the basis of the paradigm's suggested purposes and specific contemporary critiques that 'green criminology' is insufficiently developed for applied use (Boratto & Gibbs, 2021; Lynch et al., 2017). As summarized by Boratto and Gibbs (2021), contemporary green criminological practice is "left open to the critique that it is loosely connected, descriptive, and overly subjective" (p. 778). Meanwhile, other green criminologists have suggested that green criminology more actively embrace quantitative research methods to balance against already heavy qualitative methods use (Lynch et al., 2017; Lynch & Pires, 2019). At least one green criminologist further suggests that green criminologists adopt mixed methods to better achieve their research goals (Hall, 2016).

A hallmark of mixed methods research is the use of a formal mixed methods research design to combine two or more research methods (Creswell & Plano Clark, 2017). In the production of this specific report, a convergent mixed methods design was used to apply 10 research methods in support of this report's two research questions and associated analytic strategies and frameworks. In a convergent design, two or more research methods are applied independently and then interpreted collectively using an integrating process framework. The

precise process framework and associated analytic strategies and frameworks are described in the remainder of this section.

4.5.3. Research design

The convergent mixed methods research design used for this report is described in Table 18. Specifically, three research questions were explored through two tailored analytic strategies employing best-practice and customized frameworks, and each framework was used to interpret data from 10 research methods. These analytic strategies and frameworks and supporting methods are described further below with information on the institutional approvals supporting their application.

4.5.3.1. Analytic strategies and frameworks

Two analytic strategies and supporting frameworks were used to explore and answer two research questions in the development of this report. Each strategy corresponds to those used in published research on harmful wildlife trades but must variably build upon both formally and informally presented frameworks as these strategies are rarely described. In line with green criminological practice, these frameworks have also been modified to include a broader conception of crimes and harms.

Kept and Traded Songbirds Analysis. A strategy of analyzing kept and traded songbirds in Trinidad and Tobago was adopted to explore and answer research question one: "What songbirds are kept and traded as pets in Trinidad and Tobago?" In support of this strategy, a customized framework was developed to structure analysis of songbirds as distinct 'species' and as constructed 'products' (Figure 17).

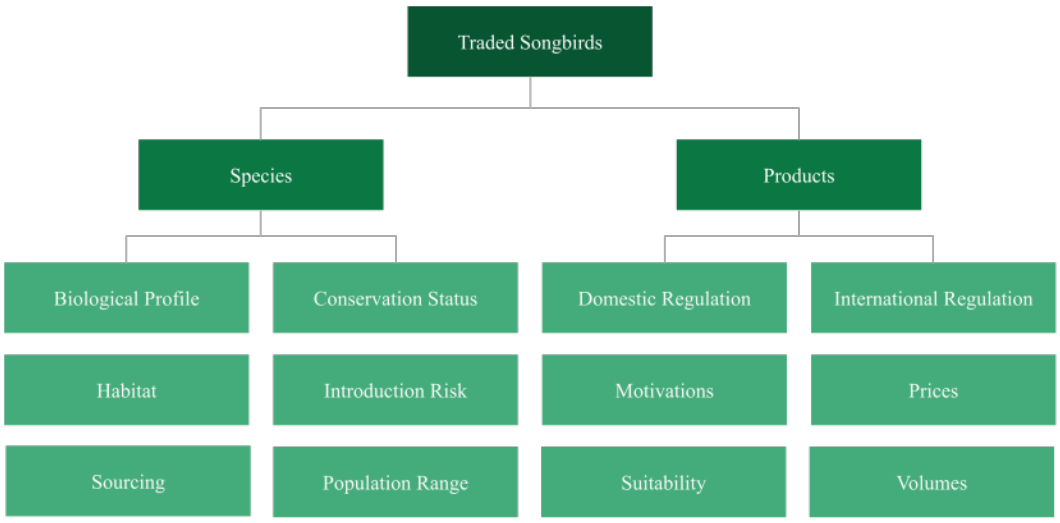
The description of traded songbirds as species and products in a given trade is commonly featured in gray literature wildlife trade assessment reports (e.g., Sinovas et al., 2017, p. 27-66),

Table 18: A convergent mixed methods research design to explore a harmful trade in songbirds. Methods key: DO=direct observation, FG=focus group discussion, GR=government records review, HS=household surveys, KI=key informant interviewing, LR=literature review, NM=news media review, SM=social media observation, SQ=software-supported qualitative analysis, and TL=taxonomic legal inventory. Method inclusion key: □=major supporting method, ◯=minor supporting method.

Research Question	Strategy	Framework	Methods									
			DO	FG	GR	HS	KI	LR	NM	SM	SQ	TL
1. What songbirds are kept and traded as pets in Trinidad and Tobago?	Kept and traded songbirds analysis	Species and products framework	□	◯	□	□	□	◯	◯	◯	◯	◯
2. How are the songbird trade and its harms organized in Trinidad and Tobago and trade-linked countries?	Trade chain analysis	Stages, actors, and harms framework	◯	□	◯	□	□	◯	□	◯	□	□

but without the benefit of formal supporting descriptive frameworks (except see: IUCN, 2022b). Meanwhile, customary practice suggests that traded species should be described according to their biological profile, conservation status, habitat, sourcing, and population range (e.g., Bush et al., 2014; D'Cruze et al., 2021). Researchers have also put forward formal frameworks to describe traded wildlife products inclusive of domestic regulatory statuses, international regulatory statuses, motives for consumption, prices, and volumes (e.g., Desenne & Strahl, 1991; Phelps et al., 2016; Thomas-Walters et al., 2021).

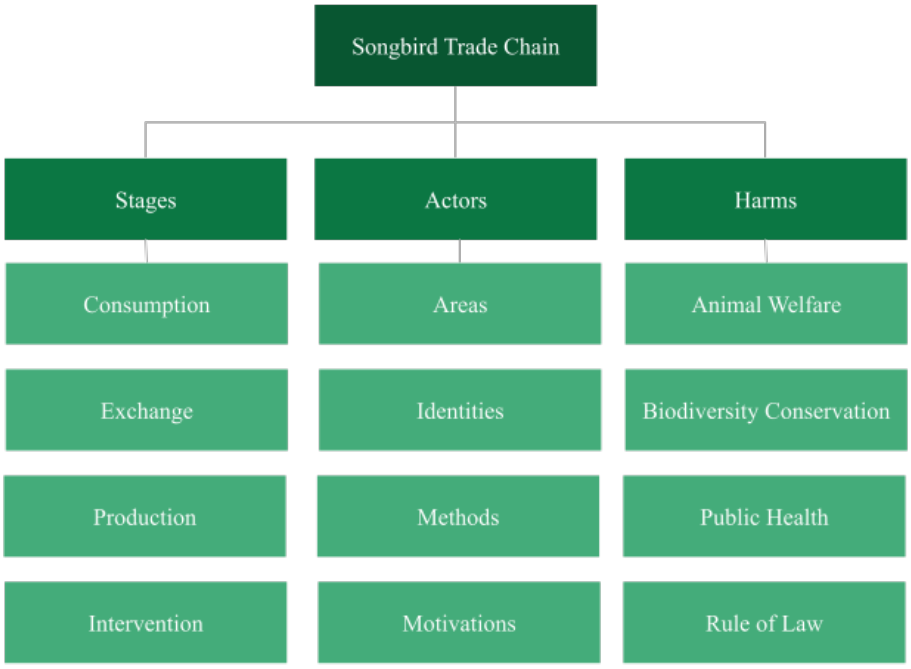
Figure 17: A framework for analysis of traded songbirds as species and products.



Following the tenets and practices of green criminology, popular descriptive dimensions are retained and expanded upon in a novel ad hoc framework. This framework specifically expands species description to also consider invasive species introduction risk and product description to also consider the suitability of a songbird as a pet. The inclusion of these additional dimensions permits a fuller examination of harms to biodiversity conservation and a more novel examination of harms to animal welfare. All 10 of the underlying research methods were used in support of this analytic strategy, but the most important methods used were direct observation, government records review, household surveying, and key informant interviewing.

Trade Chain Analysis. A strategy of analyzing the harmful songbird trade chain in Trinidad and Tobago and the wider world was adopted to explore and answer research question two: "How are the songbird trade and its harms organized in Trinidad and Tobago and trade-linked countries?" In support of this strategy, a customized framework was developed to structure the analysis of a trade chain as 'stages,' 'actors,' and 'harms' (Figure 18).

Figure 18: A framework for analysis of the stages, actors, and harms of a songbird trade chain.



Description of wildlife trades according to stages, actors, and harms is commonly featured in gray literature wildlife trade assessment reports (e.g., Rossi, 2018, p. 80-88), and these descriptions tend to correspond to a broad array of supporting technical literature (Phelps et al., 2016; UNODC, 2021). More generally, criminologists specializing in the situational prevention of crime and other harms also commonly consider associated actors and stages of behavior (Cornish & Clarke, 2014). Common descriptive dimensions for stages of wildlife trade chains include base categorization according to: an initial 'production' phase, a terminal 'consumption' stage, and a phase of 'exchange' linking production and consumption (e.g., 't Sas-

Rolfes et al., 2019). Common descriptive dimensions for actors in wildlife trade chains include their areas of operation, identities, methods of action, personal motivations (e.g., Leberatto, 2017).

Descriptions of wildlife trades typically focus on legal offenses and other harms to species in gray literature wildlife reports (e.g., Wyler & Sheikh, 2013) and scientific articles on wildlife trades (e.g., ‘t Sas-Rolfes et al., 2019). Nevertheless, the precise nature of legal offenses in wildlife trades is often poorly explored (Pascual et al., 2021), and there are clear indications of many other types of harms that bear investigation, notably animal abuse (Baker et al., 2013, p. 928), invasive species introduction (Lockwood et al., 2019, p. 329), and zoonotic disease transmission (Bezerra-Santos et al., 2021, p. 181). Partly as a result, green criminologists today increasingly explore the multidimensional nature of green crimes as both legal and normative constructs (Goyes, 2019; Nurse, 2017).

Following the tenets and practices of green criminology, common descriptive dimensions for stages and actors are retained and a broad set of descriptive dimensions are employed for harm analysis—animal welfare, biodiversity conservation, public health, and the rule of law. Additionally, a novel descriptive phase of a wildlife trade—intervention—is included to better recognize that at least some traded wildlife are eventually removed from the main trade chain by intervening actors. Stages of intervention would include government seizure (e.g., Masés-García et al., 2021), institutional euthanasia (e.g., Rivera et al., 2021), rehabilitation and sanctuary (e.g., Lopresti-Goodman et al., 2012), and release into the wild (e.g., Collard, 2014). All 10 of the underlying research methods were used in support of this analytic strategy, but the most important methods used were household surveying, key informant interviewing, news media review, software-supported qualitative analysis, and taxonomic legal inventory.

4.5.3.2. Research methods

A total of 10 research methods were in the research underlying this report to apply the report's two analytic strategies and associated frameworks. All of these methods were specially tailored to support each strategy and the convergent use of multiple methods facilitated a more holistic understanding of the songbird trade here reported upon. For instance, information gathered from direct observation was often used as interview topics with key informants, while household survey data could be combined with government records to estimate captive populations and permit compliance rates. Each method is described below in terms of its general use, design for this study, and research outputs.

Direct Observation. The use of direct observation constitutes an important method for research on natural resource crimes (Gavin et al., 2010) and wildlife trades (Nijman et al., 2022). Direct observation of songbird keeping and trade was conducted both opportunistically and through visitation of a range of public and publicly-accessible locations, including: bars, pet shops, shopping areas, songbird competition sites, residential streets, tourist sites, and zoological parks. Observations of residential homes and businesses not ordinarily accessible to the public were also made, but only after obtaining the informed consent from an adult member of the household or a property manager, respectively. Several observations of Trinidad Game Wardens were also conducted after invitation by their managing Wildlife Section. Meaningful direct observations were recorded through written notes, photography and videography, or both modalities when appropriate and permissible (see Chapter 2, Appendix E).[9] Written notes were stored and coded using NVivo software for qualitative analysis (see below) and photos were organized by theme, date, and subject using Google Drive. From August 2018 to December

[9] Please note that future publication of this report will make these method descriptions available to readers online or within the manuscript. However, for the sake of brevity, this material is not duplicated in this dissertation.

2021, a total of 407 distinctly recorded observation events were recorded through 286 written observations made and 6,919 photos and videos.

Focus Group Discussion. The use of focus group discussion constitutes an important method for research on conservation (Nyumba et al., 2108) and wildlife trades (e.g., Kahler & Gore, 2012). Focus group participants for this project were identified through social media marketing and participants received honoraria of TT$200 (~US$30). All focus groups were semi-structured and followed a topic and question guide with special topics and questions for keepers of songbirds, amazon parrots, and macaws (see Chapter 2, Appendix B). Prior to initiation, informed consent was obtained through discussion and review of a study information sheet, and participants also provided basic information on the animals they keep. A total of 12 focus group discussions were also conducted with wild animal keepers (n=75) and all were audio recorded and transcribed. Focus groups lasted 102 mins on average. Transcripts were stored and coded using NVivo software for qualitative analysis (see below).

Government Records Review. The review of government records constitutes an important method for research on wildlife crimes (Crow et al., 2013) and wildlife trades especially (e.g., Nijman, 2010). Four sets of governmental records were reviewed as part of this study: 1) applications to keep captive wildlife made to the Trinidad and Tobago Forestry Division (FD), 2) permits to keep captive wildlife issued by the FD, 3) enforcement reports made by game wardens with the FD, and 4) trade records maintained by the CITES Secretariat. FD datasets were anonymized prior to distribution and corresponded to the period of January 2016 through August 2018. Additional records were requested for the period up to December 2020, but the agency was only able to provide summary statistics on permit issuances due to staffing shortfalls (D. Mahabir, pers. comm., February 7, 2022). Similar records were also requested from

the Tobago Department of Natural Resources and Forestry, but these records were unavailable due to staffing limitations (D. Henry, pers. comm, May 23, 2019). CITES data was obtained on all terrestrial wild animals regulated by the treaty and imported into Trinidad and Tobago from 2016 to 2020 (https://trade.cites.org/).

Household Survey. The use of household surveys constitutes an important method for research on a wide range of social and environmental issues (e.g., Lakshmi et a., 2013) and occasionally on wildlife trades (e.g., Drews, 2001). A national survey was conducted from September 2019 to February 2020 in order to gather a range of data on animal keeping practices in 2,004 households, or approximately 0.5% of all households nationally (see Chapter 2, Appendix A). A randomized sampling of census units and households within them was conducted using a multistage, population-weighted approach with the support of the Trinidad and Tobago Central Statistical Office (CSO). All surveys were conducted anonymously and, prior to initiation, informed consent was obtained through discussion and review of a study information sheet. Relatively high participation rates were achieved among initially-selected households in both Trinidad (89.3%) and, to a lesser extent, Tobago (72.3%). On average, each household survey lasted approximately 27 minutes.

Key Informant Interviewing. The interviewing of key informants constitutes an important method for research on green crimes and harms (e.g., Bisschop, 2016) and wildlife trades (e.g., MacMillan & Nguyen, 2014). Formal interviews were conducted with 172 key informants from January 2019 to March 2020 (see Chapter 2, Appendices C & D). Informants represented seven stakeholder groups: animal breeders (n=3), animal welfare advocates (n=7), wild animal keepers (n=64), pet shop operators (n=40), veterinarians (n=23), wildlife conservationists (n=30), and wildlife traffickers (n=5). Wild animal keeper informants were identified through social media

marketing and received an honorarium of TT$100 (~US$15) for participating. Other informants were selected through purposive sampling and received no monetary compensation for their participation. All interviews were conducted privately and anonymously and, prior to initiation, informed consent was obtained through discussion and review of a study information sheet. All interviews were audio recorded or memorialized with written notes. Each interview lasted 64 mins on average. Transcripts and interview notes were subsequently inputted into NVivo for qualitative analysis.

Literature Review. The use of literature reviews constitutes an important method for most social scientific research (Fan et al., 2022) and wildlife trades in particular (e.g., Wyatt et al., 2022). A narrative literature review (Baumeister & Leary, 1997) was conducted to explore disparate topics on wildlife keeping and the wildlife trade in Trinidad and Tobago, its trade partners, and the wider world. From August 2018 through December 2019, this review was oriented to producing four annotated bibliographies of gray and scientific literature on: the use of qualitative and quantitative methods to study wildlife trades, the pet wildlife trade in Trinidad and Tobago and wider world, other wildlife trades in Trinidad and Tobago, and other wildlife trades in Venezuela. From January 2020 onward, literature review effort has been directed to species description (e.g., Cornell Lab of Ornithology, 2022; IUCN, 2022b), identifying and understanding wildlife trade laws (e.g., FAO, IUCN, UNEP, n.d.; UNEP-WCMC, n.d.), exploring potential animal welfare and ecosystem harms (e.g., EMODE Pet Score, 2019; Invasive Species Specialist Group, 2022), and researching literature pertinent to understanding research findings.

News Media Review. The conduct of news media reviews constitutes an important method for research on green crimes and harms (e.g., Brisman & South, 2013) and wildlife

trades specifically (e.g., Paudel et al., 2022). From August 2018 through December 2021, news articles on the consumption and trade in wildlife products were identified and analyzed. Articles were identified through keyword searches performed on all identifiable newspapers with online articles in Trinidad and Tobago and three trade partners identified early in the course of research: Grenada, Guyana, and Venezuela. Barbados and Colombia were identified as trade partners relatively late in the course of research and so a less comprehensive news media review was conducted for these countries. This search identified 1,574 relevant articles, of which only 134 articles were identified with information specifically on the songbird trade within or related to Trinidad and Tobago.

Social Media Observation. The conduct of social media analysis constitutes an important method for research on green crimes and harms (e.g., Williams et al., 2015) and wildlife trades (e.g., Krishnasamy & Stoner, 2016). Initial social media observations were made from August 2018 to September 2019 in order to identify 26 public Facebook groups and pages with regular posts with pet wildlife sale offers and requests. Structured monitoring of sales offers and requests was then conducted for six weeks from September through October 2019, which yielded 278 posts involving sales offers or requests for captive wildlife that were recorded according to a variety of descriptors (see Chapter 2, Appendix E). Afterward, Facebook groups and pages were subsequently monitored purposively and recorded in field notes through December 2021.

Software-supported Qualitative Analysis. The use of special software for the analysis of diverse qualitative data is an increasingly important method for social science research (e.g., Kaefer et al., 2015) and occasionally wildlife trade research (e.g., Feddema et al., 2020). For this project, NVivo software was used to analyze focus group discussions and key informant interviews. These data were analyzed through two different codebooks. The first 'keeper'

codebook integrated key informant interviews and focus group discussions conducted with pet wildlife keepers and was structured to explore the motivations, practices, and harms associated with wild animal keeping. The second 'trade' codebook integrated all focus group discussions and key informant interviews to explore the occurrence and regulation of the pet wildlife trade (see Chapter 3, Appendix D for sample).[10]

Taxonomic Legal Inventory. The use of taxonomic legal assessment is a traditional method for criminological research generally (e.g., Mattei, 1997) that is only beginning to be developed for wildlife trade research (e.g., Toland et al., 2020). Using the taxonomy of Pascual and colleagues (2021) as a starting point, a taxonomy of seven principal offenses was created for Trinidad and Tobago and its trade partners Grenada, Guyana, and Venezuela. Treaties, laws, and regulations were examined from August 2018 through December 2021 and classifications were subject to ongoing discussion with officials in each country. Barbados and Colombia were identified as trade partners relatively late in the course of research and so a less comprehensive inventory was conducted for these countries. The nine offenses included were: illegal hunting, illegal possession, illegal domestic trade, illegal foreign trade, injury to animals, injury to public health, inappropriate online trade, inappropriate sporting behavior, and the obstruction of justice.

4.5.3.3. Approvals

The conduct of this research was subject to two major institutional approval processes to ensure that it was conducted ethically and to the benefit of Trinidad and Tobago. The first process involved securing approval from the Trinidad and Tobago MALF and the Tobago

[10] Please note, sharing and distribution of codebooks will be limited to formally published scientific manuscripts given their research importance. Chapter 2 represents the first publication to be produced using a part of the entire keeper codebook.

Division of Food Production, Forestry, and Fisheries. Each agency provided formal letters of support for the USFWS- and USAID-funded project and was closely involved in project design.

The second process involved the ethical review of the study's research methods involving human subjects by the MSU Institutional Review Board (IRB). This review was conducted to ensure that the applied methods meet U.S. federal standards for the ethical conduct of research with human subjects. In particular, the methods of key informant interviewing, focus group discussion, household surveys, and in-person direct observations were submitted to the MSU IRB, which ruled that all such methods were minimal risk and so exempt from further review under federal regulations (application no.'s: STUDY00000489, STUDY00003141, STUDY00003142).

Additionally, the MSU IRB reviewed the methods of government records review and social media observation and determined that such methods as applied did not constitute human subjects research (application no's: STUDY00003143, STUDY00003144). Other methods used in this study were not submitted to the MSU IRB as they did not constitute research on human subjects (e.g., news media review).

4.5.4. Presentation of results

Application of the research methods, frameworks, and strategies produced a broad set of data and findings on the harmful keeping and trade in songbirds in Trinidad and Tobago. This information is presented in the following two sections which correspond to the report's two analytic strategies. In short, curated results are provided according to two core topics: kept and traded songbirds in Trinidad and Tobago and the organization of the songbird trade in Trinidad and Tobago and the wider world. These topics are explored according to the ordering of each

associated framework except where the findings suggest alternative or additional ordering support a clearer narrative.

4.6. Kept and Traded Songbirds in Trinidad and Tobago

A total of 34 species were detected as kept and traded as songbirds in Trinidad and Tobago since January 2016 (see Appendix B). These species were identified on the basis of one or more of four research methods: direct observation (32%), government records review (71%), key informant interviews (68%), and news media review (12%). Half (16) of these species were identified on the basis of only one method: direct observation (1 species), government records review (8 species), key informant interviewing (6 species), and news media review (1 species). Key informants providing sole identifying information reported either actively keeping or selling the species (e.g., "I does be selling a Venezuelan troupial" [P095]), while the other two methods permitted photo identification by a trained expert (e.g., Anonymous, 2021a).

The 34 kept and traded species were found to span a range of biological groups, to be primarily wild-caught and sourced from the surrounding Southern Caribbean, and to underpin a trade variably threatening species, habitat, and ecosystem conservation. These species are also locally perceived to constitute a common 'songbird product' with consistent base motivations, regulations, suitability issues, end-user prices, and trade volumes.

4.6.1. Species

A total of 34 species of perching birds (order Passeriformes) were identified as kept and traded as songbirds in Trinidad and Tobago (Appendix B). These species span six taxonomic families: Thraupidae (14), Estrildidae (6), Fringillidae (5), Cardinalidae (4), Icteridae (4), and Tyrannidae (1). Within these families, the traded species further constituted 19 genera. The most represented genus was *Sporophila* within the Tanager family (Thraupidae) with nine species,

followed by *Lonchura* within the Estrildid Finches family (Fringillidae) with three species. The *Sporophila* genus was also most commonly detected, with the chestnut-bellied seed finch (*S. angolensis*) clearly predominating the local market (see Figure 19).

Research on the sourcing of the 34 identified songbird species indicates that 25 (74%) of these species are entirely wild-caught, while another five species, all non-native species, were identified as being entirely sourced through captive breeding: European greenfinch (*Chloris chloris*), Gouldian finch (*Chloebia gouldiae*), Java sparrow (*Lonchura oryzivora*), white-rumped munia (*Lonchura striata*), and zebra finch (*Taeniopygia guttata*). Another four songbird species were found to be sourced through both wild-capture and captive breeding—common waxbill (*Estrilda astrild*), chestnut-bellied seed finch, gray seedeater (*Sporophila intermedia*), and tricoloured munia (*Lonchura malacca*). However, breeding of the two native species, chestnut-bellied seed finches and gray seedeaters, represents at most a small fraction of their total trade. Thus, a full 27 of 34 species are entirely or primarily sourced through wild-capture. Meanwhile, wild capture of the other two 'mixed sourcing' species—the common waxbill and tricolored munia—is less common as they are non-native species, though each has been locally introduced and may occasionally be caught locally.

A full 26 of 27 wild-caught and mostly wild-caught species are native to Trinidad and Tobago (20) or to neighboring Venezuela (24) and nearby Barbados (1), Colombia (23), Guyana (17), and Brazil (19). Only one wild-caught species—yellow-breasted chat (*Icteria virens*)—was native to further away countries in North and Central America. Notably, many of the traded songbirds' native ranges offer insights into their sourcing. For instance, the closest area where the double-collared seedeater (*Sporophila caerulescens*) could have been sourced would be the interior of Brazil, suggesting possible air travel was involved.

By comparison, the native ranges of the seven species that are sourced entirely or substantially through captive breeding are less useful for the determination of sourcing. These species' native ranges and areas of more traditional breeding span the regions of Australia (1), Central Asia (1), Europe (1), South Asia (2), Southeast Asia (3), and sub-Saharan African (1). However, in contemporary times, the seven captive-bred species are also commonly captive-bred in countries around the world. For instance, the Java sparrow is endangered in its native range in Indonesia but has been introduced into the wild in a range of other countries due to the pet trade, including Mexico, Puerto Rico, Sri Lanka, and the U.S. Hawaiian Islands (Sharpe et al., 1997).

Figure 19: An image of a captive chestnut-bellied seed finch. From *Bullfinch, Looking Out* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The Red List of Threatened Species maintained by the IUCN (2022b) categorizes almost all traded songbird species as Least Concern (31) from a global species conservation perspective. However, two species are categorized as endangered: Java sparrow (*Lonchura oryzivora*) (Figure 20) and red siskin (*Spinus cucullatus)* (Figure 21). Another species—Gouldian finch (*Chloebia*

gouldiae)—is also categorized as Near Threatened. Nevertheless, both the Java sparrow and Gouldian finch appear to be exclusively sourced through captive breeding. Also, like the Java sparrow, the Gouldian finch has now spread around the world as a commonly bred species. Meanwhile, the keeping and trade of red siskins in Trinidad and Tobago is a particular cause for concern as there remain only isolated populations in Venezuela and Guyana (Sanchez-Mercado et al., 2020).

Figure 20: An image of captive Java sparrows. From *Lonchura oryzivora, twee in kou.jpg* [Photograph], by JMK, 2014, Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Lonchura_oryzivora,_twee_in_kou.jpg). CC BY-SA 3.0.

In contrast to global conservation concerns, local experts in Trinidad and Tobago indicate that many songbird species, especially those within the *Sporophila* genus, are threatened with local extinction (Abdool, 2020; ffrench, 1973; Sookdeo, 2015; TTFNC, 1984). These concerns for songbirds populations are also shared by conservationists in other countries in the region where songbird keeping and trade is popular: Brazil (e.g., Ortiz-von Halle, 2018), French Guiana

(e.g., Le bonniec, 2006), Guyana (e.g., Cullen, 2005), Suriname (e.g., Ouboter, 2001), and Venezuela (e.g., F. Espinosa, personal communication, May 8, 2022).

Figure 21: An image of a red siskin. From *Carduelis Cucullata, Macho de Cúcuta (Colombia)* [Photograph], by Siskini, 2008, Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Cucullatamachocolombia.jpg). CC0.

The trade in songbirds presents possible risks to habitats and ecosystems. The IUCN (2022b) categorizes the 27 entirely or mostly wild-caught species that are native to the region as being found in five different habitats: shrubland (21), grassland (12), forest (12), savannah (11), and wetlands (5). Two entirely or almost entirely captive-bred species also present risks of invasive introductions. The common waxbill is listed as invasive in the GISD (Invasive Species Specialist Group, 2022) and has been locally introduced to Trinidad and Tobago. The tricoloured munia is not listed in the GISD, but has been introduced to Trinidad and Tobago and neighboring Venezuela.

4.6.2. Products

These 34 species were found to constitute a common 'songbird product' distinguished by motivation. The common defining motivation for having a songbird is the production of bird song and having a beautiful appearance. For instance, a national survey of 2,004 households identified 38 homes with a total of 84 songbirds. Approximately 94% of these birds were kept because of their having 'a beautiful song' and 93% for their 'beautiful appearance.' Similarly, songbird keepers that participated in focus group discussions and key informant interviews most commonly described their motivations as related to the beauty of the bird's song and appearance: "I love it's color, song, appearance" [P013], "I have it because it does be re'l singing" [P27], and "you see that bird singing and it de-stresses you" [P28].

For many, the keeping of songbirds was also motivated by recreational interests. Of the 84 songbirds identified as kept in the national survey, approximately 67% kept them for the 'enjoyment of a hobby' and 46% in order to 'profit from sale,' while just 8% were kept for 'companionship.' This was further illustrated in focus group discussions and interviews: "having these birds as pets it creates a lot of opportunity in terms of socializing" [P019], "You have to distinguish between people minding the birds for profit as opposed to people who minding the birds for love and competition…" [P007], and "Even after the competitive aspect, we still hangout as friends" [P005]. The songbird species that is most associated with recreation is the chestnut-bellied seed finch, locally known as "bullfinch" and "chickichong," and which is used in songbird competitions in Trinidad and Tobago (Figure 22) as well as Brazil (Rydlewski, 2011), French Guiana (Le bonniec, 2006), Guyana (Mentore, 2013), and Suriname (Ouboter, 2001).

In Trinidad and Tobago, kept and traded songbirds are broadly regulated under two animal-specific national laws—the Animals (Diseases and Importation) Act (2016) as amended by the Animal (Diseases and Importation) Amendment Act (2020) and the Conservation of Wild Life Act (2016), the Customs Act (2007)—and a range of laws governing economic activity in the country, including the Customs Act and Value-added Tax Act. These laws respectively establish special regulatory categories for *all* kept and traded songbirds as "animals" whose captivity requires keepers to report public health risks, ensure animal welfare, and obtain a permit for all but two species, and as "goods" whose import and sale require payment of taxes to the national government. Meanwhile, with respect to international law, only a few songbird species are internationally regulated for the purposes of protection or trade monitoring. Notably, only two species are listed under CITES, the endangered red siskin and the Java sparrow, which are respectively listed under Appendices I and II.

Figure 22: An image of trophies at a bullfinch singing competition. From *Bird Winners* [Photograph], 2019, by M. C. Gibson. CC BY 4.0.

With regards to pricing, reported end-user prices for songbirds ranged widely from as low as TT$100 (~US$15) for species subject to low demand up to TT$100,000 (~US$14,744) for high-quality chestnut-bellied seed finches for competition. As price data was obtained through only qualitative methods, the research team constructed their own consensus ranking of songbirds according to their perceived *median* end-user pricing as 'low,' 'average,' or 'high.' This scale was set using an "average" median end-user price of TT$350 (US$52), as indicated by social media observations of retail pricing for the most commonly traded species, the chestnut-bellied seed finch (Figure 23). Though less than ideal for precise pricing information, such an approach may serve as a simple measure and is commonly used in wildlife trade research (e.g., Desenne & Strahl, 1991). On the basis of this qualitative scale, 16 songbird species were ranked as being sold at or around average median prices, eight species at relatively low median prices, and 10 at relatively high median prices.

Figure 23: An image of an online advertisement with retail and bulk pricing. From *2022.06.17.001* [Screenshot], by M. C. Gibson, 2022, Facebook. CCO.

All kept and traded songbirds may be considered unsuitable for ordinary residential keeping on the basis of a range of information. For example, 32 of 34 identified species score as 'difficult' to keep in captivity by ordinary households under the EMODE scoring system (https://emodepetscore.com/), with the two other species—common waxbill and zebra finch—scoring as a 'moderate' challenge. Songbird keepers also appear to understand the difficulty of caring for songbirds. According to key informant interviews and focus groups discussions, keepers are aware that their birds require greater care than a domesticated animal: "Yeah, if they get stressed out so much, they die" [P035] and "Compared to caring for a monkey, I would say it takes more attention to my birds" [P34].

With regards to songbird keeping and trade volumes, only a conservative estimate of certain captive populations is possible at this time given the conduct of a national survey on animal keeping in 2,004 households. Specifically, a minimum quantitative estimate of the national captive songbird population may be made following the approach of Drews (2001), in which prevalence rates and estimated household numbers may be combined with a conservative estimate of there being only one specimen per species kept in households. Taking this approach permits the estimation of household prevalence rates for 11 reported songbirds reported in the survey (Table 19).[11] This indicates a minimum captive population of 12,000 to 36,000 songbirds in Trinidad and Tobago, of which the chestnut-bellied seed finch may comprise a half to a third of this population. With respect to volumes of wild-caught songbirds only, the captive-bred

[11] The observed average number of songbirds kept per species was consistently higher than one for most species. For instance, the average number of bullfinches observed per household was 2.8 individuals. Nevertheless, additional data or interpolation would be needed to estimate average possession numbers for uncommon and rare species. Following the central limit theorem and popular advice, at least 30 instances are required to estimate a mean of a population.

Table 19: Estimated prevalence and minimum captive populations of 11 songbirds at 95% confidence. Prevalence rates are based on a household survey. Captive populations are based on estimates of there being 413,332 households in Trinidad and 20,724 households in Tobago. *Negative minimum estimates are instead set to zero.

Statistic	Household Prevalence			Estimated Minimum Captive Population in T&T		
Name	Trinidad	Tobago	National	Low*	Average	High
Blue-gray tanager (*T. episcopus*)	0.0% (±0.0%)	0.4% (±0.8%)	0.0% (±0.0%)	1	82	244
Chestnut-bellied seed finch (*S. angolensis*)	2.4% (±0.7%)	1.6% (±1.6%)	2.4% (±0.8%)	6,952	10,238	13,523
Gray seedeater (*S. intermedia*)	1.4% (±0.6%)	0.0% (±0.0%)	1.4% (±0.5%)	3,600	5,898	8,196
Java sparrow (*L. oryzivora*)	0.0% (±0.0%)	0.4% (±0 0.8%)	0.0% (±0 0.0%)	1	82	244
Large-billed seed finch (*S. crassirostris*)	0.1% (±0.1%)	0.0% (±0.0%)	0.1% (±0.1%)	1	236	699
Lesson's seedeater (*S. bouvronides*)	0.2% (±0.2%)	0.0% (±0.0%)	0.2% (±0.2%)	19	944	1,868
Ruddy-breasted seedeater (*S. minuta*)	0.1% (±0.1%)	0.4% (±0.8%)	0.1% (±0.1%)	3	318	943
Saffron finch (*S. flaveola)*	0.2% (±0.2%)	0.4% (±0.8%)	0.2% (±0.2%)	8	790	1,753
Trinidad euphonia (*E. trinitatis)*	0.1% (±0.1%)	0.0% (±0.0%)	0.1% (±0.1%)	1	236	699
Violaceous euphonia (*E. violacea*)	0.9% (±0.4%)	1.2% (±1.3%)	0.9% (±0.5%)	1,937	4,021	6,144
Yellow-bellied seedeater (*S. nigricollis*)	0.2% (±0.2%)	0.4% (±0.8%)	0.2% (±0.3%)	21	1,026	2,113

species detected in the national survey was the Java sparrow, which is estimated to account for at most 300 individuals.

In comparison to other animals kept, the keeping of certain species of songbirds keeping is relatively popular. According to the household survey, the chestnut-bellied seed finch is the 6th most popularly kept animal in residential homes, surpassed only by: domestic dogs (*Canis familiaris*) with 34.9% (±2.4%) of households, orange-winged amazons (*Amazona amazonica*) with 7.3% (±1.3%) of households, domestic cats (*Felis catus*) with 5.4% (±1.1%) of households, chickens (*G. domesticus*) with 5.2% (±1.1%) of households, and ducks (*Anas platyrhynchos domesticus*) with 2.7% (±0.8%) of households. Meanwhile, if songbirds were compared to other popular species as a product group, songbird keeping would be the 5th most common animal keeping practice in the country with an estimated 4.3% (±1.1%) of households.

Finally, the research team constructed a consensus ranking of songbird keeping rates according to a scale of 'very rare,' 'rare,' 'uncommon,' 'common,' and 'very common.' Though less than ideal for precise volume information, such an approach may serve as a simple measure and is commonly used in wildlife trade research (e.g., Desenne & Strahl, 1991). On the basis of this qualitative scale, 29 songbird species are ranked as rare or very rare, three are ranked as uncommon, and the gray seedeater and chestnut-bellied seed finch are each ranked common and very common, respectively.

4.7. The Songbird Trade Chain in Trinidad and Tobago and the Wider World

The songbird trade chain in Trinidad and Tobago and the wider world was determined to involve more than six countries, a range of stages and actors commonly found in other wildlife trades, consistent illegal activities across the entire main trade chain, and a diversity of other harms varying in scope and severity within the trade chain. Furthermore, there exist a range of

stages and actors involved in trade intervention, some of which cause additional harms to animal welfare, public health, and the rule of law.

This trade chain analysis was conducted on the basis of a wide array of primary and secondary research, including household surveying, key informant interviewing, news media review, software-supported qualitative analysis, and taxonomic legal inventory. Given that these methods primarily produced demand-side data, additional detail and information were added through literature review and discussion with wildlife management professionals in Guyana and Venezuela.

Following popular convention, the stages and actors are presented according to their general trade phase: production, exchange, consumption, and intervention. Identified harms are considered in relation to each identified stage and actor. Additionally, in the course of research, each trade phase was found to have at one or more major cleavage between certain stages and actors and these are further used to structure the analysis. Specifically, the production phase is divided into 'wild-caught' and 'captive-bred' production, the exchange phase is divided into 'import,' 'domestic supply,' and 'export,' the consumption phase is divided into 'caregiving,' 'obtaining,' and 'recreation,' and the intervention phase is divided into 'civil society actions,' 'criminal actions,' and 'governmental actions.'

4.7.1. Production

Of the 34 songbirds identified as kept and traded in Trinidad and Tobago, 27 of these songbirds are entirely or almost entirely sourced through wild capture, while seven are entirely or primarily sourced through captive breeding (Appendix B). By volume, wild-caught songbirds constitute most of the domestic market and are primarily produced through trapping in Venezuela. Captive-bred species, meanwhile, are relatively rare but have distinct stages of

production. Each segment of the songbird trade also poses meaningful harms. The stages, actors, and specific harms of both captive-bred and wild-caught production are further described below.

4.7.1.1. Captive-bred songbirds

The identified stages of production for captive-bred songbirds are two: stocking and breeding. Based on interviews with two large-scale breeders of captive-bred songbirds, the stocking of songbirds for breeding depends on whether a species is found in the ecosystems of the country or region or if there is a pre-existing captive breeding population available locally or abroad. Species available locally in the wild could simply be sourced through domestic sellers and trappers involved in wild-caught production. Such species include the native chestnut-bellied seed finch and gray seedeater, which are only rarely bred, as well as the introduced common waxbill and tricolored munia, though these species are more often sourced through local captive breeding.

Meanwhile, five other species are indicated to be stocked through both local and foreign local captive breeding. These species are: European greenfinch, Gouldian finch, Java sparrow, white-rumped munia, and zebra finch. Notably, the Java sparrow is listed under CITES, specifically Appendix II, and CITES records indicate that more than 100 such birds have been imported into Trinidad and Tobago since 1999 from both the United States and the Netherlands. Interviews with pet shops and songbird keepers further indicate that these countries continue to play important roles in stocking captive-bred birds, primarily through their online sellers (e.g., http://www.brendasbirds.com/) (Figure 24). Interviews with three experienced international traffickers suggest that Canada and the United Kingdom may also supply some captive-bred species through airline trafficking (see 4.7.2.1).

As indicated, key actors' identities within the stocking and breeding stages of non-native, non-introduced birds are foreign wholesale breeders and domestic breeders. Foreign wholesale breeders typically operate abroad in a range of countries, while domestic breeders appear to be more commonly found on the larger and more populated island of Trinidad. Also, depending upon the species of interest, domestic breeders will source either from other domestic breeders, foreign wholesale breeders, or local trappers and sellers of wild-caught songbirds. In general, domestic breeders of primarily wild-caught songbirds were men, while breeders of primarily captive-bred songbirds were not noticeably gendered. Domestic breeders of primarily wild-caught songbirds were also typically involved as consumers and intermediaries, while breeders of captive-bred songbirds were typically also consumers. Domestic breeders tend to operate out of their homes, though some large-scale breeders have set up special facilities. Breeders of typically captive-bred songbirds also commonly have direct ties to one or more pet shops.

Figure 24: An image of a website selling captive-bred Gouldian Finches in south Florida. From *Gouldian Finches for Sale* [Screenshot], by M. C. Gibson, 2022, July 12, Brenda's Birds (http://www.brendasbirds.com/).

Methods of breeding vary considerably by whether a species is wild-caught or captive-bred and, relatedly, according to the relative difficulty of keeping the species in captivity. As

breeders were most often fundamentally motivated by recreation as well as financial gain, these methods are covered in more detail below in the section on recreational consumption (see Section 4.7.3.3) Notably, breeding wild-caught chestnut-bellied songbirds was regularly described as a technically challenging process due to their primarily seed diets and the goal of breeding for competition. As one songbird keeper explained: “It’s not just breeding of birds, it’s all about genetics to put the correct pieces together and collect proper detail” [P012].

By comparison, captive-bred non-natives were perceived to be easier to breed in captivity and in relatively larger quantities. Notably, there exist a variety of online breeding guides for the identified non-native and commonly captive-bred species (e.g., Menon, 2021). Additionally, partly as a result of successful local captive breeding, non-native common waxbills and tricolored munias are now found in Trinidadian ecosystems. “Tricolored munia as well as the common waxbill are exploding in recent years in parts of Trinidad, especially grasslands and marshlands, and we believe they are here because of the pet trade” (F. Abdool, personal communication, July 1, 2022).

Only general motivations for domestic breeders could be discerned in the course of research. These motivations varied particularly by the origin and species of the songbirds. With respect to the chestnut-bellied seed finch, two breeders and numerous keepers and potential breeders expressed a desire to produce higher-quality birds for competition, sale, and recreational enjoyment. For instance, one potential breeder explained: “[breeding] is a good self-project to maintain a bloodline [for competition]” [P022]. Meanwhile, an occasional breeder of chestnut-bellied bullfinches added, “You can sell a bird for $10,000 [Trinidad dollars], that is an industry!” [P010]. Meanwhile, breeders of other songbirds generally remarked about their love for birds and their enjoyment of breeding as a hobby and source of income. For instance, one

songbird keeper remarked on a family relation that breeds all species of songbirds: “he just loves finches, he loves breeding birds, every morning he gets up for them, that’s his system” [P018].

Harms in the production of captive-bred songbirds were meaningfully identified in relation to animal welfare, biodiversity conservation, and the rule of law. With respect to animal welfare, stocking captive-bred non-native songbirds through international supplies is known to result in mortality due to the stress and care restrictions associated with plane transportation and quarantining. For instance, one veterinary care website in the US describes high mortality in traded zebra finches, which are kept in Trinidad and Tobago: “Finches used to be imported from other countries to the USA…[b]ut there was a high mortality rate…largely due to the high numbers of birds, the shipping time and containers, and the time spent in a quarantine station” (Anonymous, 2021b). However, once such non-native birds are in captivity in the country, there are no apparent animal welfare issues beyond the relative difficulty of keeping songbirds in captivity. Of the five non-native species that may still be sourced from abroad, only the zebra finch is identified to be a ‘moderate’ challenge for keepers under the EMODE methodology. The other four species are meanwhile considered “difficult” to care for.

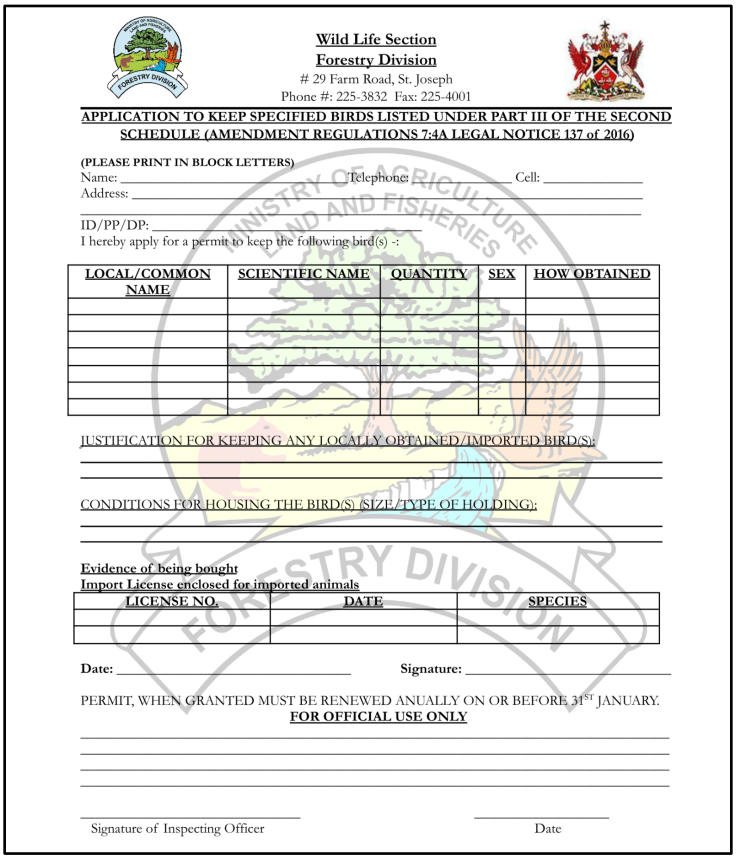
With respect to biodiversity conservation, captive-production of songbirds does not clearly pose a harm to species conservation in Trinidad and Tobago or other countries. Only the Java sparrow is listed by the IUCN as ‘Endangered’ or, more generally, as threatened with extinction, though the Gouldian finch is listed as ‘Near Threatened.’ However, global sourcing of such species through captive populations potentially means reduced demand for wild populations. Meanwhile, captive-bred production does appear to harm or potentially harm native ecosystem conservation. Both the common waxbill and tricolored munia have been introduced into the country through songbird keeping and breeding, but only the tricolored munia are

considered invasive species under the GISD. Likewise, none of the other captive-bred and sourced birds are listed under the GISD.

Compared to the production of wild-caught songbirds, captive-bred production appears to entail lower public health risks. However, disease testing of captive-bred songbirds does not appear to have been yet undertaken in Trinidad and Tobago, so this determination is highly tentative. Ostensibly, captive-bred birds may also carry lower risks of disease and transmissible diseases after multiple successive generations of captive breeding. However, the use of caged environments also suggests that disease could spread easily in stock animals if sickened wild birds come to visit. Indeed, direct observation of one large-scale chestnut-bellied seed finch breeder and keeper indicated that he must carefully guard against feral pigeons that could easily access the cages that were kept in a semi-finished residential building. Notably, feral pigeons are recognized to be common carriers of zoonotic disease (Haag-Wackernagel et al., 2004).

With respect to the rule of law, the production of most captive-bred songbirds appears to occur in violation of domestic law ordinarily. In particular, under the Conservation of Wild Life Act, the non-native common waxbill European greenfinch, Gouldian finch, Java sparrow, tricolored munia, white-rumped munia, and zebra finch are all ‘protected animals’ requiring possession permits and special authorizations for every sale. Meanwhile, from 2016 to 2018, the Trinidad FD received possession applications for just captive-bred Java sparrows and zebra finches (see Figure 25). Additionally, applications covering these birds represented 56 distinct birds, yet issued permits allowed only 21 of these birds to be kept captive. Ostensibly, the remaining birds were kept illegally, and there are likely many more birds that have never been associated with a permit application.

Figure 25: An image of an application form to possess a second schedule animal. From *Application for Possession* [Screenshot], by M. C. Gibson, 2022, Forestry Division.



Wild Life Section
Forestry Division
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APPLICATION TO KEEP SPECIFIED BIRDS LISTED UNDER PART III OF THE SECOND SCHEDULE (AMENDMENT REGULATIONS 7:4A LEGAL NOTICE 137 of 2016)

(PLEASE PRINT IN BLOCK LETTERS)
Name: _____ Telephone: _____ Cell: _____
Address: _____
_____
ID/PP/DP: _____
I hereby apply for a permit to keep the following bird(s) -:

LOCAL/COMMON NAME	SCIENTIFIC NAME	QUANTITY	SEX	HOW OBTAINED

JUSTIFICATION FOR KEEPING ANY LOCALLY OBTAINED/IMPORTED BIRD(S):
_____
_____

CONDITIONS FOR HOUSING THE BIRD/S) (SIZE/TYPE OF HOLDING):
_____
_____

Evidence of being bought
Import License enclosed for imported animals

LICENSE NO.	DATE	SPECIES

Date: _____ **Signature:** _____

PERMIT, WHEN GRANTED MUST BE RENEWED ANUALLY ON OR BEFORE 31ST JANUARY.
FOR OFFICIAL USE ONLY
_____
_____
_____
_____

_____ _____
Signature of Inspecting Officer Date

4.7.1.2. Wild-caught songbirds

The identified stages of production for wild-caught songbirds are three: trapping, collecting, and logistics. Based on interviews with a wide variety of key informants, the trapping of wild-caught songbirds spans more than six countries, specifically: Barbados, Brazil, Colombia, Guyana, Trinidad and Tobago, and Venezuela. The primary producing country was identified to be Venezuela, followed by Colombia, Guyana, and Trinidad and Tobago as occasional countries supplying Trinbagonian markets. This ordering of trapping countries was strongly supported by key informant interviews conducted with five traffickers specializing in wildlife and other animals as well as 40 pet shop operators. For instance, one trafficker explained, “a lot of the animals are coming from Venezuela, next Colombia, Trinidad, and

generally South America" [P102], while a pet shop operator indicated that "Most of the birds come from Venezuela, the bullfinch comes from Venezuela" [P232].

Barbados and Brazil were only indicated as only rarely trapping wild-caught songbirds for the Trinbagonian market. Only in one instance was an endemic Barbadian bullfinch (*Loxigilla barbadensis*) identified in the course of the research, and expert songbird keepers suggested that this was a unique novelty bird. Brazil was also indicated as rarely producing high-value songbirds for Trinidad and Tobago, which aligns with its production of songbirds from its neighbor Guyana to the north (Andel et al., 2003; Gupta, 2014). Meanwhile, one wild-caught species—yellow-breasted chat—could have been trapped in any number of countries in North and Central America.

The collection of trapped songbirds for trade ostensibly occurs in all foreign countries that supply songbirds to Trinbagonian markets, however, only information on this practice in Venezuela and Guyana was uncovered in the course of research. Where trapping occurs over large areas in Venezuela and Guyana, collection involves the aggregation of songbirds into common locations from which they may be sold and transferred to Trinidad. Notably, collection in Venezuela also involves songbirds that have been trapped in Colombia. Meanwhile, because collection often occurs in locations with poor communications, logistics are commonly arranged out of at least two villages in Venezuela—Tucupita in the Orinoco Delta and Guajira on the Paria Peninsula—and at least one village in Guyana—Mabaruma near the border with Venezuela. For instance, one trafficker explained, "the guys in the bush will have the birds, big cages, and they will send word to Tucupita when they are ready to sell" [P198].

The key actors in these wild-caught production stages are trappers, collectors, and logisticians. All these actors are typically men, and indigenous communities play a prominent

role in trapping in South America. In Venezuela, the Warao indigenous are primarily involved in trapping, while in Guyana, Warao and other indigenous communities are involved. Occasionally, however, Trinidadians do visit Venezuela to engage in trapping directly and avoid the need to work with collectors and logisticians (e.g., Anonymous, 2016). In Trinidad and Tobago, meanwhile, trappers are universally Trinidadian nationals and catch and distribute at such small scales that specialized collectors and logisticians are rare if non-existent.

One trafficker has also suggested that collectors and logisticians in Venezuela are commonly individuals that have a criminal record in other illegal activities, and for this reason, they choose to live in remote areas or away from their home countries to organize a range of illegal trade. This was explained by the above-quoted trafficker familiar with the Tucupita trade: "the guys calling in Tucupita at Trinis have had to leave the country [to avoid arrest], murder usually, so they find business linking the Venes and their [Trinidadian] networks" [P198].

Three specific methods were identified as used by songbird trappers. The first is the use of cage traps, which may be the same type of cages used to keep solitary songbirds or specially made cages to improve capture (Figure 26). The second is the use of bird glue, or "bird lime," which is made by pulping the berries of a native fruiting tree called "lay lay" (*Cordia collococca*) and combining the pulp with sugar to make a sticky substance (Figure 27). This is then applied to branches that have been stripped of leaves to encourage the bird to land on them. The third is the use of large mist nets, which are typically placed in slight or major clearings in forests to increase the likelihood of passive catches. Mist nets may be placed and revisited the following day. The use of cage traps and bird glue is commonly paired with other attractants, including food, a small speaker playing calls, and another bird. Depending on the species,

available resources, and preference, trappers may use a live bird or recording to produce either male or female calls.

Figure 26: An image of a standard solitary cage meeting legal requirements. From *Empty Solitary Cages* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

Figure 27: An image of a video explaining how to use saliva to remove bird glue from songbirds in Guyana. From *Catching Birds in Guyana Best Bird Catching* [Screenshot], by M. C. Gibson. 2022, July 8, YouTube (https://youtu.be/ZQF6iK3eRWA). CC0.

Collectors, meanwhile, typically specialize in the maintenance of a camp where medium to large volumes of wildlife may be maintained. This includes keeping aviaries, small cages, and a range of materials to pack wildlife for transport to Trinidad. Some collectors also provide supporting equipment to incentivize trapping among indigenous communities, and some may also become part of the local indigenous community by establishing close business ties and possibly marrying in the area. This practice in Guyana is particularly well described by Cullen (2005, p. 69), who reports on a middle-man, Jerry, that has "shifted from being a distrusted stranger and *mekuru* to a full-fledged *parawan*, or trade partner, valued for the social and material wealth he brings from afar."

Importantly, collectors in Venezuela and Guyana do not entirely rely on logisticians to arrange sales and shipments of wild-caught songbirds to Trinidad and Tobago. This is due to the fact that maritime traffickers are often searching for additional contraband to place in their boats. Thus, if a trip is arranged to agricultural products and there is space remaining in the boat, then the crews will visit collectors of wildlife and other products to see if there is additional availability. As one trafficker explains, "It is a business, you understand? Every space that is empty is costing you money, so you will fill it out with whatever you can, gas is not cheap" [P102]. Additionally, sometimes small-scale collectors in Venezuela will simply make a trip to Trinidad via more general transportation of persons between the two countries and thus serve instead as full 'middlemen.' This is particularly evidenced by the recent loss at sea of a vessel from the Warao village of Nabasanuka, which carried more than twenty passengers bringing birds and handicrafts to sell or exchange for gasoline, medical supplies, and food products (Marín, 2021).

Outside of Trinidad and Tobago, trappers, collectors, and logisticians also engage in the trade of a wide variety of wildlife, not just songbirds. For instance, one trafficker explained his excitement upon visiting his first collection site in Venezuela: “when I go Venezuela I go mad with the different species of animal, they have everything” [P215]. Furthermore, logisticians appear to act as generalists without any specialization in wildlife. One pet shop operator with a family member trading out of Tucupita explained: “sheep, dog, cheese, honey, marijuana, birds, he does it all” [P067].

For ground transportation in Colombia, Guyana, and Venezuela, indigenous producers will typically employ small dugout canoes of 3-4 meters in length, while non-indigenous producers will use non-decked boats with outboard motors, typically 7-12 meters in length, as well as regular motor vehicles when trapping off of roadways. In Trinidad and Tobago, trappers will employ regular motor vehicles to partly reach their trapping areas, often in deep forests. In the remote areas of northern South America, little effort is expended to hide bird cages, while in Trinidad and Tobago, extra care must be given by trappers to avoid detection by the police on major roadways. Another trafficker explained, “they not looking in the forest, the only real risk is if you hit a roadblock [for general police inspection], then there could be trouble” [P105].

As for motivations, the generation of primary income drives songbird production across producer countries. This is particularly the case for Warao indigenous in Venezuela, who are among the poorest communities in Venezuela and there appear to be few legal opportunities for them to make living wages (Valverde, 2019). For Warao trappers, collectors are reported to pay a mix of bartered goods such as alcohol, flour, and medical supplies and US currency equivalent to approximately US$0.50 to $1.00 per songbird. Non-indigenous trappers, meanwhile, will be paid exclusively in U.S. dollars or Colombian pesos given the hyperinflation in the Venezuelan

bolívar. By comparison, some Trinidadian trappers are motivated by a desire for recreation and only small amounts of supplemental income. As one songbird keeper and trapper explained, "People do it because it is a pastime, hunting" [P017].

Harms in the production of wild-caught songbirds were meaningfully identified in relation to animal welfare, biodiversity conservation, public health, and the rule of law. With respect to animal welfare, injury and death are common in the use of both bird glue and mist net capture methods. The use of bird glue can cause broken legs and wings, especially if a trapped bird is not quickly retrieved by a trapper. Though mist netting is considered a relatively safe collection method for songbirds, very often birds will spend extended time in nets allowing for mosquitos to feed on them, and can result in infections that kill many of the birds. For example, one songbird keeper who has visited Venezuelan collectors explained, "Sometimes they stay overnight [in a net] and the mosquitos bite them and this gives them the sickness" [P002]. The overcrowding of birds in cages is also common throughout the production phase, which can result in stress, injury, and the transfer of disease.

With respect to biodiversity conservation, the collection of wild-caught songbirds is broadly perceived by stakeholders to have resulted in substantial population declines, if not local extinctions. In Trinidad and Tobago, many songbirds can no longer be found in the wild due to excessive collection (Sookdeo, 2015). As one hobbyist explains, "Where we come from in the southern areas, you use to have picos [gray seedeaters], you used to have chat [Lesson's seedeaters and lined seedeaters], silver-beaks [yellow-bellied seedeaters], robins [ruddy-breasted seedeater], and you don't see them now." There are also similar anecdotal reports of various songbird species becoming increasingly rare in Guyana (e.g., Deolall, 2019). Based on these past

extirpations, it is likely that collection continues to contribute to a serial depletion of populations that could one day constitute a global extinction threat to traded species.

With respect to public health, disease occurrence and transmission is common at this stage of trade, but sick songbirds are reported to not be particularly symptomatic until the exchange and consumption phases. The most common pathogens acquired in this stage as well as throughout the trade are: coccidiosis, a parasitic intestinal infection; avian pox, a viral infection; and avian mites, a parasitic dermatological infection. Coccidiosis and avian mites will often be acquired through the use of contaminated cages and interactions with the fecal matter of infected birds, while avian pox will be acquired through interaction with infected birds and by being bitten by infected mosquitos and mites.

Finally, with respect to the rule of law, production results in a diversity of legal violations in all producing countries. The songbirds are regulated in Colombia, Guyana, Trinidad and Tobago, and Venezuela, and producers almost never comply with rules for trapping, possession, and sale. As one trafficker explains, “you won’t find a more lawless place than Venezuela right, no one is stopping anyone [from committing crimes]” [P210]. Similarly, enforcement officials in Guyana note that they have too few staff to monitor a reported wildlife trade along the Venezuelan border (Anonymous, 2020). Additionally, in Trinidad and Tobago, there are only two species of songbirds permitted to be hunted with a permit, yet even these species are commonly hunted without authorization. For instance, a songbird keeper and trapper indicated that he was unaware that a permit was required to hunt violaceous euphonia (*Euphonia violacea*) or “semp”: “During the hunting season, you can hunt semp, it is on the list of what you can catch, no permit needed” [P012].

4.7.2. Exchange

The exchange of songbirds involving Trinidad and Tobago occurs through a variety of routes for international import, domestic supply, and international export. International import routes vary by mode of transportation and if they involve songbirds that are wild-caught or captive-bred in origin. In particular, the primary importation route for songbirds is trafficking by sea from Venezuela directly into Trinidad, while a low volume export is reported to occur through a largely unregulated yachting community. Domestic supply routes typically vary according to whether a songbird is foreign wild-caught, domestic wild-caught, and captive-bred in origin. Meanwhile, international export appears to occur through at least one route involving yachts traveling within and outside the Caribbean. The stages, actors, and harms of national and international routes are further described below.

4.7.2.1. Importation

The importation of songbirds into Trinidad and Tobago is indicated to occur through at least five routes. The four of the five importation routes correspond to foreign-caught songbirds and are composed of parallel stages of boat transport. The fifth importation route corresponds to foreign-bred songbirds and is composed of one to two parallel stages of airplane transport and, for legal imports, associated government quarantine. Notably, boat transport for wild-caught songbird importation defines four of five importation routes. Three of these maritime routes are rather similar as they are conducted bilaterally, specifically from Colombia to Venezuela, Venezuela to Trinidad, and Guyana to Trinidad.

Key actors in the Venezuela-to-Trinidad and Guyana-to-Trinidad are small crews of generalized traffickers, all men, that operate relatively small vessels. There is also evidence that these generalized traffickers are supported by coastal villages and communities in Venezuela,

Trinidad, and possibly Guyana. For instance, in one news story, a mother of a slain trafficker reflects upon the importance of contraband for her village of Icacos: "[C]attle, goat, sheep, honey, gold, milk, cheese, weed…[p]arrot, bird, monkey, goat...If that is a criminal offence [to bring in from Venezuela], then come and lock up the whole village" (Fraser, 2021). Various news reports also indicate that many Venezuelan fishing communities have turned to trafficking to survive the economic crisis (e.g., Avendaño, 2016), while informing traffickers highlight that there are at least several camps of foreign-origin traffickers from Cuba, Haiti, and Jamaica within the Orinoco Delta. As one trafficker explains, "they come from all over the Caribbean and a lot of them have some history of trafficking in their own country" [P198].

Traffickers engaging in the bilateral routes between South America and Trinidad are notable for sharing common methods. Pirogues, or non-decked vessels typically 7-12 meters in length operated with outboard motors, are ordinarily used with crews of 2-3 persons (Figure 28). Occasionally, pirogues of 12-13 meters in length will also be used. Traffickers operating along the two main bilateral routes also commonly own their own pirogues and some traffickers may own two or three and run several associated boat crews. As one trafficker explains, "these guys are hustling hard trying to make a little money, so some of them decide to expand, but it is never more than a few boats because of the risk of getting too big [and becoming a target]" [P215].

Traffickers in Venezuela and Guyana will obtain songbirds by purchasing from them wildlife collectors for approximately $2-3 USD per bird. Trips will occur both during day and night. Animals will be stored in cages, cardboard boxes, and indigenous-made baskets woven from moriche palm fibers. Typically, weights will be placed in the containers to allow easy "disposal" by sinking in the event of detection by a Venezuelan or Trinidadian coast guard vessel (e.g., Wilson, 2020). However, where the Venezuela-to-Trinidad route is typically completed by

a single boat, the Guyana-to-Trinidad trade route often requires Trinidadian and Guyanese boats to transfer cargo at sea at an agreed GPS location.

Figure 28: An image of pirogues docked inside of a mangrove in south Trinidad. From *In 60 Minutes or Less* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

These two bilateral routes will also typically involve the trafficking of a wide range of other contraband, including: cheese, honey, milk, farm animals, gold, human refugees, marijuana, cocaine, purebred dogs, and other wildlife. Where all wildlife will typically be collected from one or two locations in a typical "run," other contraband will be collected from a multitude of locations based on existing relationships and availability. This contraband will typically be landed across the southern and western coasts of Trinidad and in the northwestern peninsula of Trinidad. The landing of contraband is reported to mainly center around the southwestern Cedros Peninsula. As one pet shop operator explained, "Once you in Cedros [in southwest Trinidad], you getting anything" [P233].

The trip from Venezuela to Trinidad takes traffickers between 30 and 60 minutes, while a trip from Guyana to Trinidad may take 3 to 5 hours due to the greater distance and ocean

currents. However, the operation of either route is highly dependent upon weather conditions. It is also common for a boat to wait many hours hidden in coastal inlets and mangroves when a coast guard patrol or a pirate gang is sighted in the area. For over a decade, piracy has been reported to be particularly problematic in and near Venezuelan waters, and many traffickers have lost engines and even their lives (Venezuela Investigative Unit, 2019). Another trafficker further substantiated the difficulty of this journey: "I experience that, I had to jump off the boat, with machine gun and thing, shooting behind you…you never know when you go come back" [P215].

For trafficking along the Orinoco River from Colombia to coastal Colombia, traffickers employ more varied vessels. Traffickers may operate as crews using pirogues, or individual traffickers may transfer their cargo down the Orinoco River via riverboats. This type of trade is generally perceived to occur only occasionally, with Colombian wildlife reaching the lower Orinoco at most once a month for subsequent sale at collection sites. Given the risks Colombians face if they encounter a Coast Guard patrol, few Colombian traffickers ever arrive in the delta themselves but will have instead sold off their contraband to Venezuelan nationals.

A fourth maritime route using cargo vessels has also been documented as uncommon but involves high-value songbirds sourced from countries across the Caribbean and South America. In this route, individual Trinidadian crew members on cargo vessels sailing between these countries will occasionally carry juvenile songbirds and other types of birds in their personnel effects. One high-end trafficker indicates that he has previously sourced high-value ultramarine grosbeaks (*Cyanoloxia brissonii*) through a cargo vessel route: "it happens, but not often because it takes a lot of work…every few hours they have to use a dropper to feed them" [P105]. These birds will be purchased as juveniles from local sellers at major ports including Georgetown,

Guyana, Paramaribo, Suriname, and Belem, Brazil. The juvenile bird is then kept in personal luggage and, as indicated, attended to every few hours to ensure it is properly nourished.

A fifth importation route involving airplane transportation is specially used for the exchange of songbird species not native to Trinidad and Tobago and nearby countries. At least some species of captive-bred birds are sporadically imported through legal airplane transport, which would involve government quarantine. Additionally, one trafficker and high-end seller shared that he previously illegally imported a range of captive-bred songbirds and parrots from the United States and the United Kingdom with the assistance of a private jet pilot. These species included zebra finches with special color variations as well as parrots like white cockatoos (*Cacatua alba*). He further added, "I don't do that now, I have kids [laughs], but others are still doing it. You'd be surprised, they don't really check the jets [when departing], and they don't always take a look at Piarco [airport in Trinidad]" [P105]. This individual further added that he believed some captive-bred birds may also now be sourced through Canada.

With regards to motivation, traffickers working across the main three bilateral routes are broadly perceived to operate for the purposes of securing primary income by which they and their families may survive. For instance, one conservationist explained: "the Venezuelans are selling all sorts of stuff just to try to get something to go back to eat, and it isn't much better for others in Guyana and Colombia" [P047]. By comparison, the cargo vessel trade and illicit private jet trade are perceived to just provide supplementary income to the participating crew members. As a trafficker explains, "it's some extra money to bring in some birds [by cargo vessel or plane], but it isn't like they are replacing their main income" [P105]. Finally, by comparison, legal airplane transport of captive songbirds is motivated by the ordinary provision of services for legal international air shipments.

Harms in the importation of wild-caught songbirds were meaningfully identified in relation to animal welfare, public health, and the rule of law. With respect to animal welfare, particularly high rates of mortality are reported for wild-caught songbirds transported by the three main bilateral routes. Songbird keepers were open about the high mortality in these trade routes. For instance, one songbird keeper explained, “They will have maybe 100, 200, sometimes 800 birds, and it’s not a big cage…very few birds survive that” [P002]. Songbird keepers and traffickers also commonly reported that a 100% mortality event often resulted if the TTCG intervened in songbird trafficking: “Sometimes the Coast Guard coming to meet them [traffickers] and they just dumping it...they dump a whole cage in the sea” [P025]. Meanwhile, the animal welfare harms associated with cargo vessels and planes are well understood.

With respect to biodiversity conservation, harms may occur in the event that imported songbirds are accidentally released and introduce diseases to wild songbirds. However, accidental releases are reported to be rare in this stage. Relatedly, however, intervention by enforcement agencies in this stage can result in songbirds being released if officers so decide, which greatly increases the risk of sick songbirds introducing illnesses to wild populations.

With respect to public health, harms clearly occur in this stage in relation to the main bilateral importation of wild-caught songbirds. As already discussed above, the production of wild-caught songbirds commonly introduces diseases to wild-caught songbirds, while the conditions of pirogue-based transport mean that songbirds are stressed and often exposed for prolonged periods to the sun, salt spray, and rain. As one pet shop operator explains, this treatment weakens the songbirds and means many ultimately die from disease: “many birds have been coming and the condition they come in is really really bad, and if I buy them and they die on me I still have to pay” [P122].

Finally, with respect to the rule of law, the importation of wild-caught songbirds involves consistent violations of laws governing general international trade, international trade in animals specifically, and possession, sale, and treatment of wild animals. The extent of legal violations involved in the well-documented contraband trade between Trinidad and South America is such that many stakeholders believe that Trinidad and Tobago fails to stop trafficking volumes due to large-scale corruption. For instance, a veterinarian remarked, “It’s corruption and corruption and corruption and corruption, and it’s just nothing we can control as vets” [P083]. A trafficker further similarly reflected, “work hard and make your way up is not the way in Trinidad, the way in Trinidad is ‘Who do you know who you can bribe?” [P102].

4.7.2.2. Domestic supply

The domestic supply of songbirds within Trinidad and Tobago is indicated to occur through at least three routes differentiated by whether songbirds were caught abroad, caught domestically, or bred locally. Given the large volumes of foreign wild-caught songbirds, their domestic supply is the most complex with stages of storage, wholesaling, retail sales, and secondary sales. Meanwhile, domestically-bred and domestically-caught songbirds are variably traded through stages of retail and secondary sales and rare as part of luxury sales. When Tobago is involved, the exchange of any type of songbird also involves a stage of boat transport, variably before or after sales are made.

The domestic supply of foreign wild-caught songbirds begins once they are landed in Trinidad. Upon reaching Trinidad, boat crews will either immediately pass their contraband to a storage handler with a waiting vehicle or instead hide the cargo at a nearby house or forested area so that they or others can retrieve and store the contraband later. At this stage, songbirds and other living wildlife are typically separated from other types of contraband so that they can

receive basic care and be transferred to a specially set up storage site (Figure 29). If animals have become wet with salt water, they may be washed with fresh water and placed in the sun to dry prior to being transferred. Storage sites are heavily concentrated in south and central areas of Trinidad but have been reported across the island. Descriptions of storage sites provided by a range of pet shop operators and traffickers suggest that these locations are typically unfinished houses within which cages are constructed. This was further substantiated by FD management, which confirmed that these descriptions are consistent with their staff's enforcement experiences.

Figure 29: A cage of wild-caught songbirds at a wildlife storage facility in Trinidad. From *Warehoused for a Song* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The organization of storage in relation to boat transport and subsequent stages of wholesaling, informal sales, and retail sales is highly variable. Boat crews may have established partnerships or close personal relationships with persons who can store and sell songbirds and other wildlife, or they may simply sell their wildlife to any number of business operators known to engage in wildlife storage and wholesaling. This organization partly depends upon whether

these crews typically transport wildlife and on the volume of the animals. For instance, a boat captain may be part of a large familial network within which there is a pet shop operator to partner with for distribution, or the crew may store the songbirds and possibly other wildlife for several days as they and close relations market the animals to pet shops and other retailers. Therefore, depending upon the operation, wholesaling may be essential or absent to exchanges of wild-caught songbirds.

Key informants and direct observations of captive wildlife indicate that wildlife storage handlers and wholesalers vary in their identities as Trinidadians or Venezuelans. Though there exist local concerns of Venezuelan and Trinidadian gangs (e.g., Renne, 2022), these actors generally lack ties to violent organized crime. Most commonly, Trinidadians maintained authority in these stages, but hired Venezuelans to provide care to stored animals. For instance, two videos of wildlife facilities shared by a participating trafficker featured off-camera individuals speaking Venezuelan Spanish, but the trafficker clarified: “those guys are just the helpers” [P198]. Additionally, several pet shop operators and one trafficker highlighted that occasionally Venezuelans that speak English would also market wholesale shipments to pet shops and other private sellers through WhatsApp. In general, storage handlers and wholesalers were reported to be men.

The methods employed for storage generally consist of providing periodic food and cage cleaning for the animals and removing any that may die. Some storage handlers are reported to provide specialized care for some sick or injured traded wild animals but do not provide such care to songbirds. For instance, several participating veterinarians described a small number of integrated storage and wholesale operations that ordinarily provide veterinary inspection and treatment for large shipments of trafficked blue and gold macaws (*Ara ararauna*), but could not

think of any operation providing such care to songbirds. Instead, it appears a certain volume of songbirds are expected to die due to disease. As one pet shop operator explains, “maybe 50% will die, [so] they cater for that, in a business you must cater for losses, if you don’t then that is not a business” [P069].

The methods employed to market songbirds wholesale primarily involve calling, WhatsApp texting, or visiting pet shops to offer them a shipment of songbirds. Pricing for wholesale songbirds varies widely due to the high rates of mortality, but juvenile wild-caught songbirds were broadly indicated to be bulk priced at rates equivalent to US$1 to US$2 per bird. For example, a pet shop operator shared, “you can buy a cage of bullfinches, 50 to 100 [individuals], for US$100, and each bird is sold for TT$250 to TT$300” [P232]. Beyond pet shops, wholesalers may also market songbirds to private sellers that specialize in the retail sale, secondary sale, and competitive keeping of chestnut-bellied seed finches.

After wholesaling, foreign wild-caught songbirds are domestically exchanged through a mix of retail and secondary sales. Retail sales occur through pet shops and other private sellers, while secondary sales occur almost exclusively through private sellers. Pet shops are typically, but not always, operated by Trinidadian men, while other private sellers are almost universally Trinidadian men. In the course of research, more than 50 pet shops were identified in Trinidad and four pet shops were identified in Tobago (Figure 30). Approximately half of these pet shops had one or more songbird species for sale upon visiting, while some pet shops indicated that they did not participate in the songbird trade because they specialize instead in the sale of dogs, fish, and other birds. For instance, one pet shop operator explained that they “used to have a pet shop with finches, parrots, and fish [and dogs]…but we closed to sell dogs because a lot of money will pass [for these animals]” [P187].

Figure 30: A pet shop selling wild-caught songbirds in Trinidad. From *Songbird Sales in the Open* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

In comparison to pet shops, private sellers are far more numerous and play an essential role in developing the secondary market. Many recreational consumers will make secondary sales of their birds to persons within their community as part of their ordinary keeping practices. This suggests that many of the country's 10,000 or more songbird keepers will at some point make a secondary sale. Meanwhile, there exist a number of independent private sellers who appear to have begun as recreational consumers and now make money in retail sales as well. Such sellers report that they engage in retail sales of songbirds because this allows them to expand their network for secondary sales and because they are often able to charge a premium for sales assistance. As one private seller explained, he is able to charge consumers extra by helping them pick birds that are likely to be healthy males: "People does use me to pick their bird for them, so I charge a little bit more than a pet shop" [P014].

In spite of the importance of private sellers compared to pet shops, there is only limited data to estimate or clearly identify them. A national survey of 2,004 households suggests that most kept songbirds have most recently passed through a private seller rather than a pet shop. Out of 84 reported songbirds out of 38 detected homes, 31% of these birds were reported to have been sourced from pet shops, compared to 44% who purchased from a "private seller" and 10% who purchased from a friend. However, this data did not specify for which birds were purchased having never been kept before as opposed to birds that were kept by new keepers. Combined with CSO household estimates, the household survey data further suggests that there are between 6,945 and 13,890 households in the country that keep chestnut-bellied seed finches and that may at some point engage in private sales (see Table 19).

The methods used to make retail and secondary sales of foreign-caught songbirds vary by storage and pricing, but substantially overlap in marketing. As discussed above, foreign-caught songbirds are initially considered to be low value and ordinarily subject to high mortality rates. As a result, retail sales of such songbirds involve keeping large cages of birds with between 30 to 100 birds from which customers may choose. Meanwhile, secondary sales will involve keeping these birds in solitary cages, which is in line with customary keeping practice. For the most common chestnut-bellied seed finch, retail sales will often be made for TT$250 to $450 (US$37 to $66), with a social media observed median price of TT$350 (US$52). Price premiums of TT$100 to $400 (US$15 to $59) may also be added for a more curated sales experience provided by an independent private seller that also doubles as a recreational keeper. By comparison, secondary sales prices of chestnut-bellied seed finches may reach as high as TT$100,000 (~US$14,744) for the most prized competitors, though more commonly, secondary sales are reported to occur with pricing between TT$1,000 to $5,000 (US$147 to $736).

With regards to marketing, pet shops and private sellers will commonly make use of social media platforms and broader social networks, while retail sellers will also make use of physical locations to varying degrees. In the course of research, two social media platforms were observed to be especially important in the sale of both wild-caught and captive-bred songbirds, Facebook and WhatsApp. For instance, six weeks of observation of 26 public Facebook groups in 2019 yielded 248 posts of sales offers or posts of songbirds and, inclusive of sharing information, this indicated that more than 32 public Facebook groups are involved in songbird sales, though a clear majority were posted to just three groups. Similarly, songbird keepers regularly referred to being members in one or more groups on WhatsApp. The research team was unable to estimate the number of these groups due to privacy issues, but one large group is reported to have more than 200 members, and there is ostensibly one WhatsApp group for each of the 15 formal clubs. In addition to posting sales offers and requests, group members post a range of content, inclusive of photos, videos, and discussions on care and training practices. In the most popular Facebook and WhatsApp group, new content will be posted on most days of the week.

With respect to the use of networks, retail and secondary sellers will also ordinarily share information on their offerings through participation in informal songbird groups and formal club events. For pet shop operators, this typically occurs indirectly, such as by calling friends and acquaintances within groups and clubs, though some pet shop operators are also recreational songbird keepers. Meanwhile, direct observation of six songbird competition events indicates that most recreational consumers will rely on groups and clubs to receive solicited and unsolicited private sales requests, and some private sellers will also use such events to complete sales exchanges.

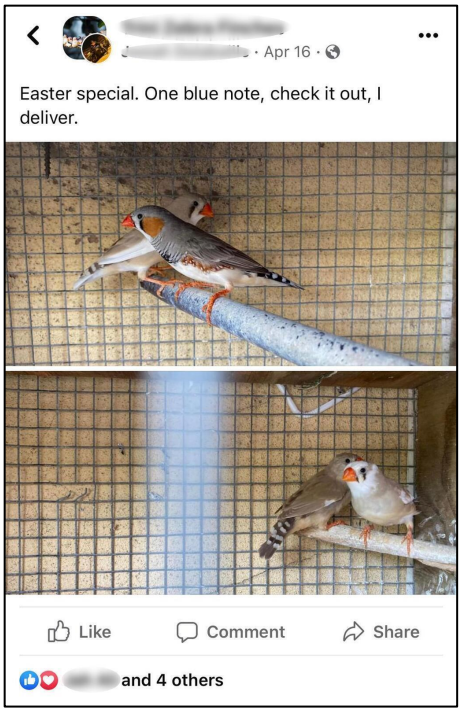
Fixed places of business and both songbird and other animal species inventory is central to the retail sales method used by pet shops but only of limited importance to private sellers. By definition, pet shops rely on fixed locations with public advertising to attract customers. However, pet shop advertising typically suggests that songbirds are a relatively low-interest species to the general public, and public advertising often emphasizes other animals like dogs, parrots, and turtles (Figure 31). Meanwhile, only some private sellers employ fixed locations or involve themselves in the sale of other animals. For instance, direct observation of one private seller's "training room" revealed a carefully arranged room showcasing more than 15 cages with songbirds for secondary sale, while another room had a large cage of juveniles for retail. This seller additionally showcased a monkey and indicated that he also acts as a middle-man for the sale of monkeys and macaws.

Figure 31: A pet shop using broad species advertising in Trinidad. From *Advertising Illegal Pets* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

Private sellers making secondary sales of chestnut-bellied seed finches also stand out for sometimes accepting payment through barter or a mix of cash and barter. For instance, one

songbird keeper explained, “My grandfather has sold a bird for a car already, and he’s not the only one, you could barter, that happens a lot” [P012]. In other cases, one or more songbirds of lesser or equal value may be exchanged to make a sale. In the midst of extensive exchange of foreign wild-caught songbirds in Trinidad and Tobago, relatively small amounts of captive-bred and locally wild-caught songbirds are also exchanged through retail and secondary sales. Retail sales of these categories of songbirds is largely restricted to non-native captive-bred species, such as zebra finches and white-rumped munias. Retail sales of these species may be conducted by breeders through posting in Facebook groups (Figure 32) and, to a lesser extent, by pet shops that purchase from local breeders.

Figure 32: An image of an online advertisement for captive-bred zebra finches. From *2022.04.19.001* [Screenshot], by M. C. Gibson, 2022, Facebook. CCO.



Luxury sales, meanwhile, are made almost exclusively for captive-bred and locally wild-caught chestnut-bellied seed finches. Captive-bred specimens are considered a novelty that holds the potential to perform exceptionally well in competition if it has a reputable bloodline, and

keepers report prices for juvenile captive-bred chestnut-bellied seed finches up to TT$10,000 (US$1,473). Locally wild-caught chestnut-bellied seed finches, meanwhile, are considered an extremely rare and superior songbird, possibly with unique local phenotypic characteristics. An untrained juvenile caught locally could sell for up to TT$30,000 (US$4,418). Local songbird keepers would regularly share how rare and valuable such a specimen would be given their near local extinction. For instance, one songbird keeper shared, "you see a local bullfinch now and it's like seeing god" [P009] and "I actually know someone who bought a local for TT$30,000" [P039]. In the case of luxury songbirds, secondary sales are also common.

With respect to songbird exchanges in Tobago, a common additional stage is that songbirds are transported over to this smaller island from Trinidad using the country's inter-island ferry. Though trapping for songbirds occurs in Tobago, like in Trinidad, this activity is very limited, and there are no reported songbird breeders on the island. Songbirds may be brought to Tobago prior to the sale in order to be promoted by two of the island's pet shops, while chestnut-bellied seed finches, in particular, may be sold through independent private sellers operating in several of the island's main population centers. Caged songbirds would typically be placed in the cab of a vehicle in the parking hold for the approximately three to three- and half-hour journey.

Compared to actors in the stages of storage and wholesaling, the actors involved in sales stages vary greatly by motivation. Storage handlers, wholesalers, and pet shop sellers are broadly perceived to operate for business purposes only, and rarely hold any special passion for the keeping of songbirds. However, private sellers are often operating for a mix of income and a special love for the keeping of songbirds. As one keeper explains, "You have to distinguish between people minding the birds for profit as opposed to people who minding the birds for love

and competition" [P011]. These special consumer motivations are further described below (see 4.8.3).

Harms in the domestic supply of all songbirds were meaningfully identified in relation to animal welfare, the rule of law, and public health, and serious harms to biodiversity conservation are suspected. With regards to animal welfare, the high mortality of wild-caught songbirds is especially concerning, particularly as one common disease, coccidiosis, is treatable with appropriate medicine. The presence of these diseases also poses grave risks to other captive birds when kept in the same storage area. The scale of songbird mortality is such that some songbird keepers express serious remorse, such as one keeper that was brought to tears in a focus group as he reflected on how his prized chestnut-bellied seed finch had been sourced. Numerous pet shop keepers similarly hoped for a legal trade with Venezuela to reduce the death of songbirds due to sickness. For instance, one pet shop operator expressed that there should be "a legal way to bring it in, so if there are sick birds they can take out the sick birds [during quarantine]" [P098].

With regards to the rule of law, the domestic supply of songbirds involves consistent violations of laws governing the possession, sale, and animal welfare. For instance, the recently amended Animals (Diseases, Importation, Health and Welfare) Act requires animal keepers to seek veterinary care when an animal is in need. Additionally, only a few species are permitted to be sold during an open season, including the most common chestnut-bellied seed finch and gray seedeater, yet these species are commonly known to be almost exclusively sourced through trafficking and poaching. This situation is so contradictory to the aims of conservation embedded in the governing Conservation of Wild Life Act that some conservationists believe that the government is unable to take appropriate actions to reduce illegality. As one explains, "the government must know that the bullfinches are being smuggled because permits for them aren't

being given. The only real way to promote conservation here is to make bullfinch ownership illegal" [P056].

With regards to public health, disease occurrence and transmission is common in the domestic supply among songbirds that have been illegally imported. Weakened by poor captive conditions and introduced to new caged environments with other birds, trafficked songbirds are vectors for avian pox, coccidiosis, and mites. Nevertheless, some actors involved in sales report taking extra steps to "quarantine" newly acquired birds by separating them and providing special care as needed. For instance, one keeper and specialized seller explained, "you have to quarantine them, you have to isolate them, and get proper medical support to treat the ailment because it could be devastating, it could be devastating to whatever birds are in your home" [P021].

Finally, there are suspected serious harms to biodiversity involved in domestic supply. Though it appears rare that songbirds are accidentally released, there is a possibility that some sellers release sick songbirds when they no longer believe the bird will survive under their care. This is a practice that occurs in at least some songbird keepers, though some also eventually realize their mistakes. As one songbird keeper explains, "There are plenty who have a sick bird and let it go back into the wild. I do it already, but then I did not know the danger in that" [P040]. Although this practice may be common among consumers, it is not clear if those involved in stages of exchange do the same.

4.7.2.3. Exportation

The exportation of songbirds from Trinidad and Tobago to other countries possibly occurs as part of a broader trade of contraband with other countries in the Caribbean and the wider western hemisphere. The research strongly indicates that a variety of wild animals are

exported from Trinidad and Tobago to Grenada and Barbados, but it is unclear if this trade involves songbirds. Specifically, professional experts in both Grenada and Barbados anonymously report that South American parrots, macaws, and monkeys are kept as pets and zoological attractions in these countries and have been sourced through Trinidad and Tobago. This was further confirmed through direct observation of captive species of South American capuchin monkeys, macaws, and parrots in these countries. For instance, a military macaw was observed at a tourist attraction in Grenada and a site manager confirmed that the animal was sourced through Trinidad (Figure 33). Meanwhile, CITES has no record of this Appendix I listed animal ever entering the country.

The full range of countries receiving trafficked wildlife from Trinidad and Tobago remains to be fully defined, but other countries in the Windward Islands of the Lesser Antilles are very likely also receiving wildlife through Trinidad and Tobago. For instance, one conservationist shared that "things have been moving up and down the islands for centuries like…macaws and monkeys" [P241]. There also exists a substantial trade in drugs moving up and down the Windward Islands. For instance, the U.S. Department of State (USDOS) reports that "[l]ocal producers [of marijuana in Trinidad and Tobago] compete with imports from St. Vincent and the Grenadines, Jamaica, Guyana, and Venezuela" (USDOS, 2016a), and that Barbados authorities report "increased marijuana and cocaine shipments transiting from Trinidad and Tobago" (USDOS, 2016b). The export of contraband to other Windward Islands is strongly indicated to occur through a stage of boat transportation involving both pirogues and yachts. For instance, direct observation of a pirogue in northeast Tobago indicates that sea turtle meat is occasionally trafficked into the country from Grenada, and that such inter-island travel is common among fisherfolk. Similarly, a conservationist and experienced sailor in the region

remarked, “The yacht clubs are not regulated by immigration so they can come and go as they please [with contraband]…some of them go to Grenada, some go to Venezuela, some go to the other islands” [P063].

Figure 33: A military macaw likely sourced through trafficking from Trinidad and Tobago to Grenada. From *How Did I Get Here?* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

As to whether songbirds in particular are exported out of the country, key informants are uncertain. Traffickers involved in the illegal importation of wild-caught songbirds noted that they do not export these birds themselves, and that there exists little demand for the most popular chestnut-bellied seed finch in the other Windwards Islands. As one explained, “I’m sure some are sent up the islands, but most people won’t ask for it, so it’s probably very little [that gets sent]” [P198]. Traffickers also reflected that extra-regional shipments of songbirds are more likely to emanate from the South American mainland by plane due to their abundance, which is consistent with news reports of songbird trafficking out of Guyana (Vigdor, 2021), Suriname (Anonymous, 2021c), and French Guiana (Anonymous, 2021d). Such plan exports from South America was further supported by one songbird keeper experienced in keeping Guyanese

songbirds: “now the Guyanese [bullfinch] is getting [expensive] like a local, but this is because they are sending them more to New York now” [P041].

The primary actors involved in the shipment of wildlife up the island change are poorly understood, but various informants highlight a part played by staff and possibly management at the Emperor Valley Zoo as it receives all seized wildlife in Trinidad and Tobago. For instance, one conservationist reflected on how seized animals may reenter the illegal trade through the zoo: “there may be an actual syndicate in there trying to pedal animals as well as just the average man finding a way to steal something from his boss without his boss knowing and trying to sell it and make money “ [P045]. Another veterinarian familiar with zoo operations further added, “there’s no question that people who may be involved in zookeeping [at the Emperor Valley Zoo] may in some way be involved in the animal trade” [P093]. A pet shop operator with more than two decades of industry experience further added, “Yes, I know they selling it [seized wildlife at the zoo], they have their market and one of them has a link to sell it in Barbados, that’s what I understand” [P223].

Given the limited available information, the harms of songbird exportation from Trinidad and Tobago are not well understood. However, given existing trade laws in potential destination countries, violations of the rule of law would be inherently involved. For instance, under Grenada’s Animals (Diseases & Importation) Act, various animals inclusive of caged birds are fully prohibited from importation from Trinidad and Tobago and the South American continent. Additionally, based on the harms observed in boat trafficking from South America to Trinidad, it is likely that exportation also involves harms to animal welfare and public health, if not biodiversity conservation as well.

4.7.3. Consumption

The consumption of songbirds in Trinidad and Tobago is marked by core stages for 'caregiving' and 'obtaining,' which are often further supported by other behavioral stages for the active enjoyment of songbirds through some form of 'recreation.' Notably, where at least some caregiving and obtaining behaviors were found to be associated with all identified species of captive songbirds, recreational behaviors were found to almost entirely involve the chestnut-bellied seed finch. The consumption phase in the trade chain is particularly notable for its sophistication, containing at least six stages of caregiving behaviors, five stages of obtaining, and as many as five recreational behaviors. This sophistication, however, is reasonable given the relative amounts of time that songbirds spend in the consumption phase. Some kept songbird species identified in this study can have captive lifespans of up to 20 to 25 years, whereas most are first sold prior to one year of age.

Review of different stages of caregiving, obtaining, and recreation further identify a diversity of motivations that complement and what might be considered a base motivation to enjoy birds for their song and visual appearance (see Section 4.6.2). In particular, examination of caregiving identified additional motivations of keepers having close personal bonds and a desire for personal growth, while examination of obtaining indicates that some keepers obtain songbirds in a compulsive fashion, while sometimes others obtain songbirds without any prior desire as a result of gifting or inheritance. Examination of recreational enjoyment further identified motivations of financial gain, relaxation, socializing, and participating in a cultural tradition. The stages, actors, and harms of songbird consumption are further described below.

4.7.3.1. Caregiving

The consumption of all songbirds in Trinidad and Tobago is composed of a foundational set of staged behaviors that may be collectively termed 'caregiving.' Such behaviors are required to meet the basic physiological needs of captive songbirds. Key informant interviews and focus group discussions with songbird keepers, and additional interviews with knowledgeable veterinarians and breeders, indicated that caregiving consists of at least six stages of behavior: caging, cleaning, feeding and watering, giving health care, learning to give care, and protecting. Some songbird keepers also ordinarily engage in a seventh stage of behavior, permitting.

Caging was, by definition, continuous but varied for some keepers that occasionally transferred songbirds into larger cages or entire enclosed rooms. For instance, one songbird keeper invited a member of a research team into their home to view zebra finches released into a room during a weekly full cage cleaning. Meanwhile, keepers of chestnut-bellied seed finches and other songbirds native to the region noted that they would almost never remove such birds from their cages as it could badly affect its ability to sing. As one such songbird keeper explained during an observation of a competition event, "There is an old myth to never take your bird out of its cage, it may stop singing and I have actually experienced it."

Cleaning was reported to occur daily by all participating keepers, but they acknowledged that other songbird keepers do not clean their cages daily (Figure 34). For instance, one songbird keeper expressed frustration with such persons, saying "You have some people with birds and when you watch the cage, the bottom of the cage is high with shit. That filth is going to get that bird sick" [P023]. The stage of feeding and watering occurred, of course, daily in order to meet the basic physiological needs of songbirds. For many songbird keepers also participating in

recreational activities, the feeding of birds was reported to also involve special efforts to source high-quality foods (see below).

Figure 34: A chestnut-bellied seed finch in a newly cleaned cage at a competition. From *Cage Fight* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The provision of health care was further indicated to vary widely in practice, with some keepers only practicing health care when a bird displays sickness and others taking proactive steps. For instance, one songbird keeper explained, “I give it one drop of the rough skin lemon in its water, which gives it some electrolytes to fight whatever it has” [P023]. Meanwhile, other songbird keepers expressed that they spent more money than other keepers to ensure the health of their animals. For instance, one songbird keeper reports his monthly expenditure to be “TT$250 [US$37] to be exact” for a single chestnut-bellied seed finch, which covers “seeds and vitamins” including natural seeds that “are more expensive because they have a life span and you wanna get them fresh” [P013].

With respect to learning to give care, songbird keepers varied far more widely in the frequency with which they engaged in this behavior. For some, learning occurred only initially to

establish basic care and thereafter in response to external events or evolving interests. For instance, one keeper indicated that most songbird keepers will only explore health care options through online resources only when a bird gets sick, “When it sick? You come online to ask for advice” [P027]. For others, learning was an ongoing, proactive behavior, which was most prominently displayed by recreational keepers. For instance, one such keeper explained, “Once you have that passion and that love, you have the desire to learn more…so as a result of that, I've done a lot of research and a lot of reading and so on these particular birds, so I can give them the best care possible” [P012].

With respect to protecting, this behavior was reported as ordinarily practiced by experienced songbird keepers. Songbird keepers reported that songbirds are at risk of injury or death from disease transmission from wild birds, environmental hazards like smoke and excessive sun, free-roaming cats, other wildlife like snakes and wasps, and theft by street criminals. For instance, one songbird keeper explained that “indoor” birds can be at risk of free-roaming cats since so many homes will open windows during the daytime: “the neighbors have two children with cat and thing and them cats, they go in the cage and take out the bird” [P034]. Nevertheless, many songbird keepers indicated that they had learned protective behaviors only as the results of failures and near-failures. As one songbird keeper explained, “They real easy to die” [P038]. In some rare cases, songbirds were also valuable enough to require theft protection while even placed inside a home. For instance, in 2022, three men were involved in the theft of a prize-winning chestnut-bellied seed finch valued at TT$30,000, or US$4,426, through breaking and entering (Superville, 2020).

Finally, efforts to obtain legal permits for captive songbirds were reported as a basic caregiving activity by some songbird keepers. Out of 34 kept species, 32 species require permits

to be held in captivity under the Conservation of Wild Life Act. Even still, effort to obtain permits is rarely continued after making an initial first effort. Notably, government application records only provide evidence for the keeping of 24 out of 34 identified songbird species, indicating that some species are never reported as kept to the government. For instance, FD permitting records indicate that it received two applications to keep 11 non-native Gouldian finches from 2016 to 2018, but issued no permits in response. FD enforcement records also indicate that no additional formal action was taken to confiscate the animals. Other songbird keepers commonly remark that they do not apply because the permitting system is not functioning. As one songbird keeper explained, "I signed up for it [the permit] but they never call me back" [P027].

The key actors in the giving of care to captive songbirds are the keepers themselves. The identity of songbird keepers was also found to be broadly inclusive in Trinidad and Tobago. Songbird keeping is comparably more often practiced in Trinidad than Tobago by volume, but there may be differences in preferences across islands (see Table 19). Similarly, survey respondents report keeping some species only in Trinidad and other species only in Tobago, but their low rates of occurrence suggest that this may be due to the rarity of keeping such species across both islands. Meanwhile, there was clear indication of songbird keepers more often being men, with the national survey indicating that 66.1±10.1% of keepers were male, which is greater than the national gender division with men accounting for 50.1% (CSO, 2011). Recreational songbird keepers also ordinarily acknowledge that many but not all songbird keepers are male. As one explained, "the majority of us are men, but you do have some women" [P037].

Supporting actors were reported to play only minimal roles in the giving of care to songbirds. In particular, the delicate nature of many wild-caught songbirds means that keepers

ordinarily fear there are not others in their homes who could properly care for the birds if needed. For instance, one keeper reflected, “You can’t go on vacations with those birds, because when you going, somebody just comes [to provide care], those birds just die” [P039]. Another keeper refrained, “they [temporary caregivers] forget to feed them for a day, or something happens and they’re, yeah, they’re dead” [P038]

Many households that keep songbirds ordinarily reported keeping more than one species of songbird at a time. For instance, the national survey data indicates that 34 out of 2004 households kept songbirds with an average of 1.8±0.3 species kept per household. Some songbird keepers participating in key informant interviews and focus groups further indicated that some songbird keepers engage in the practice as a family pastime. For instance, one keeper explained, “my cousins, my father have birds too…my cousins have over 25 birds” [P034]. Oftentimes this means songbird keeping is culturally transmitted to persons at a young age. Another songbird keeper shared his own history, saying “I have birds since I grew up in birds…I was introduced to birds by my late grandfather at the age of 11” [P012].

The methods by which songbird keepers engage in the fundamental stages of songbird caregiving are numerous and some notably vary in their use by species groups. Caging of most native species is typically done using a standard-sized cage of 12” x 9” x 18” that is made of wood and metal bars and also inclusive of a trap compartment, though most such keepers do not engage in trapping themselves. Most if not all species native to Trinidad and Tobago and surrounding countries are ordinarily caged alone once they have been obtained for consumption. Species not native to the region are more often caged in slightly larger enclosures that may be purchased or made custom by the keeper or a close associate. Such species are also ordinarily kept in pairs if not larger group sizes. Additionally, non-native songbird keepers may set up

special cages or even release their birds into an enclosed room to allow for exercise. Cages for all species are further noted to ordinarily have wooden perches and metal or plastic bowls for water and food.

Cleaning methods were fairly consistent across all species. Most keepers would daily remove and replace newspaper placed on the bottom of the cage and possibly spot clean surfaces with water and dish soap. For some keepers, a deeper clean would also be conducted once or twice a week in which perches and other objects are removed and all surfaces are cleaned. One consistent difference across species, however, was whether songbirds would ever be removed from their cages for the purposes of cleaning. As indicated above, regionally native songbirds would ordinarily never be removed from their cages for fear of affecting their ability to sing. Meanwhile, keepers of other songbirds vary in whether they apply this same logic to other species of songbirds.

Feeding and watering methods varied somewhat by species groups and whether species are also kept for recreational purposes. Songbirds are ordinarily provided with fresh water through an on-demand fountain set onto the cage wall and keepers will at times insert a separate bowl for birds to bathe. Seed-eating songbirds are ordinarily provided with seeds to forage throughout the day as compared to fruit-eating songbirds which tend to be provided with fruit intermittently in order to not attract pests. Some keepers of seed-eating finches also provide their birds with special wild-sourced seeds to provide them more nutritious diets, and this is particularly common among recreational keepers. For instance, one songbird keeper at a competition event explained, “You give special seeds on the day of racing, like how you prep the bird.” Many recreational keepers also explained that they would sometimes give their birds

marijuana seeds as a treat. For instance, one keeper explained, “bullfinches love marijuana seed” [P028].

Healthcare methods among songbird keepers were also found to be highly idiosyncratic, but ordinarily healthcare was only provided by the keeper rather than a veterinary professional. Most songbird keepers explained they relied on home methods because of a lack of avian veterinary experts in the country. For instance, one keeper expressed, “anybody could go by a dog veterinarian and they will fix their dog, but hardly any of them know much about the bird aspect” [P022]. Another added, “Just like a doctor we diagnose, rule out certain symptoms, so you try something that works” [P013]. Common treatment methods for sick birds, however, were often reported to include citrus fruit derivatives, such as: “You have a cold, our remedy might be lime, garlic, salt, and honey, and they mix that up and give to the [sick] bird too” [P002].

Another method commonly reported by many songbird keepers was the release of particularly sick songbirds back into the wild. Keepers commonly reflected that they would rather give a songbird a chance at survival in the wild rather than dying in a cage. As one concerned songbird keeper explained, “they let them go sick and that’s a problem because sick ones can affect the other [wild] birds…a lot of people let release sick birds” [P013]. Another reaffirmed this perspective, “there are plenty who have a sick bird and let it go back into the wild. I do it already, but then I did not know the danger in that” [P040].

Learning methods were reported to be rather consistent among songbird keepers, differing instead only in their degree of utility and so use. Methods used to learn about songbird keeping were almost universally reported to occur initially through direct guidance from a pet shop operator, family member, or other personal acquaintance. Afterwards, continued learning would typically occur on an as-needed basis using the initial guide, online resources and another

guide. For instance, one songbird keeper explained how he learned to keep all types of songbirds: “[I got] advice from my elder neighbor, he’s about 70, been into birds about 40 years of his life” [P027]. However, where there are a range of online learning resources for most captive-bred, non-native songbird species, the keeping of other species is relatively unsupported by online literature. As a keeper of chestnut-bellied seed finches explained, “the most you get [online] is just health care [information] on finches, not bullfinches, but finches [in general]” [P013].

The methods used for protecting songbirds most of all consist of vigilance when a cage is placed outdoors and broad household security measures when birds are kept within a home. Unfortunately, many keepers express that they are not able to protect their birds, and sometimes not even themselves, in the event of robbery. For instance, one keeper recalled:

> A lot of people stealing, and you leave your bird outside, and that bird gone, and you can be robbed at gunpoint and have one of your birds taken away. There was one guy [recently] who was actually killed, and they stole five of his birds. [P041]

Other songbirds indicate that recovering stolen birds was also quite difficult due to a lack of commonly identifiable markings on most songbirds. For instance, one songbird keeper reflected, “It is very difficult to identify your bird if you see it somewhere else” [P040].

Methods to obtain permits for the 32 of 34 songbird species requiring them were rarely described as many persons had chosen not to apply. Among those songbird keepers who did have such experiences, they described somewhat consistent processes established by the FD in Trinidad and Tobago Department of Natural Resources and Forestry (DNRF). in Tobago. In each case, a songbird keeper will visit these government offices to fill out an application form to keep a songbird. Participating songbird keepers that had applied for permits note that applying for permits is an “easy process” but that “they may or may not visit you” for an inspection and

permit issuance [P019]. Others, however, indicated that they were able to use personal connections to complete the application process. For instance, one keeper explained how he had obtained a permit as “one man at Forestry is my friend, and he puts it through” [P037].

Additionally, those persons having attempted to obtain permits were divided in whether they would keep trying to obtain a permit. As one keeper explained, “it's just a waste of time” [P002]. Nevertheless, another described not giving up in his effort, “I applied and they never come...I wait six months, so I went and reapplied the 23rd of this month for a permit, right, because of the simple fact that I have birds at home” [P026]. Most applying keepers also noted that they kept a receipt of their applications for use as a possible “temporary” permit if ever inspected by an enforcement officer. As one explained, “when I apply is a form I get…just to have it in case, but I doubt I will go back…nobody coming up to inspect me” [P027].
caging, cleaning, feeding and watering, giving health care, learning to give care, and protecting

The foundational motivations to giving care to songbirds are defining elements to this very report, and are especially described in Section 4.6.2. Nevertheless, some songbird keepers, especially note that giving care to their songbirds was motivated by an additional close bond with one or more birds and even their own personal growth. For instance, one keeper of several songbird species explained, “They [songbird keepers] bond with it, you know, they take care of it, you know, they fall in love with their pets, so for me, that it the channel through which I ended up getting up into birds generally speaking” [P020]. Meanwhile, many recreational songbird keepers also explain that songbird keeping prevents them from engaging in potentially self-harming activities. For instance, one keeper noted, “It keeps you out of trouble…when you spend time with your bird, you don't really have the negative thought to drink” [P006]. Another keeper

speculated that recreational songbird keeping could perhaps be promoted to keep youth away from self-harming activities:

> You have these [young] men liming on the corner and maybe they become affiliated with drugs, but then they see this bullfinch and they see how it is, and they get into this hobby, and there is no longer that desire to lime on the block. [P028]

Finally, harms associated with songbird caregiving were meaningfully identified in relation to animal welfare, biodiversity conservation, public health, and the rule of law. With regards to animal welfare, most keepers acknowledged that songbirds are highly susceptible to illness and death as a result of caging, and many indicated that they had previously had songbirds that die of unnatural causes due to their inability to treat underlying health problems. For instance, one songbird keeper acknowledged that "birds come in with all kinds of diseases" but that options for treatment are "limited, limited." [P037]. Nevertheless, most songbird keepers also believed that, once they had gained suitable skill as caregivers, their captive songbirds are in fact better cared for than they would be in the wild. For instance, one keeper explained, "People have become the so knowledgeable now the birds get very good care to live, you know, to that [older] age" [P012] One songbird keeper further reflected on the easy life of a captive songbird: "A singing bird is a happy bird…he getting three square meals a day, he has water, he does not have to compete for food, he doesn't have to do anything" [P002]. Another songbird keeper reflected upon how a chestnut-bellied seed finch might live "10 to 20 years in the wild" but "30 or something years" in captivity [P028].

Animal welfare is also harmed due to keepers' failure to use veterinary services either for preventative or diagnostic care. For instance, one veterinarian specializing in avian medicine described how often songbird keepers will cause more harm than good when treating their birds: "these birdmen treat [their sick birds] with a battalion of madness before they actually bring

birds to you. So, by the time it's here, it's been on 50 different antibiotics used at the wrong dose and the wrong grades…it's probably blown the kidneys" [P083]. This lack of veterinary care was substantiated by the national household survey; out of 38 homes reporting having songbirds on the household survey, only one had ever obtained veterinary services for their single captive bullfinch.

With respect to biodiversity conservation, the greatest harms caused by songbird caregiving are related to intentional or accidental release of songbirds that have come into contact with a range of diseases. Though accidental releases can happen in other stages of consumption, they most commonly relate to activities involving giving care, most of all cleaning and feeding and water. The health care method of intentionally releasing particularly sick songbirds is also particularly problematic, but possibly occurs less often than in the obtaining stage as unwanted females are so frequently released. Unfortunately, the release of songbirds through caregiving is particularly dangerous to wild populations. For instance, Suepaul and colleagues (2019) discovered a novel pox virus in illegally traded songbirds in Trinidad and reflected that this high-mortality virus is likely regularly spread to native populations:

> Trinidad has a tropical climate with year-round mosquito activity, making mosquito transmission a likely factor in disease spread in the country. Furthermore, the virus may be shed for up to 13 mo after clinical disease; thus, the release of sick birds, birds with subclinical or unapparent infection, or even recovered birds into the wild could lead to its onward spread to native susceptible species. (p. 235)

The close contact involved in songbird caregiving also presents broad risks to public health, both that of human communities and agricultural operations. The relative popularity of songbird keeping in Trinidad and Tobago may put human households at risk of zoonotic disease transmission. For instance, one study has found several species of songbirds to be a meaningful intermediate vectors for at least one form of avian influenza, such that they conclude:

> [F]inches, sparrows, and parakeets may be intermediate hosts and sources of A(H7N9) viruses and that their frequent interaction with wild birds, domestic poultry, and humans renders them a particular risk factor in the emergence and transmission of novel influenza strains. (Jones et al., 2014, p. 384)

The sourcing of most wild-caught songbirds through Venezuela also likely poses an unexplored but potentially substantial risk of other zoonotic disease transmissions occurring between captive songbirds and households and their other kept animals. Notably, local officials in Trinidad and Tobago fear the introduction of Newcastle Disease virus that can cause high mortality in domestic poultry. As one local wildlife biologist explained, "I am sure there are low pathogenic versions in circulation [in Venezuela], and it could only take a little to trigger a mutation…but we have not had a testing program because the kits are very expensive" [P99].

Given the relatively pathogenicity between different bird species, it bears further to note that songbird caregiving is part of a much larger practice of residential bird caregiving, both as pets and food sources. Unfortunately, these behaviors mean there are many and regular points of direct and indirect contact between multiple avian species and human households. For instance, according to the national survey conducted for this survey, the orange-winged amazon parrot (*Amazona amazonica*) is the 2nd most popular captive animal in the country and domestic chickens and ducks (*Anas platyrhynchos domesticus*) are the 4th and 5th most popular species (see Section 4.6.2). Thus, though songbird keeping presents risks to public health, it is also part of a much larger set of risky wild animal and agricultural animal keeping behaviors among everyday residents.

With respect to the rule of law, keeping of songbirds appears to ordinarily occur in violation of governmental permitting rules, a situation broadly appreciated by local stakeholders as well as local managers of the permitting program (R. MacFarlane, personal communication, February 19, 2018). In the course of key informant interviewing, only two songbird keepers were

ever encountered who had valid permits to possess their songbirds. Many keepers also told stories of having applied with no response, such as: “I applied and they never come...I wait six months, so I went and reapplied the 23rd of this month” [P026]. Additionally, of the 11 species detected by the household survey (Table 19), nine of these species require permits for captivity and collectively represent a minimum estimated population of 19,614 songbirds. In 2020, the Trinidad FD issued permits to just 121 households for *any* wild species (see Chapter 2, Section 2.6.4). Correspondence with the FD also indicates that there are several year’s worth of backlogged applications for permits from keepers of songbirds and other species (D. Mahabir, pers. comm., February 7, 2022).

Perhaps more profoundly, the failed permitting for such a popularly kept animal may broadly delegitimize the MALF’s permitting agencies, the FD in Trinidad and the DNRF in Tobago. For instance, one songbird keeper expressed considerable frustration over the permitting system, “they [at the FD in Trinidad] are short-staffed, number one. They have no vehicle, number two. But that is not my concern. My concern is that you get up off your ass and do your work” [P024]. Another keeper reflected that any attempt to enforce the failed system would receive serious political pushback: “If the government come around saying you can’t be minding [illegally imported] birds, there will be a civil uprising. This is our pastime” [P010]. A pet shop operator further reflected that “the whole system is a pain in the butt” [P223].

The government’s failure to implement the songbird permitting system further creates opportunities for songbird keepers to both activity and passively participate in public sector corruption. As noted above, some songbird keepers use personal connections to obtain songbird permits. However, some songbird keepers are asked to pay small bribes to obtain permits, sometimes without even knowing it. For instance, one songbird keeper reported having recently

paid TT$25 (~US$4) per application for multiple songbird applications, even as neither the Conservation and Wild Life Act nor its regulations specify any fee for the service. Further probing indicated they were unaware that this was meant to be a free service. Meanwhile, given the difficulty of the system, it appears that many keepers neither renew nor modify their permits when changes are made. Notably, a keeper that had previously obtained a permit because "my cousin is working in Forestry" reported already being in violation of its terms: "I only have a license with three [songbirds allowed] and I have four [now]" [P034].

4.7.3.2. Obtaining

The consumption of all songbirds in Trinidad and Tobago is composed of additional foundational stages of behavior that may be collectively termed 'obtaining.' At least some of these stages are necessary for a person to come into possession of a songbird. Key informant interviews and focus group discussions with songbird keepers, and additional interviews with knowledgeable pet shop sellers, indicated that obtaining consists of as many as five stages: buying, receiving gifts, releasing, secondary selling, and trapping. Either buying or receiving a gift are essential to obtaining a songbird, while many keepers also practice releases and secondary sales to make room for new birds. Trapping was reported to be particularly rare among ordinary consumers.

The buying of songbirds is already broadly outlined in the stages of domestic supply (see Section 4.7.2.2). As described above, these stages may be one-off engagements with pet shops or independent sellers or regularly ongoing experiences as part of a broader recreational experience. As one songbird keeper explained at a competition, "some guys just buy bullfinches at shops and keep them as pets, no training, they sing whatever" and "they would only buy a new bird if that one dies." The buying of songbirds also appears to be more often a planned decision. For

instance, out of 84 songbirds reported as kept on the national survey, 80% of these birds were reported to have been purchased with forethought rather than spontaneously.

Gifting was reported to sometimes occur for a variety of reasons, including as a token of appreciation, to encourage another person to keep songbirds, and as part of an inheritance after the loss of a family member. For instance, one songbird keeper gifted her father a songbird as a show of caring: "Daddy always had [songbirds], but then there was a period of time when he didn't have any and I know he missed having birds so I got him one" [P001]. Another keeper remarked on how he received his trained songbird from a friend who recognized him to be an animal lover: "Yea, he [his friend] know me to more be a dog person. He was amazed, like, 'You never had a bird before? You want a bird?' I was like 'okay'" [P033].

The releasing of songbirds was noted to be common in the keeping of wild-caught songbirds. Keepers will ordinarily release female songbirds as they are less gifted singers, and they may even release male songbirds that show no talent for learning a desired song. For instance, one songbird keeper describes the possibility of obtaining a female songbird as "the first gamble you're taking" and that "most females are eventually sent free" [P002]. As another keeper explains, "it all depends if the bird takes that particular roll…If it doesn't do that, then you part ways with the bird [by releasing it] if you can't sell the bird" [P012].

The secondary sale of consumer-owned songbirds is also broadly outlined in the stage of secondary sales involved in domestic supply (see Section 4.7.2.2). As described above, this stage may occur actively, by announcing a desire to sell a bird, or passively, by receiving an unsolicited offer to purchase a songbird. For instance, one keeper reflected on a past bird that he had sold: "No, what happened is the bird wasn't really for sale, but you know, it's a bird…so I decided to invest in other birds and I made a decision to sell him" [P003]. For persons seeking to

engage in recreational training, additional buying is also often required to secure a trained bird to teach others to sing correctly. For instance, one keeper explained:

> We went in a pet shop or went somewhere to buy [our first chestnut-bellied seed finch]...and after that he drove me to spend more money to get a proper singing bird, what we would call a teacher, to teach the younger ones. [P013].

The trapping of songbirds in Trinidad and Tobago is described in the stage of wild-caught production that initiates much of the songbird trade chain (see Section 4.7.1.2). Notably, the standard cage for keeping wild-caught songbirds includes a "trap" component that may be used to trap other birds attracted to the cage. Nevertheless, most songbird keepers will never engage in any trapping activities themselves, as this would typically require setting the cages in natural areas and sitting in wait. As one songbird keeper and large-scale private seller explained at a competition event, "No, it's funny, we really don't use the trap…we all buy the birds." Others noted that they would prefer for all local trapping to be stopped due to steep population declines. For instance, one keeper was very clear in his opinion on trapping, "Ban it!" [P025].

The primary actors involved in obtaining songbirds are the songbird keepers themselves, both as buyers and sellers. The identities of these actors are further described in the preceding caregiving section (see above). Other key actors involved in the buying and secondary sales of songbirds also include pet shops, specialized private sellers, community groups, and keeper clubs that are described in the domestic supply section (see section 4.7.2.2). Other key actors involved in gifting songbirds include a wide range of persons that also keep songbirds within a keeper's household, community, and keepers network. As one keeper at a competition event explained, "there is a very large community, a very large bird fraternity in Trinidad, and by extension, Tobago."

The methods used for buying and secondary selling are broadly described in the section on domestic supply (Section 4.7.2.2). Songbird keepers will ordinarily obtain their songbirds through both pet shops, consumer re-sellers, and independent retail sellers. Songbird keepers were universally aware that they could purchase songbirds from any number of pet shops. For instance, one keeper explained, “What a lot of us do is we go to the pet shops and choose a bird” [P012]. Songbird keepers also ordinarily re-sell their songbirds through social media platforms and broader social networks. For instance, one keeper noted how he regularly receives purchase offers from people living and working in his neighborhood: “One guy he heard him whistle when he pass, and he just stopped and was like, I could pay TT$5,000 for that bird…another time a police officer came and offered to pay” [P033]. Notably, the use of Facebook was identified by some consumers as a driver of irresponsible buying and increases in thefts. As one keeper explains, “You see a lot of people see the value of these birds online [on Facebook] and they think it's a ‘get rich quick’ scheme, and so they not really minding the birds…and then they want to come thief your birds” [P041].

Many songbird keepers also commonly make use of recreational activities to buy and resell songbirds. By some estimates, there are at least 100 loosely organized groups of five to 20 persons and as many as 15 clubs with up to 50 members each that regularly engage in songbird competitions across Trinidad. Further, in Tobago, four such competition groups have been identified through direct observation in public parks. Though these competition groups almost always compete with chestnut-bellied seed finches, the community is notable for commonly keeping other songbird species. For instance, observation of a club-organized songbird competition led to one competitor explaining, “I now have picoplat, robin, and bullfinch because this community” and collects these other species “for the love of it” [P026].

Methods of gifting were found to be highly idiosyncratic among songbird keepers but keepers mostly explained that gifting occurred within families and larger social networks. For instance, one songbird keeper explained that gifting songbirds within his family was a long-tradition: "[songbird keeping] was something that was passed on in my family generation to generation [through gifting]…they had primarily seed-eaters, not just bullfinches, but [all types of] seedeaters as pets" [P021]. This gifting practice was also explained to sometimes be done to support a person in returning to the practice of songbird keeping. For instance, one songbird keeper explained that a friend helped him return to the hobby with a gift: "From young I had birds, and then I stop for a number of years…and I came back here [to live at home], I have a friend and he was the one got me started back [with a gift]" [P028].

The gifting of songbirds may also be an important component of new persons being socialized into competitive recreation. This appears to commonly occur within families. As one explained, "I learned the sport because it was something passed down by generation in my family"... "my father gave me my first bird" [P010]. Another added, "the house I grew up in, birds were, you know, only bullfinches, everybody in the family, bullfinch" [P034]. It is also possible that gifting within organized clubs may be necessary to improve the competition experience. One keeper and competitor explained:

> A lot of the younger ones [new keepers] are hoping to train them [chestnut-bellied seed finches] to whistle how we want them to whistle but not all the time it works out that way…buy one good one [that's already trained] so that's the advice. We will now even give [trained birds] to the younger ones, to the new persons coming in. [P013]

Methods used for the intentional release of undesired songbirds centered on the appropriate locations for release and appropriate point at which to decide to release a bird. Informal discussions at songbird competitions suggested that most keepers will release their birds near a forested area or "out in the wild" rather than in an urban area, to improve a

songbird's chances of survival. Some songbird keepers also remark that juvenile female songbirds can be observed through careful observation prior to her first adult molt. Another competitor explained, "You see the shape of the eye, and how she moving and sings, and you can know in a month or two, and the [juvenile] males may show darker spots."

Methods of trapping in Trinidad and Tobago are broadly described as part of the above section on wild-caught songbird production (Section 4.7.1.2). These methods broadly consist of using cage traps and bird glue paired with other attractants, including food, a small speaker playing calls, and another bird. Observation of songbird keepers keeping their songbirds outside also indicates that some keepers opportunistically set their cage's trap even in urban areas. Conversation with such keepers reveals that capture of songbirds in this way is rare, but occasionally a person may get lucky. As one explained, "Sometimes you will capture a female that you might try to breed."

Examination of different stages of obtaining indicated several additional motivations to keeping songbirds. Notably, some songbird keepers spoke of sometimes having a problematic compulsion that drives some keepers to purchase new songbirds. For instance, one keeper explained that his wife controls his purchasing, "There is a point in the mall, when you are close to the pet shop, and my wife takes my wallet. Because I'm going to buy [a songbird]" [P008]. In some cases, songbird keepers also described their bonds with particular birds as preventing the sale and purchase of other songbirds. For instance, one keeper explained, "I sold a brown bird last year and now I is trying to get it back!" [P028].

Given the cultural popularity of songbird keeping, some keepers receive songbirds as gifts or inheritances and so initiate keeping through social obligation. For instance, one keeper

indicated that he only began keeping a songbird recreationally due to inheriting it from his father:

> My dad, he used to mind birds, so when he passed away, I didn't know. I just had this bird and I had to take care of it. And when I see these guys keeping all these birds, and I went to see some competitions. I thought, oh, let me try that. So, I guess you could say that is how I caught the "bird virus" [P006]

It is also quite possible that this results in new keepers quickly selling or gifting away their new animals. A local veterinarian further reflected that such unwanted songbirds may also either die or be released by less caring persons, especially when poor caregiving leads to them getting sick:

> They inherit this headache, and then what happens is it gets sick and they might say, "You know what? I don't want to keep this animal. They don't go to a veterinarian and say that this animal is sick… They will just let him go. [P166]

A variety of harms associated with the obtaining of songbirds were identified in relation to animal welfare, biodiversity conservation, public health, and the rule of law. With regards to animal welfare, the purchasing of songbirds by inexperienced keepers and the release of songbirds by keepers of all experience levels were identified to lead to songbird injury and possibly death. For instance, one macaw keeper admitted to previously obtaining a songbird without suitable preparation: "I think they're too slow, they're too fragile…I try with small songbirds and I saw some die" [P081].

Meanwhile, songbird keepers and conservationists were divided as to whether releasing undesirable wild-caught songbirds into the wild might hurt them. One keeper noted, "they release the female and it does suffer, it does not know where to go to eat, you see a bird will come to cages for food, the bird will be dehydrated in a state of shock" [P023]. However, observation of one wildlife rehabilitation facility suggested that the release of most juvenile songbirds may not always be harmful to their long-term welfare. As one rehabilitator explained:

> Just six months in captivity in that small cage, it would still be able to fly short distances to evade predators, and each day it would regain its ability to fly more and more. It is still a wild bird that knows about its food. It wouldn't be that bad, the bird would be able to make it.

With respect to biodiversity conservation, the ordinary release of undesirable songbirds may cause substantial harms to wild populations.. Similarly, with respect to public health, the ordinary purchasing of juvenile songbirds sourced through trafficking means that the obtaining of songbirds threatens the health of keepers, through households, and the other avian species they may keep. Both of these issues are already described in the preceding section.

Finally, with respect to the rule of law, all stages of obtaining songbirds appear to ordinarily occur in violation of the Conservation of Wild Life Act. Under this law, the purchase, sale, and trapping of 27 out of 34 kept songbirds is ordinarily prohibited at any time of the year as they are categorized as "protected animals." The other seven species of kept songbirds are categorized as "second schedule animals," and this means they may be legally purchased and sold during an open season from April 1 to September 30 each year. In spite of this, all songbirds are sold all year long as indicated through observation of public Facebook groups and pet shops. Meanwhile, an additional five of the regulated species also require hunting permits if they are to be trapped during the open season, yet most hunters do not appear to have such permits. Some wild-caught songbird keepers and sellers expressed that they saw the scale of local songbird poaching to be problematic: "They need to beef up [enforcement], people are catching them [songbirds] normal" [P014].

4.7.3.3. Recreation

Recreational consumption of songbirds in Trinidad and Tobago is composed of additional foundational stages of behavior that may be collectively termed 'obtaining.' Ordinarily, a songbird keeper will engage in at least one stage of recreational behavior and commonly they

will engage in many more. Nevertheless, it is also possible for a songbird keeper to engage in no recreational activities at all, such as if a keeper has accepted an unwanted gift or inherited a songbird from a deceased relative. Key informant interviews and focus group discussions with songbird keepers, breeders, and pet shop operators, as well as direct observation of social media and competition events, together indicated that there are at least five stages of recreational activity: breeding, competing, entertaining, gambling, marketing, and training. Most recreational keepers commonly practice many stages, and the stage of entertaining appears to be almost universally enjoyed.

The stage of breeding is broadly outlined in the stages of captive-bred production (see Section 4.7.1.1). As described above, most breeders of songbirds will be motivated by *both* financial interests and recreational enjoyment. Breeders of non-native songbirds ordinarily source breeding stocks from abroad and will sell juveniles through pet shops, social media platforms, and other personal networks. Meanwhile, the recreational breeding of native and ordinarily wild-caught songbirds appears to be commonly attempted but only rarely successfully practiced by their keepers. For instance, one keeper reflected on his past success in birding other birds and failure in breeding a chestnut-bellied seed finch: “You breed a budgie like that, natural. A bullfinch is a whole different thing” [P007].

The stage of competition is tightly linked with stages of entertaining, gambling, marketing, and training described below. Competition ordinarily occurs among groups of five to 20 persons at parks and other public locations with grassy areas on weekend mornings (Figure 35). Competitions are most commonly arranged when juvenile chestnut-bellied are sufficiently trained to compete and when both juveniles and adults are not molting their feathers. This makes the months of March through September a particularly active competition period. These

competitions may be highly organized and have registration fees with trophies and possibly cash prizes, or relatively disorganized and based in friendly competition. As one keeper and regular competitor explains:

> We have actually in Trinidad, in Tobago, are the areas where you have what they term as 'shying grounds.' These are where all the bird lovers, they will gather in certain communities and they will hang up the birds against each other and the birds sing against each other. So, this is something that happens all over Trinidad particularly on a Saturday or a Sunday morning. [P012]

It is also possible that competition will be arranged between two competitive keepers as private matches with friends and other known competitors in attendance and typically these events are oriented more towards higher-value gambling. As the above keeper continues to explain: "It's called 'quick bulling,' it's not official so when you have, it's more or less gambling" [P012].

Figure 35: An image of a competition field in south Trinidad. From *Competing Songs at Intermission* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The stage of gambling is fundamentally dependent upon the competition stage. Most commonly, gambling occurs at weekly competition events and at specially organized events. Observation of a competition event led to a competitor to explain: "It [gambling] happen all the

time, even at shows , guys will take side bets on which bird will win." Songbird keepers also shared that some recreational gamblers will only compete in specially organized gambling-oriented events. The same competitor added, "Some guys don't waste time on shows, they prefer to go around looking for challenges. It's a way to make money because it cost a lot to buy one of these birds with the ability to do battle." Notably, some keepers also explained that informal gambling is a more traditional practice than the organized competitions occurring today. As one older keeper and competitor explained:

> That's where bullfinch really started. These guys had birds going around, gambling, and then it became more of a hobby, with a lot of people, professionals, getting into it. It developed into what it is today with competitions. [P036]

The most commonly practiced stage of recreational keeping may be described as 'entertaining,' or deriving special personal pleasure from the everyday keeping of songbirds. For some songbird keepers able to spend most of their day near their birds, such as by being retired, entertainment occurred whenever a songbird chose to sing or if the keeper had developed a special inter-species bond with the animal. For instance, one keeper remarked upon how his retired grandfather engages with songbirds throughout the day: "My grandpa, he lives alone, so these birds are his company. He talks to them, he takes them for walks and stuff" [P001]. For others, particularly those with jobs outside of the home, entertainment occurs more commonly as a ritualized morning and evening routine. As one conservationist explains, "The idea that you work hard so you can sit down with it in the morning before breakfast, and when you come home, and you have the songs for attention, birds are a big part of East Indian culture" [P091].

The marketing of songbirds was identified as commonly supporting behavior of other recreational stages. Though such a behavior may be considered more a type of 'obtaining' behavior, recreational songbird keepers were notable as often marketing their birds to derive

satisfaction from the praise of others, rather than to engage in an actual sale. For instance, observation of a competition led one competitor to reflect on his intentions: "you can get the opportunity to market your bird, so if you win a category, the price of your bird goes up…but some guys keep getting offers but they never part with their birds. They just like the attention." Another songbird keeper further added, "[It's nice when] you get the recognition this is a good bird, this is quality stuff" [P012]

The training of songbirds was especially common in the keeping of wild-caught and regionally-native songbirds and relatively uncommon in the keeping of captive-bred songbirds not native to the region. For instance, a keeper of native and wild-caught songbirds highlighted their satisfaction when a bird is able to perform this particular song pattern: "You know it is like grooming a child, so when the bird actually matures to that point where it achieves that particular song, there is this great sense of achievement" [P022]. When keepers of non-native captive-bred indicated they had trained their birds, it was more often done not for song training, but for physical handling. For instance, one keeper of Zebra finches directed the research team to a particular YouTube video to explain how to train a specimen to be hand-fed (Figure 36).

Key actors in the recreational keeping of songbirds are the keepers themselves. These actors' identities are largely consistent with the identities of all songbird keepers in the country (see Section 4.9.3.1). However, recreational behaviors are broadly more skewed to men than women, such that recreational songbird keeping might be considered a distinct manifestation of Trinbagonian masculinity. For instance, a female keeper of monkeys reflected upon her husband's embrace of recreational songbird keeping:

> I see that he is enthused by it, I see that men are more drawn to it. Women more like things that they could pet and cuddle and those kinds of things. But these birds? You can't touch it, so that why men are more into it. He more [interested in] walking with the

> bird, he more whistling with the bird, and he play this thing on the computer all the time to teach the bird a song. [P239]

Another keeper of songbirds and parrots reflected that keeping birds was a part of male identity: "It's a natural things with us [men]. We grow up having 'boy days' and a big part of that is to catch animals" [P125].

Figure 36: An image of a video explaining how to train Zebra finches to be fed by hand. From *Online Training Video* [Screenshot], by M. C. Gibson, 2022, July 8, YouTube (https://www.youtube.com/watch?v=bN8hrbf_OgA).

The involvement of other actors varies according to the particular recreational behaviors undertaken, for some behaviors, the preferences of a given keeper. Notably, breeding is reported to be a solitary affair for some recreational keepers, while others rely on the guidance of family members and other recreational breeders. Some breeders are also happy to market their breeding experience and resulting 'product' through social media platforms and personal networks. In cases where chestnut-bellied seed finches are also bred, songbird keeping groups and clubs may also provide support and advice.

Competition and gambling, meanwhile, fundamentally involves an extensive network of competitors, some of whom are organized into neighborhood competition groups and larger organized clubs. For instance, one keeper describes competition and low-value gambling as creating a social community: “Bullfinching has brought a lot of people together, it’s a serious thing, people see it as a sport” [P028]. Notably, some competitive songbird keepers also mention that spouses can become involved in moderating these stages if they become problematic to the functioning of the household. Some keepers even described that sometimes spouses fail in their efforts and the relationship is ended, such as: “I know a few people who had had that experience. It creates tensions, it even cause divorces” [P010].

The seemingly most common stage of entertaining varies greatly in whether it is a solitary or more social experience. For instance, one keeper explained how he derived pleasure from watching and listening to his bird: “ I just like to see them, how does is whistle and they does flex their wings and thing” [P019]. Commonly, participating songbird keepers also reported that their songbirds entertain others in the household. For instance, one keeper explained, “We enjoy hearing that, multiple birds will sing, everyone hear it [at home]” [P036]. In some cases, this form of entertainment is also provided in a business setting, such as a bar or neighborhood store. For instance, several chestnut-bellied seed finches were observed prominently displayed at a bar in northeast Trinidad, and the bar operator remarked that he liked offering his customers a “natural experience.”

The stage of marketing perhaps involves the widest variety of actors as recreational songbird keepers may seek both purchase offers and compliments. Notably, some songbird keepers will post videos to social media platforms in which songbirds perform a particular song. For instance, in one observed posting, a keeper posted a song video without a caption and a

simple one-word comment inquiring to buy, or "Price," received a simple response of "Not for sale bro sorry." As described in the section on domestic supply (see Section 4.7.2.2), there exist numerous Facebook and WhatsApp groups through which keepers may market their birds. As described above, those also involved in competing and gambling further market their songbirds by demonstrating an ability to compete.

The actors involved in training will vary greatly by whether a keeper engages in song training or physical handling training. Song training is ordinarily employed for chestnut-bellied seed finches and some other native songbirds and ordinarily involves other songbird keepers who provide guidance and who may either gift or sell teacher birds. In the broadest sense, national and subnational communities shape songbird training by deciding what songs are correct. For instance, observation of a songbird competition led to one competitor explaining that there are different community-approved "dialects" in different parts of Trinidad: "We in the south prefer "chee chow wheet" [a particular song], guys up north and town-side [*sic*, in the capital Port-of-Spain] do "drawl" [another particular song].

The methods for breeding vary according to each species, most of all whether it is a non-native and ordinarily captive bred species or if it is a regionally-native and ordinarily wild-caught species. The former are broadly perceived to be easier species to breed and have a wide variety of online resources from which a breeder may draw. Observation of one breeder of zebra finches, for instance, revealed that relatively large cages fitted with nesting boxes and paired finches are sufficient: "With that, they will breed when they feel the time is right. Depending upon the size [of the cage], it is possible to breed multiple finches [within a single cage]."

Breeding of regionally-native songbirds, especially chestnut-bellied seed finches, was perceived to be particularly more involved. Direct observation indicates that local breeding

practices are a result of local word-of-mouth and the occasional passing around of a Brazilian breeding manual translated into English. Ordinary breeding practices include use of at least two cages, a standard cage for the male and larger cage for the female, as well as a variety of special foods and vitamins to prepare both male and female birds to be ready to breed. Other males and females may also be kept in other cages to increase the chances of successful mating. One or more specialized rooms are also necessary to allow a female bird to hear the call of her potential mate or mates. Cage partitioning is also necessary to ensure that neither breeding nor potentially breeding songbirds are able to see each other, except in the case of breeding pairs.

Using minimal breeding practices, most recreational keepers of chestnut-bellied seed finches are often unsuccessful in producing a useful songbird. For instance, one private seller and recreational keeper explained, "If they breed and lay two eggs, it is 70% one will survive" [P014]. Other recreational keepers add that there is little point to breeding unless you are able to make many years of community-based effort to isolate desirable traits and build up enough genetic diversity. As one keeper reflected, "We need to create a registry so we can track genetics of captive bred birds" [P023]. A pet shop operator and songbird keeper further indicated knowledge of the basic principles of captive selecting as requiring multiple generations:

> The first generation, your F1 generation, will breed a lot easier than your wild-caught [generation], and they will breed within one year…then you go to F2, and your third generation will be breeding a lot easier. So that way, these birds breed over many years. [P109]

Methods for the competing of chestnut-bellied seed finches are numerous and include rules and categories for competition events. The basic rules of competition are that two cages are placed near to each other with the birds able to see one another, and this in turn causes the birds to defend their "territories" with song. A bird will score a point when it sings a song of at least three consecutive notes before stopping, which is referred to as a "whistle." These notes can be

combination, even as particular songs are favored within the competition community. As one competitor at an event explained, “It doesn’t matter what the three notes are, but the most sought after are ‘chee chow wheet.’...and these songs are different from what they use in Guyana and Brazil.

Competitions further occur in three basic formats. The first is the “weekly shy” which is not typically organized and is more pleasure-oriented. Observation of such an event led one keeper to explain, “it’s just for fun, there’s no official counting or definite time, this is the ‘shy.’ We will just match them to see what will happen.” In the other two formats—one-on-one competition and show competition—the keeping of scores, times, and other aspects are carefully managed. In these events, each songbird keeper will call out when a songbird completes a particular song pattern to score a point, and a third person will also serve as judge to resolve any possible disagreements. A songbird wins a competition by scoring the greatest number of points in the established time, or by “knocking out” the other bird by causing it to stop singing in submission.

One-on-one and show competitions events will continue for a set time, a standard 30 minutes for the former and 5 to 15 minutes for the later. Where a one-on-one competition is universally a single-round event, show competitions may involve one or two rounds. Observation of such an event led to one competitor explaining, “We only do two rounds for black birds [meaning adult birds], and very rarely we do a third round if it is on one pole, which is the most competitive.” Typically, these events also occur on weekend mornings, but one-on-one competitions may also be scheduled during the week. One-on-one competitions events also typically involve setting cages containing two adult songbirds on a single pole, while show competitions involve a range of age divisions and hanging arrangements. Show competitors may

often engage in competing in three age divisions: brown bird, or fully juvenile songbirds; spot bird, or juvenile birds beginning to show signs of maturation; and black bird, or birds that have molted and acquired adult plumage. As for arrangement, there are as many three different categories of competition that affects how aggressively birds sing: “one pole,” in which two cages are hung side by side on a single pole; “three feet,” in which two poles are used and set apart at approximately three feet; and “five feet,” in which two poles are used and set apart at approximately five feet.

An essential aspect of competition is the scoring of whistles, which involves both “callers” that identify when each bird has completed a whistle and scored a point, “objectors” that monitor callers for accuracy of each caller, and a “scorer” who keeps track of unobjected points. Ordinarily, callers are the owners of each bird, but this may deviate when a caller does not feel particularly talented at identifying completed whistles. As one observed competitor explained, “So you would have a team for each bird, a caller and objector, but some guys are not so good at calling the bird, so they would have a friend to call the bird for them.”

Participating songbird keepers also reported there are certain minimum standards for one’s participation in a sporting event of any size. Songbird keepers experienced in both informal and formal competitions indicated there are rules against keepers providing seeds that excite a songbird to be more active. For instance, one keeper and champion competitor explained: “sometimes they [unsporting keepers] give birds things like hemp or marijuana seeds [and] it makes the bird heated so they can perform at competition.” [P137]. This individual further explained that evidence of any such seeds would mean disqualification within his competition association. Another songbird keeper explained at a competition event that there are ways to startle birds into singing in more desirable ways: “There will be all sorts of tricks guys

use, some guys will touch the cage…so maybe the bird start singing short…That's a disqualification." Notably, other norms of appropriate sporting behavior have also been identified among Guyanese songbird competitors (Mentore, 2013).

The methods of using songbirds as a form of entertainment vary greatly by species and keeper preferences. For most, enjoying a songbird meant to listen to its song and appearance, or engage in other particular stages of songbird consumption that are found by a keeper to be enjoyable. Many keepers also note that they most often enjoy their birds in the morning and evening times when such birds most commonly sing. For instance, one songbird keeper explained that he enjoys having his songbirds as a pleasing "alarm clock": "I supposed to reach to work for 6am, alright, every 5 o' clock, 4 o' clock in morning them birds whistling, the birds waking me up" [P034]. Observation of a songbird competition led one competitor to reflect on his "morning ritual:" "I can just sit and enjoy the company of my birds. It's what I love. It's when I hear myself too."

The methods of gambling were generally difficult to explore in the course of research due to such activities being inherently illegal. Nevertheless, observation of competition events and some participating songbird keepers were able to provide information on key differences between friendly, low-value gambling and more competitive, high-value gambling. Low-value betting is reported to sometimes occur among small community groups during regular weekend competition events, but this practice varies by community. Observation of one weekend competition group led to one competitor explaining, "It is for fun, you know, but we might say, 'My bird will beat your bird' and put a few hundred [TT dollars] on the match up." A pet shop operators and former competitor, meanwhile, explained that side-bet gambling was common in club organized competition events, but was itself not the key driver of such an event:

> There will be guys on the sidelines saying 'yeah, that man bird going mash up and that bird going and outsing that bird.' They will bet on that, so yes there is the side-betting like that. Quite a bit of it. But more so, that bird now that wins the competition is of course now, premium quality. That is what everybody is after. So instead of two people, you have ten or fifteen or twenty people now interested in that bird. [P184]

Finally, other songbird keepers noted that one-on-one competitions between two are commonly organized for gambling between two competitors and possibly other interested bystanders. Observation of such an event led an organizer to explain:

> Like a guy from Princes Town will make a challenge to a guy in San Fernando. They will agree on the stakes [between themselves] and do a battle and guys on the side will make side bets. Sometimes it is for just TT$200-TT$300, or maybe TT$500. Any level of bird is possible, though you have more money exchanging for the better birds.

Another observer explained that "99% of the time there is money involved" at such events. Another individual at the observed event explained that the best birds are those scoring "200-230 [points] in 30 minutes, those are the money birds."

The methods of marketing are broadly explored above in the description of domestic supply methods (see Section 4.7.2.2). However, with respect to recreational marketing of one's songbirds, this appears to occur most commonly through in-person competition and gambling activities, rather than online over Facebook or WhatsApp. The latter appear to be more commonly used for re-selling, with posts indicating sales opportunities greatly outnumbering other more general "share" posts. For instance, observation of a competition event led one keeper to share his frustration with his club's WhatsApp group for songbird keeping: "You see some beautiful birds, but everyone now saying 'call me at…' or 'the price is…' It's just all about the money now."

The methods of training of captive songbirds was found to largely vary according to which species were being kept, but are almost always employed when songbirds are in their juvenile life stages. Songbirds subjected to physical handling training tend to be captive-bred

species not native to the region, like Gouldian finches and zebra finches, which are also sometimes bred for recreation. Such training includes desensitizing songbirds to human presence through food incentives and physical restraint. These methods were also outlined in various online resources shared by such songbird keepers. Meanwhile, other native songbirds tend not to be trained in for physical handling, but are ordinarily subjected to a range of training methods to acquire their foundational song or, for some species, acquire new ones. Such training appears to vary greatly by keeper but ordinarily involves extended training regimens with varying daily sets and intervals of listening to the desired bird song over periods of weeks or months, if not years.

With regards to the specific song training methods used, recordings of idealized songs are typically played on speakers near one or more cages with trainees. For instance, one keeper of macaws recalled growing up listening to her father train songbirds, "daddy doing his whole bird thing…growing up we would just hear these tweet, tweet, tweet tapes all day long, all through the house" [P222]. However, experienced keepers will also often use talented "teacher" birds. For instance, a keeper explained:

> No, the first bird, my first bird that I bought for $200, I trained it from my phone…and after that…he trained the rest. I call him the teacher bird. He is the teacher. All the rest of the birds just whistle like him. [P034]

Many songbirds subject to song training are also commonly trained to be desensitized to new surroundings to ensure they can sing outside of their usual settings. This is ordinarily done through moving caged songbirds to hang at different outdoor locations each day and by many keepers taking their caged birds on walks. One keeper reflected that such walks were particularly time consuming: "It's a lot of walking, boy, a lot of walking" [P097]

Examination of recreational stages of songbird keeping identified at least five additional motivations driving this phase in the trade chain: community esteem, financial gain, relaxation,

socialization, and participation in a cultural tradition. Community esteem was ordinarily noted as something of importance to songbird keepers that engage in competition and gambling. As one keeper explained, “It’s pride, when you have a songbird that wins, you feel pride” [P006]. Observation of competition events led to another competitor explaining that winning in the one pole category at organized competitions brings “bragging rights” and will lead to having “a lot of people now that coming to you and trying to buy your birds.” Other competitive songbird keepers spoke reverently of known champion songbirds by their names, such as one bird called “The Monster” that is over 20 years old and still wins competitions, and most such keepers were aware of who owned such birds at any given time.

Financial gain is another commonly stated motive of recreational songbird keepers. For instance, one private seller and recreational keeper reflected on his approximate timeline and rate of return when he trains chestnut-bellied seed finches for profit: “it takes six to 12 months of training to turn a TT$400 bird to a TT$5,000 bird” [P014]. Similarly, according 34 households reporting keeping songbirds in the national survey, 46% of all captive songbirds are kept for the keeper to “profit from sale”, which follows the other core motivations of “beautiful song” (94%), “beautiful appearance” (93%), and “hobby” (67%).

In spite of this motive to gain financially, there is some evidence indicating that financial gain is rarely if ever realized apart from those keepers that primarily operate as specialized sellers. One competitor explained, “Is it [to make money or a hobby]? It is all, because it all ties into each other. You love them, and the bullfinch has a good resale value too” [P012]. Another keeper also admitted that he felt somewhat trapped into his hobby now that he is aware of how harmful the songbird trade is to animal welfare: “They should be free, but I have so much invested in it that I can’t just stop…I have birds probably worth TT$100,000 or more” [P002].

Relaxation was also indicated as an important motivation among recreational songbird keepers. Many such keepers shared accounts of how listening to, watching, and even caring for their songbirds gave them an opportunity to relieve stress. One keeper reflected on this saying,

> What a lot of these birds do is they destress a person. So you go to work, you might have a hard day, and you relax on that couch and you hear that bird singing and it destresses you. It puts in you in a relaxed mode. [P028]

Another keeper recalled how he would attend to his songbirds whenever he would have arguments with his now ex-wife: "I could care less [if we argued]. In the night, my birds are hung out, if we have a problem, I clean my cages" [P020]. Nevertheless, keepers engaging in recreational activities with their birds also reflected that such activities could also create stress. One keeper explained, "You know, it helps you with stress and it creates stress" [P037].

Socialization within a broader songbird keeping community was also indicated as a motivation among some recreational songbird keepers, particularly those engaging in competitions. For instance, recreational keepers shared that "even after the competitive aspect, we still hangout as friends and lime" [P007] and that many other club members are "more family than friend now" [P008]. Another keeper reflected that "networking [through recreational songbird keeping] is a huge factor…you meet people from different walks of life you wouldn't normally meet" [P010]. Members of some clubs also shared that they would also encourage families and children to participate in community events: "we encourage families to come out with their kids so we have kids categories and stuff that are part of our main singing competition" [P022].

Lastly, with regards to recreational motivations, many keepers explained their recreational activities as part of a cultural tradition. For instance, one songbird keeper explained, "It is something that was passed on in my family generation to generation…so my dad and they

had seedeaters, primarily seedeaters, not just bullfinches, but seedeaters, all as pets" [P020]. This perspective was further broadened by other key informants. As a pet shop operator explained, songbird keeping is "traditional, indigenous, it happens in Guyana and a lot of the West Indians that live in NY do it and the West Indians that live in Europe like Holland and Germany" [P109]. Meanwhile, a conservationist and local historian reflected upon how songbird keeping was brought to the country through colonial practices of African slavery and Asian indentured servitude:

> In African culture, songbirds are a part of a bigger pet culture, so they came. So, what was these peoples able to maintain at low cost? So, birds were kept as pets. The dog wasn't kept because it wasn't the "domestic dog," it wasn't a pet. The dog had the power to control the slaves…East Indian indenturers came, and they had their sociological society of bird fancying, so it became what it is with what is available [in local ecosystems]. [P091]

A variety of harms associated with the recreational use of songbirds were identified in relation to animal welfare, biodiversity conservation, and the rule of law, while harms to public health were not found beyond those already involved in caregiving and obtaining. With regards to animal welfare, some songbird keepers indicated that irresponsible competition can lead to a "fold" bird, which will be unable to sing temporarily and possibly indefinitely. For instance, one keeper provided his own in-depth description:

> Yea the term for that is folding, right? What happens is you might put two birds up against another and one bird is so dominant it folds the other bird. Folding means he stops the bird from singing…They recover most of the time, but anytime they have an encounter with that particular bird, they wouldn't sing. [P012]

Others further noted that competition often exposes caged songbirds to excessive sunshine and heat, which they would naturally seek to avoid in the wild. As one keeper explained, "The conditions are real harsh on the birds…We would sit in the shade and have them out in the sunshine, and they would be out there till 11am, 12pm, 1pm, all out in the hot sun" [P002].

With regards to biodiversity harms, recreational keeping is a major driver for the largest volumes of songbirds kept in captivity, and so in turn drives most local and foreign trapping that depletes wild populations. This connection between biodiversity decline and recreational keeping is perhaps best exemplified by the relatively strong demand existing for chestnut-bellied seed finches sourced from local remaining populations. As one keeper and seller explained, "The reason that our local bullfinch has fetched such a large price is that it's almost extinct now, you know?...There are guys waiting to pay [extra] for those birds, you know? So, there's a large demand" [P012].

With regards to the rule of law, recreational keeping already depends upon core behaviors of caregiving and obtaining that routinely violate Trinidad and Tobago laws. Nevertheless, recreational keeping appears to add to these harms by creating a substantial gray or black market for songbirds within which more active criminal actors may operate. Additionally, some participating keepers even remarked on knowing persons that stopped competing or even keeping chestnut-bellied seed finches entirely as a result of the increased risks of criminality. One keeper recounted:

> I know plenty of people who was in it and stopped, mainly because of the cheating in the competitions and how they getting in, so most of these people would just be keeping them as a hobby. And I know one guy who just set free all his birds. He say he don't want to do that anymore. [P002]

Finally, no additional harms to public health were identified in relation to recreational keeping specifically. In fact, it is possible that recreational keeping is associated with reduced harm to public health relative to caregiving and obtaining. Once a particular songbird is perceived to be valuable, it is likely that a keeper will take special care to keep this bird from being accidentally released and provide it with special health care. For instance, one recreational keeper admitted that he had put in special effort to find an appropriate veterinarian skilled in

avian care: “You know I’ve done a lot of searching and I’ve found an avian vet…if it is that a bird happens to show signs of some stuff, I would reach out to her, she would lend support” [P024].

4.7.4. Intervention

The trade chain for songbirds kept in Trinidad and Tobago was found to be modified through intervention by ‘civil society,’ ‘criminal,’ and ‘governmental’ actors. These actors variably intervene across the core phases of production, exchange, and consumption, and further vary by the degree to which they coordinate their activities. The civil society stages of intervention identified are seven: advocacy, desistance, education, government reporting, monitoring, releasing animals, and sanctioning. The criminal stages of intervention identified are six: bribery, embezzlement, extortion, fraud, obstruction of justice, and theft. The governmental stages of intervention identified are 12: arrest, case proceedings, euthanasia, inspections, investigation, patrolling, permitting, public education, quarantining, releasing animals, and seizing animals. Due to the nature of the research, the intervention phase described here primarily corresponds to intervention in Trinidad and Tobago and along its maritime border, but limited additional information was also obtained on intervention in other trade-linked countries. Additionally, the methods and motivations of intervening actors were only lightly explored when possible, so only cursory information is provided.

It is also notable that the intervention phase does not, at this time, appear to include any stage for rehabilitation, neither civil society nor governmental, as is often the case for some other species recovered from wildlife trades. Though it is possible that some wild-caught songbirds are successfully released back into the wild, rehabilitation would greatly improve their chances of survival and decrease chances of transmitting diseases to wild songbird populations. Observation

of an independent wildlife rehabilitator led them to reflect on the lack of rehabilitation of songbirds in the country: “Who going to bring that [a captive songbird] in [as a donation]? They will just release the bird. If it is seized, well, all of those go to the zoo where they are euthanized.” Local experts in Venezuela also confirm that such birds are not ordinarily rehabilitated when seized (A. Orta, personal communication, May 5, 2022).

The stages, actors, and harms of songbird trade intervention are further described below.

4.7.4.1. Civil Society Action

The identified stages of civil society intervention are seven: advocacy, desistance, education, government reporting, monitoring, releasing animals, and sanctioning. Importantly, for this description, ‘civil society’ is broadly inclusive of independent activists as well as the more organized non-state social associations commonly fitting the description (e.g., Edwards, 2013). Due to the nature of the research, civil society intervention information is greatly limited to Trinidad and Tobago civil society. Additionally, we note that the stage of advocacy is self-referentially indicated by this report and the broader work of the Nurture Nature Campaign (see Section 4.4.1), as well as long term work of its coalition members and other local NGOs (see Section 4.4.4 & Appendix A). Many of the campaign’s coalition members are also key actors in other stages of civil society action to intervene in the songbird trade chain.

The stage of advocacy is fundamental to the functioning of civil society systems and is ordinarily practiced in Trinidad and Tobago. As indicated above, some of this advocacy is relatively recently initiated by the Nurture Nature Campaign and its coalition members, but in the past other NGOs and activists have publicized their concerns about songbird keeping and trade. Such species-specific advocacy notably goes back to the 1970s (e.g., ffrench, 1973) and has continued in the decades since (e.g., Sookdeo, 2015; TTFNC, 1984). For instance, Sookdeo

(2015) advocated for a reform to Trinidad and Tobago's laws: "We await to see how the wildlife laws of our country will be re-written in the months and years to come but it is clear we need to practice the sustainable usage of our wild resources" (p. 5).

The stage of desistance was reported by some songbird keepers and traders as sometimes occurring. For instance, one songbird keeper at a songbird competition remarked that the expansion of an ineffective government permitting system to include most wild-caught songbirds in 2016 has caused some people to stop keeping songbirds: "You have to have permits now and you can't get them and there's a fine, so some guys don't like that." Meanwhile, one participating wildlife trafficker explained that he had given up trafficking in wild-caught songbirds because the mortality rates are so high:

> I mean, you can't keep doing that when you have kids. You can't deal with cages of dead birds and just go home, you know?...[so] I do other things, like breeding dogs. I just bring in [wildlife] when it makes sense and they [the keeper] have the resources to take care [of the desired animal]…I got a tiger from Mexico once. A circus there was looking to sell and there are guys here who want that" [P198].

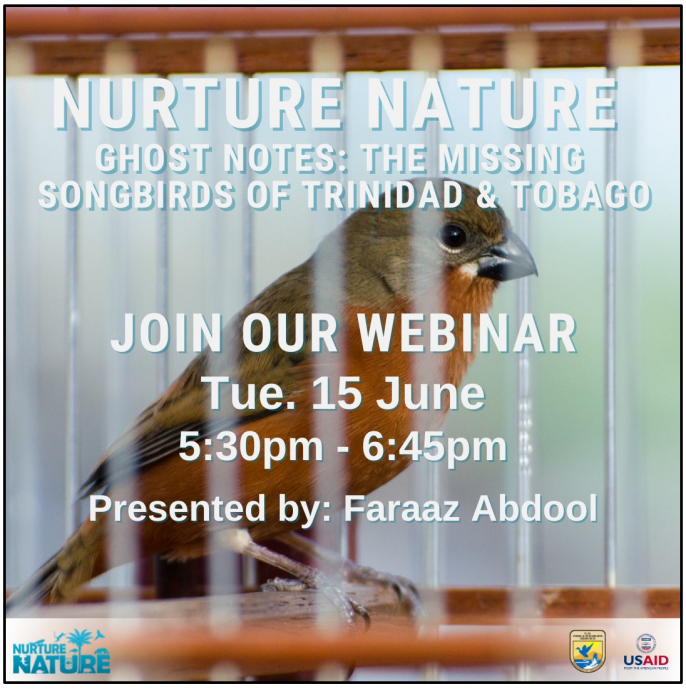
The nature of songbird keeping as a culturally-embedded recreational activity further suggests that desistance may be a rather extended experience. For instance, recreational keepers routinely referred to themselves as part of a "bird fraternity" [e.g., P012]. One keeper also indicated that desistance would require a period of time to recoup substantial monetary investments: "They should be free, but I have so much invested in it that I can't just stop…I have birds probably worth TT$100,000 or more" [P002].

The stage of education occurs ordinarily among recreational songbird keepers and their organizations, as well as more recently by the Nurture Nature Campaign. This education is commonly based around competition events where keepers may also learn about caregiving and obtaining. For instance, the Bird Racing Association of T&T was featured in a 2022 article in the

Trinidad & Tobago Guardian in order to educate the public on sporting aspects (Boodan, 2022). Others explained that such education was common among only some keepers, such as: "There's a lot of info you could get from more experienced birdkeepers, you know? …[but] there are some guys that hide information and there are some guys that give information freely" [P012]. Other forms of more action-oriented education are more recently exemplified by social media content produced by the Nurture Nature Campaign (Figure 37).

The stage of reporting problems to the government occurs occasionally through the actions of key actors in the exchange and consumption phases of the songbird trade chain. Some of this reporting occurs specific to the songbird trade or more general wildlife trade would ordinarily result in displays of government frustration. For instance, observation of a pet shop led to the owner recounting: "There is a pet shop in [redacted]...they sell monkeys, macaws, bullfinches, everything. I told Forestry but it's been months and they still selling." Beyond this, animal welfare and conservation activists occasionally report to the government on the wildlife

Figure 37: A social media post advertising a webinar on harmful songbird keeping. Ghost Notes Webinar [Graphic image], by Sustainable Innovation Initiatives, 2021. CC BY 4.0.



trade and more general animal trade, yet they too frame these reports with displays of frustration. For instance, one conservationist that occasionally reports issues of illegal wildlife keeping and trade explained that the MALF is limited in activities due to a lack of police support:

> I think the [wildlife] enforcement is clearly, at the moment, not good. But the police force is coming from the same population as everybody else. So, if the average person sees nothing wrong with having a bird in a cage, the average policeman is not going to enforce a bird catcher…I don't expect the police to be more supportive…and the Forestry Division is not going to be able to do it. They are not adequately equipped and not adequately trained to, you know, they are not going to be able to do it. [P149]

The stage of monitoring occurs among a relatively small number of activists concerned with the occurrence of the pet wildlife trade in Trinidad and Tobago and among many members of organized clubs. Sometimes this results in reporting directly to the authorities or interested members of the press. For instance, a local wildlife rehabilitator was featured in a 2020 article on a local online newspaper in Trinidad and Tobago and described his observations of the general wildlife trade: "Commonly, poachers smuggle in animals such as tufted capuchin monkeys, parrots, macaws, sloths and even jaguars and ocelots. These animals are kept in deplorable, cramped and unsanitary conditions where many never even survive the trip" (Doodnath, 2020). Ostensibly, this analysis and its underlying research represent a major new activist contribution to the monitoring of the songbird trade chain.

Meanwhile, within the songbird keeping community, many recreational keepers engage in monitoring in order to protect their birds and others from bad actors. Such monitoring may also result in keepers engaging in education or sanctioning. For instance, one keeper reported that his club keeps a careful eye out for poor care practices: "Yeah, you see it in the guys in the club, how passionate they are. They care more for those birds than themselves…so if we see a guy who needs to do better, we will tell him" [P028]. Another added that they will keep a look

out for signs of illness in other persons birds and guide keepers on how to provide health care: “I see that and I ask…’What are the symptoms?’ because birds will show a symptom, one of the first symptoms is puffiness, they would puff up” [P013].

The stage of releasing songbirds for intentional intervention is reported to be carried out in relation to ordinary consumption behaviors (see Section 4.9.3). Though these releases appear to be mostly personally motivated (i.e., to release an unwanted bird), some keepers felt that such releases were beneficial to the environment. Observation of a competition led one keeper to explain: “You know, I did that before. I bought eight from a pet shop that was selling an entire volley for TT$500 so I just let them go. Maybe they help bring back our birds.” Additionally, various informants indicated that in recent years some songbird keeping clubs have held public events to release captive-bred chestnut-bellied seed finches. Nevertheless, these events were generally critiqued for their methods. One keeper referred to another keeper in the neighborhood, “He released birds with another group and he already saw it [releasing captive-bred birds], they wasn’t properly releasing, they birds that they released came back onto cages in the area” [P013].

The stage of civil society sanctioning was reported to occur occasionally among songbird keeping communities and it is likely there to be similar efforts to punish norm violations among other actors in the songbird trade chain. With respect to songbird keepers, some of the social norms and punishments for poor animal care and unsporting behavior have already been described above (see Section 4.7.3). For instance, one recreational keeper and independent songbird seller explained he had “blacklisted” a potential buyer of their trained songbirds: “I sold two birds to this man and they die. I would not sell to him again. The shit was piling up, you know?” [P134], after which he explained this person was no longer invited to compete in his

neighborhood group. Observation of a competition event further led to a participant to describe how new club members are sometimes scolded for bad behavior:

> Most of the time it comes through your peers or close friends that you are liming or shying with, and they would tell you. New guys might not know. The water fountain gets moss in it, it's in the sun every day, and the state of the seeds, you can tell how they are taking care of it. So, we might boof [*sic*, reprimand] them.

As for other civil society actors, there was some evidence of activists sanctioning the exchange and consumption of songbirds. For instance, a songbird keeper and avid recreational hunter recounted taking action of his own by reporting and sanctioning one for-profit zoological exhibition:

> I've gone to [redacted] last year and was so appalled I cut my visit short and left there with a complaint to whomever official I could have found because the worst thing in the world for me is an animal that's looking like it's starving, sick... Some of these animals even looked as though they were, and I forget the term they use, but they will basically not even be cognizant…I would tell anyone to stay away. [P179]

Another veterinarian further explained that they would no longer provide emergency services for another zoological exhibition: "What's this point? There are so many animals that pass through there and die because of things like malnutrition or parasites. They don't have proper restraints, and the enclosures aren't built properly. It's just not the best situation" [P083].

The key actors identified in stages of civil society intervention of the songbird trade chain include social activists, nonprofit NGOs, and concerned actors within the primary trade chain. Due to the nature of the research, actors were only clearly identified in Trinidad and Tobago. Nevertheless, there are some indications that there is relatively less civil society intervention effort occurring in neighboring Venezuela and Guyana, from where most songbirds are sourced. Venezuelan civil society has been especially impacted by the near decade-long economic crisis. By one estimate, in 2021, 76.1% of Venezuelans met the international standard for "extreme poverty," compared to just 13.1% in 2014 (Proyecto ENCOVI, 2021). In Guyana, meanwhile,

there are relatively fewer persons living here than in Trinidad and Tobago—or ~0.8 million people compared to ~1.4 million people—yet Guyana is almost 42 times bigger in land area. The United Nations Development Programme (UNDP) also ranks Guyana as having "medium" human development compared to Trinidad and Tobago's "high" development (UNDP, 2020).

In Trinidad and Tobago, independent activists concerned with issues of animal welfare, biodiversity conservation, and public health are numerous and organized through a variety of social media groups and nonprofit NGOs. Nevertheless, independent activists appear to more often focus on other aspects of the wildlife trade and broader contraband trade. Activists specifically concerned with songbird issues either previously or currently include ornithologist Richard ffrench (i.e., ffrench, 1973), local naturalist Kris Sookdeo (e.g., Sookdeo, 2015), photographer Faraaz Abdool (e.g., Abdool, 2020), and former minister of agriculture, Ian Lambie (e.g., GORTT, 2015). All of these activists have primarily emphasized concerns for biodiversity conservation, though some activists concerned with the broader wildlife trade also express concerns for animal welfare and public health (e.g., Doodnath, 2020).

Many activists are members of the Trinidad and Tobago Field Naturalists' Club (TTFNC), a nonprofit NGO that has issued recommendations on songbird conservation since the 1980s (TTFNC, 1984). However, other activists concerned with the general wildlife are also supporters and staff at several rehabilitation organizations in the country, including the El Socorro Centre for Wildlife Conservation (ECWC). More recently, the Nurture Nature Campaign has begun to intervene on the general wildlife trade with specific effort to advocate and educate on songbird keeping and trade. Intervening actors within the primary trade chain appear to most commonly include songbird keepers and their organized communities. Keepers and their organizations are further described above (see Section 4.9.9). As observed, actors in the

exchange phase of the trade may also sometimes intervene by reporting another bad actor or by desisting from their trade activities.

Another important organization for civil society advocacy is the Wild Life Conservation Committee, a governmental committee with civil society representatives that advises the MALF on wildlife policy. This committee includes representatives of the Minister, the Zoological Society of Trinidad and Tobago (ZSTT), the Trinidad and Tobago Police Service (TTPS), hunting organizations, and other members to represent an array of civil society interests and to provide feedback on policy issues and legislative reforms. Nevertheless, various reports indicate that this body is more generally concerned with matters of economic maximization than wildlife conservation. For instance, a 2017 news article on the committee indicated that the then minister would consider hunting policy in relation to "the economic value of wildlife hunting" (cited in Anonymous, 2017a). A conservationist that was previously on the committee further reflects that they were often unable to have their requests for more conservation-oriented policies entered into the official minutes: "I believe we could adopt systems that have been implemented in other countries, such as a bag limit [for hunters]. But they would not hear it. I would even ask the minute-taker to put this [their request] into the record, but nothing" [P045].

The methods of civil society actors were not directly explored in the course of research, so are considered here only cursorily. However, activists engaging in harmful keeping and trade appear to most commonly employ solitary methods rather than act through organizations. For instance, activists associated with the TTFNC appear to be more active on songbird conservation issues than the club itself. Meanwhile, representatives of several songbird clubs indicate that they would like to more actively engage on songbird conservation and welfare (e.g., "we need to do

something or they will all be gone"), but this effort appears to be limited to one or two clubs that engage in symbolic releases of captive-bred songbirds.

The motivations of intervening actors were found to vary widely from enlightened concerns among activists (e.g., wildlife conservationists) to more personal concerns among primary trade chain actors (e.g., personal safety or morality). Nevertheless, a persistent theme in all motivational accounts is that intervening actors are often pessimistic about the possibility of effective regulation. For instance, a veterinarian reflects that many laws are not enforced in Trinidad and Tobago:

> To be honest with you, in Trinidad, law enforcement is so…well, you make the laws, [but] nobody really enforces, or you go and report…well, it's not really our culture to enforce. The police are like, 'we don't have a car right now' or 'we will come just now,' [and] they come three days later or whatever time" [P085]

Specific to wildlife management, other key informants were pessimistic that any positive change could be achieved due to the state of politics without cultural change. One conservationist explained ordinary Trinidadians are too fearful to report illegal activity:

> Naturally, Trinidadians are cowards, they will never go out and speak [to report illegal activity]...I go out and talk to these angry citizens and they say, 'Oh this, oh that.' And I say, 'Will you say that on camera or to report it?' And they go, 'No, no, no.' [P056]

No harms were identified in relation to civil society intervention, but it was also apparent that harms were not meaningfully reduced either. Notably, advocacy, education, and government reporting for harm reduction has not been particularly successful, even as civil society actors have engaged in these stages for biodiversity conservation since the 1970s (e.g., ffrench, 1973). Since that time, various species of songbirds are no longer found in abundance on the island and some species may have been entirely extirpated, such as the red siskin (*Spinus cucullatus*). One particular standout event resulting from advocacy in Trinidad and Tobago was the imposition of

hunting prohibitions for some species of wild-caught songbirds in 2016, but illegal hunting is reported to continue unabated.

Meanwhile, other stages of civil society intervention that might more directly reduce or mitigate harms—desistance, releasing animals, and social sanctioning—are either particularly rare or affected in ways that do not address harms. Desistance is reported among some actors in the primary trade chain, but the keeping and trade of songbirds appears to be stable if not growing. The releasing of animals appears to ordinarily occur as part of the primary trade chain, but not in ways that might restore wild populations. Notably, no evidence of rehabilitation and quarantining to improve survival rates and reduce the transfer of disease to wild birds could be found in the course of research.

Social sanctioning also appears to occur in ways that reduce animal welfare harms among keepers, but not in ways that might reduce more profound animal welfare harms within the exchange or production phases. For instance, mortality associated with illegal songbird importation is particularly high (see Section 4.7.2.1), yet keepers broadly feel that stopping such harm is not their responsibility. For instance, one participant explained, "We all know the birds are coming in illegally, we all know it's inhumane, but yet, there is a demand and there is a market" [P010]. Additionally, extensive searching could identify not a single keeper or club that felt the keeping of locally-caught chestnut-bellied seed finches should be a social or legal offense. For instance, the observation of a club-sponsored competition president to remark, "We can't ban the locals, because those are such precious birds. So many guys would die to have one of those."

4.7.4.2. Criminal Action

The identified stages of criminal intervention are six: bribery, embezzlement, extortion, fraud, obstruction of justice, and theft. Due to the nature of the research, criminal intervention information is greatly limited to Trinidad and Tobago and its maritime border. Additionally, due to safety concerns, these issues were only explored as part of wider accounts of the wildlife trade, and it is likely that there are other criminal stages that play meaningful intervening roles in songbird keeping and trade in Trinidad and Tobago.

The stage of bribery was reported almost universally among participating informants. This was variably reported as an everyday governance problem in the country and as occurring specific to the regulation of songbird keeping and trade. For instance, one veterinarian reflected on the state of their country's governance system: "You can pretty much get anything done with the right bribe" [P077]. Another veterinarian added, "Money talks. Everybody just trying to make fast money, and they don't care how they do it…It's everywhere, there are places you can pay $2000.00 just to get your [drivers] license if you don't want to do the test" [P203].

Specific to songbirds, various persons indicated that bribes to be paid to cause government inaction on an offense or to facilitate issuance of a possession permit. For instance, a pet shop operator alleged that his business had previously paid small bribes to avoid enforcement action on illegal sales of songbirds: "They have the authority to say, 'You know what, this is protected, I can arrest you for that today, but I'm not going to arrest you but you could give me $50 and I could leave it alone'" [P079]. For another example, a veterinarian added that she knew of one client who had paid a bribe for a possession permit for various songbirds and parrots: "I know one client told me [they have permits], they had to pay a couple thousand to do it, but I think that was under the table" [P144].

Nevertheless, a number of participating informants acknowledged that their own attempts at bribery were not always successful and that bribery may not occur as commonly as some perceive. For instance, a trafficker admitted that he could not pay a bribe for a permit to possess a diversity of wild animals because he did not have a special connection: "If I could pay somebody now [a bribe]...but I can't make it happen. You could have how much money, but if you don't have the link…" [P210]. A conservationist reflected that what some people took to be bribery and general corruption was actually government inefficiency:

> The Coast Guard come up with all kinds of reasons that they can't do a patrol in an area ...and sometimes they just [say], 'well, we didn't wanna,' 'it's a rainy day' or 'there was a party the night before'...the first thing you think is corruption... They didn't let the boat through because they are corrupt, [but] they let the boat through because they are useless. They're useless and lazy…But corruption? You only need a few to do it and they won't have any opposition. [P056]

The stage of embezzlement was also regularly reported as occurring in relation to seized wildlife and songbirds in particular in Trinidad and Tobago. For instance, a songbird keeper and police officer further confirmed this problem by admitting to taking home a high-value confiscation:

> I had a bird once from Brazil, that came down, ordered for US$1500, and you know how I got it? I found it while I was on patrol exercise…I told the guy he was supposed to have a permit for it and so he gave it to me. And would you believe it was infected? I lost seven birds..." [P044].

A pet shop operator also recounted a story of a game warden who had previously asked him to help facilitate the embezzlement of a seized songbird, to which they had refused:

> I've had one game warden who was trying to befriend me. Came to my store and say, 'I want a black bullfinch, you have any dead black bullfinch?' "Why do you want a dead black bullfinch?' [he asked]. 'Well, I thief a bird from a man and that bird real singing. I want that bird.' I kid you not. [P184]

Recently, several police officers were also charged with the embezzlement and resale of 40 songbirds (Alves, 2022).

The stage of extortion was strongly indicated to occur in relation to the pirogue-based contraband trade between Trinidad, Venezuela, and Guyana (see Section 4.7.2.1). Specifically, different areas of these countries' shared maritime borders are effectively controlled by violent criminal gangs and many traffickers have been killed in recent years (e.g., Venezuela Investigative Unit, 2021). Some informants further reported that traffickers operating pirogues are occasionally forced to pay fees to move through a particular area or otherwise face a threat of violence. One trafficker recalled one close call with pirates seeking payment which required him to swim several miles back to shore: "I experience that, I had to jump off the boat, with machine gun and thing, shooting behind you…you never know when you go come back" [P215]. Another veterinarian directly involved in the illegal wildlife trade explained that violence is threatened to keep the TTTCG from intervening:

> The Coast Guard's involved. I can say with 120% certainty there. So, things come in, it may be human, animal or drugs, weapons. All those things are coming in through the borders. And if they [the Coast Guard] go [to interdict] then maybe they're getting paid off or they getting scared. Some people will kill them if they stop them from bringing in. [P083]

The stage of fraud was reported as occurring ordinarily among persons making applications to possess the 32 of 34 songbird species requiring possession permits. Notably, many conservationists are aware that the Trinidad FD will typically not give permits for "protected animals" that are not allowed to be sold *unless* a person claims it was gifted to them. One keeper reflected, "The trade of the animals is illegal, so they say, 'Wait, but I got this as a present." [P111]. Observation of a Coast Guard station further led one officer to reflect on how people apply to keep protected songbirds and other wildlife: "They don't really want to create that impression that they did some kind of illegal activity, so…[they] say they get as a gift so it won't create any type of stir when they apply." As permit applications require information on "how obtained" (see Figure 25), this suggests at least some applicants will make false statements.

Some key informants also suggest that some breeders of chestnut-bellied seed finches make false statements to the authorities when they claim to release captive-bred specimens into the wild to advocate for regulatory reform for their breeding industry. At least three such releases have been arranged with the Trinidad FD since 2018, and each event requires a special letter requesting permission to transfer such "second schedule" animals for release. A songbird keeper explained, "I know people who buy birds from the pet shop just to release them back, they do that to show forestry that they breed and release" [P008]. A songbird breeder further explained, "They release a wide variety of birds, but no[captive-bred] bullfinches are released. That is where the money is!" [P135]. Observation of a competition event led one club president to further remark, "That is a strong possibility [of fraudulent releases]. I wouldn't be able to accuse anyone in particular, but it's true you're really letting your money fly out the cage for someone else to catch it."

The stage of obstruction of justice was broadly indicated in the maritime trafficking of songbirds and other wildlife from South America into Trinidad. Specifically, traffickers will ordinarily dump their wild animals and other cargo when pursued by the coast guard. This destruction of evidence is sometimes reported on by local media. In one event traffickers dumped songbirds and parrots into the water before being apprehended by the TTCG and 42 of the birds died (Wilson, 2020). Observation of a coast guard station further led one officer to share that traffickers "usually put stones in the boxes and cages so they sink fast," and as a result many animals, dead or alive, are never recovered.

Potential obstruction of justice was also indicated as impeding government inspections and investigations. For instance, a pet shop openly selling illegal songbirds in south Trinidad explained: "You would be amazed how many politicians come to my shop [to buy wild-caught

songbirds]. I would know before the game warden [if an investigation was underway]." Another operator observed to be selling songbirds illegally explained, "Well, no one does bother me because I'm a policeman. We get some special privileges." Furthermore, observation of an investigation into a prolific illegal online seller of songbirds and other wildlife led one enforcement officer to explain, "We can't do anything about that. His family has been doing that a long time and they protected by the police."

The stage of theft was broadly reported as requiring protective action in the trade phase of consumption, which is explored above (see Section 4.7.3.1). Theft is also reported to occur in the stage of exchange. For instance, one participating monkey keeper and police officer recounted one incident of other police officers and game wardens illegally seizing songbirds from a pet shop:

> I have a friend with a pet shop and he order some birds. He have all types of birds. And the bullfinch…and he had a couple hundred there. So, whoever he bought them from, I think they set him up. So, the police and game wardens come raid his house and take the birds, just those, but he had hundreds of other birds. And then I check and there is no record of it. So actually, I think it is like a business where I sell you birds, and I have friends who are police and who are game wardens and they might go and take it back. And then they sell it again. [P240].

Similarly, another participating pet shop operator reported that he no longer directly buys songbirds and other wild animals from southwestern Trinidad due to the risk of theft after purchase: "I don't buy in Cedros because as soon as you go down there, 100 feet the police take you…As you buy the goods they call the police, you lose your money, and you lose the bird, and the policemen sharing that" [P209].

The key actors identified in stages of criminal intervention of the songbird trade chain include potentially all actors within the primary trade chain as well as corrupted governmental actors described below. Other actors further include pirate gangs that operate in the waters

between Trinidad, Venezuela, and Guyana and everyday street criminals that steal songbirds for sale. Notably, pirates, thieves, and other committed criminals are often reported to be operating with relative impunity in these countries (e.g., La Vende, 2022). For instance, officials with the Venezuela's National Organization for Rescue and Maritime Safety in the Aquatic Spaces (ONSA), are quoted as saying:

> From the Paria national park to Delta Amacuro, it's out of control, it's a danger zone. The authorities, including the army, should have control of the area…the level of criminality and piracy is far from normal. (cited in Venezuela Investigative Unit, 2021)

Meanwhile, the USDOS has placed a level 2 travel advisory on Trinidad and Tobago "due to crime, terrorism, and kidnapping" while it has respectively placed level 3 "reconsider travel" and level 4 "do not travel" advisories for Guyana and Venezuela.

Given the nature of research and concerns for safety, little is known about the identities, methods, or motivations of criminal actors. However, it is commonly alleged that some criminal actors and corrupted government officials operate with a high degree of organization, or that corrupted officials are particularly high ranking. For instance, one veterinarian described how much of the contraband traded between Trinidad and Tobago and South America was due to the relative influence of criminal actors, "There is a parallel narco economy in Trinidad that runs and dictates everything in Trinidad. So, the borders are open" [P093]. Furthermore, observation of a pet shop in south Trinidad led one operator to explain, "All of us older [pet] shops keep an eye out [in south Trinidad]. As soon as they [game wardens] visit one of us, we know to move things [wildlife] to another location."

The stages of criminal intervention inherently result in additional harms to the rule of law, but generally do not appear to produce substantial additional harms to animal welfare, biodiversity conservation, or public health. Nevertheless, there exist several notable exceptions.

With respect to animal welfare, the obstruction of justice that occurs when traffickers sink their contraband in response to possible interdiction causes particularly high rates of mortality in songbirds and other animals (see above and Section 4.7.2.1). With respect to public health, the research uncovered reports of corrupt government officials embezzling seized songbirds and this results in inappropriate quarantining and disease transfer. Meanwhile, all harms associated with the wild-caught songbird trade are exacerbated by bribery, which is alleged to be a key facilitating stage in its occurrence.

4.7.4.3. Governmental Action

The identified stages of governmental intervention are 12: arrest, case proceedings, euthanasia, inspections, investigation, patrolling, permitting, public education, quarantining, releasing animals, and seizing animals. The stage of arrest is fundamental to the exercise of governmental power and so it is no surprise to find it associated with interventions into songbird keeping and trade. For instance, news media reports establish that illegal keeping and trade have led to arrests in Trinidad and Tobago (Anonymous, 2018), as well as in the trade-linked countries of Brazil (Anonymous, 2014), Colombia (Tatiana Rojas, 2021), Guyana (Anonymous, 2017b), and Venezuela (Anonymous, 2016). Nevertheless, there is strong evidence that many governmental actors choose not to arrest. For instance, official records of law enforcement actions taken in 2017 by the 15 game wardens in Trinidad indicate that they officially detected only 13 incidents of one or more legal violations under the Conservation of Wild Life Act associated with songbird keeping or trade. Such a figure is surprisingly low given the scales by which songbirds are kept on the island. Furthermore, three of these reported incidents ended in the issuance of an official caution only.

The stage of case proceedings varied broadly depending upon the discretionary action of charged individuals. For instance, of the 10 detected incidents leading to official charges under the Conservation of Wild Life Act in 2017 (see above), only one of these incidents led to a 'not guilty plea and court action. In the remaining nine detected incidents with charges, all persons pled guilty and paid reduced fines. Meanwhile, other information on case proceedings involving charges under other laws were unavailable in Trinidad and Tobago. This was partly explained due to the TTPS' lack of special record keeping on crimes specifically involving wildlife consumption and trade (K. Lancaster-Ellis, personal community, February 8, 2019).

The stage of euthanasia was reported to occasionally happen in relation to seized songbirds. However, information shared on this stage was relatively limited, ostensibly due to the political sensitivities of discussing this issue with members of the public. Nevertheless, observation of the Emperor Valley Zoo, which receives all seized animals in Trinidad, revealed there to be a publicly-visible area for storing seized wildlife, yet no songbirds were found among these cages. Furthermore, conversations with attending zoo keepers indicated that many songbirds are euthanized if they must be kept for a court case or they are too sick for release. As one observed keeper explained, "we can put them in a room with an exhaust [*sic*, carbon dioxide] and…we put any we need [to keep] in the freezer."

The stage of inspections was indicated as an ordinary behavior for all involved government actors. Inspections are conducted as a result of ordinary investigations, patrols, and permitting and are also conducted at fixed points, including government offices and ports of entry. This stage is fundamentally tied to subsequent stages of arrest, euthanasia, quarantining, releasing animals, and seizing animals in the event that problematic issues or violations are detected. For instance, observation of an ordinary patrol in a forested area led to a game warden

inspecting the gear, identification, and hunting permits of a man detected outside of a game sanctuary. Similarly, songbird keepers ordinarily understand that a home inspection by a Forestry Division officer is required to complete permitting for their captive wild animals, even though it rarely occurs. For instance, one songbird keeper explained, “They never, they never, well, 90% something [of the time] never do that visit” [P001].

The stage of the investigation was indicated as a special activity of the Trinidad FD and other agencies in relation to the songbird trade and wildlife trade more generally. For instance, in April 2022, the Trinidad FD were called to assist the TTPS when a routine traffic stop permitted detection of several cages of chestnut-bellied seed finches and other cages holding several capuchin monkeys and amazon parrots (D. Mahabir, personal communication, April 21, 2022). The information provided by the driver subsequently led to issuance of a search warrant of their residence, which yielded over one hundred unpermitted gray seedeaters. Similarly, in the same month, the TTPS conducted an investigation of a suspected arms dealer and, in executing a search warrant on this person’s home, a cage of sixteen unpermitted chestnut-bellied seed finches were found.

The stage of patrolling was also indicated as ordinarily practiced by many government actors in Trinidad and Tobago and trade-linked countries. Patrols broadly occur by automotive vehicles and watercraft, as well as by foot in certain forested areas (Figure 38). Nevertheless, many participating informants reported on patrol activities as insufficiently exercised. For instance, a conservationist explained the current stage of maritime border security:

> You see, we have something as what we term as open borders, even though there’s a Guardia Nacional on the Venezuelan side and we have a coast guard, they stay on base 24/7 and they don’t patrol, especially in the Gulf of Paria. [P112]

Similarly, observation of a patrol by the Trinidad FD led a game warden to reflect, “We don’t really have the manpower to patrol protected areas or pet shops, like there is only one game warden and two foresters to patrol all of Bush Bush [Wildlife Sanctuary].”

Figure 38: An image of a game warden on patrol in south Trinidad. From *Inspecting an Illegal Hunting Camp* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The stage of permitting is ordinarily practiced by many governmental actors in Trinidad and Tobago and trade-linked countries. For instance, possession of most songbird species is regulated through the issuance of permits in Brazil, Colombia, Guyana, and Trinidad and Tobago, though possession is only regulated by permit in Guyana when a keeper has a sufficient number of specimens. Specifically, under Guyana’s Wildlife Conservation, Management and Sustainable Use Regulations of 2019: “(6) A Captive Wildlife Licence shall not be required by (a) a person who possesses no more than a total of eight specimens of wildlife comprising no more than two specimens of any one species.” Furthermore, in the case of Venezuela, it is unclear if the government is legally able to issue possession permits as Regulations for the

Wildlife Protection Law of 1970 only allow permitting of songbirds once a government management plan has been put in place. Beyond possession permitting, Trinidad and Tobago and other countries ordinarily require permitting for exportation, importation, and trapping of songbirds, while permitting for sellers of songbirds varies by country.

The stage of public education associated with songbird keeping and trade is ordinarily practiced by most governmental actors in Trinidad and Tobago and other trade-linked countries. This stage appeared to most often involve in-person and website-based education, but most stakeholders highlighted this stage with respect to its deficiencies. For instance, one pet shop operator explained, "We're trying to follow what is right, but we don't really know what is right. They don't tell us when they change the law" [P122]. Another pet shop operator added, "Everybody [in the government] does give you a different answer" [P227]. A conservationist, meanwhile, highlighted that the government's interpretation of certain laws is insufficient for public education:

> "Don't kill animals…don't buy red-eared pond sliders because what you going to do with it when it get bigger…tell your mommy and your daddy don't hunt…I could tell every secondary school group that come to the museum…but then, someone could undermine this by asking one question: 'Is it illegal?' Then, I could only say, 'I not sure, it not clear.' That just erodes all my evidence. [P111].

The stage of quarantining was explained to occur by government officials in Trinidad and Tobago and other trade-linked countries. However, it appears this stage occurs very rarely in the trade centered around Trinidad and Tobago given the rather small volume of illegal imports. One conservationist familiar with zoo keeping in the country reflected that the majority of zoological exhibitors in the country obtain their wildlife, inclusive of some species of songbirds, through illegal means and so these animals do not go through quarantine.

> You have to consider the safety of the public and the other animals. When the animal comes in and you do not quarantine the animal and you put it on display. Like, this

> animal came in today? It should not be put on display *today*. I'm talking all the institutions do this. [P057]

Nevertheless, one breeder explained that imported captive-bred songbirds ordinarily go through quarantine at Piarco International Airport, "It happens. If you buying the birds and bringing them by plane, they get quarantine" [P061].

The releasing of songbirds as a stage of government intervention was reported to occur in relation to some birds that are seized from traders and keepers in Trinidad and Tobago and ostensibly occurs in other trade-linked countries. As one trafficker reported, the TTPS had confiscated a range of contraband from him and, in the process, chose to release his songbirds into the wild: "It reach here already and police get it and they just let them go. I lost 700 birds and they just let them go" [P215]. Meanwhile, the Emperor Valley Zoo ostensibly releases some animals after a period of quarantine but does not share information on this process. Such information was unsuccessfully sought in the course of research, and the lack of transparency was further argued by participating informants. For instance, one veterinarian that provides care to animals at the zoo explained, "I don't really know the protocol for that, but they say they release some" [P062].

The seizing of songbirds through governmental action ordinarily occurs in Trinidad and Tobago and trade-linked countries. This is broadly attested to by participating informants in Trinidad and Tobago and various news published on government actions elsewhere. In Trinidad and Tobago, seized animals were ordinarily stored on-site at the Forestry Division's main office until a policy change in 2019 directed all seized wildlife to the Emperor Valley Zoo. This stage was commonly reported by informants as associated with behaviors that subvert the application of laws and policies (see below). Meanwhile, official records on seized animals transferred to the zoo are not available, but such confiscations and transfers occur often. For instance, in May

2022, a total of 27 unpermitted songbirds were seized from a pet shop in Trinidad and these birds were thereafter made available for Emperor Valley Zoo personnel to collect at the FD headquarters.

Within Trinidad and Tobago, there are four government ministries and associated dependencies with clear legal mandates for the keeping and trade of songbirds: 1) the Ministry of Finance (MOF), most importantly through its Customs and Excise Division (CED); 2) the Ministry of Health (MOH), most importantly through its Veterinary Public Health Unit (VPHU); 3) the Ministry of Land, Agriculture, and Fisheries (MALF), most of all through its Forestry Division (FD) in Trinidad, Department of Natural Resources and Forestry (DNRF) in Tobago, and its national Animal Production and Health Division (APHD); and 4) the Ministry of National Security (MNS), through its Trinidad and Tobago Coast Guard (TTCG) and Trinidad and Tobago Police Service (TTPS).

Importantly, these agencies are closely paralleled in the trade-linked countries of Colombia, Guyana, and Venezuela, though with important variations. Notably, each of these countries have similar ministries and managing functions of customs and taxation, public health, public security, and wildlife management. However, in other functions, the four primarily involved countries vary in their degree of centralization of authority and services. A full description of this variation is beyond the scope of this report, but may be broadly appreciated in how Venezuela is governed by an increasingly autocratic federal republic system (see Tremaria, 2022), whereas Colombia, Guyana, and Trinidad and Tobago all are governed by unitary republic systems with a number of decentralized design elements (e.g., Bulkan, 2016; Hohbein et al., 2021; Luke, 2001).

Beyond state-operated governmental agencies, one other entity plays an important role in shaping governmental interventions in the keeping and trade of songbirds and other wildlife. Specifically, the Emperor Valley Zoo, a quasi-governmental enterprise operated by the ZSTT, plays an important role in governmental intervention by receiving all seized wildlife for processing. The ZSTT is a special civilian-run organization that was incorporated in 1952 by a special pre-independence ordinance that has since been granted continuing force of law in the republic. Seized wildlife may be kept on the premises of the Emperor Valley Zoo, or at off-site locations managed by the ZSTT. Within the zoo, there exists a large area in the back corner of the park where many cages of wildlife are kept. Surprisingly, these animals are kept in open-air and very close to other wild animal exhibits in spite of all being potential carriers of disease (Figure 39).

The methods of governmental intervention were not directly explored in the course of research so are considered here only cursorily. However, participating informants broadly agreed that all governmental interventions are hindered by a lack of resources. For instance, one conservationist who previously handled seized wildlife at the zoo recalled that many animals die due to a lack of staff and training:

> So, we would assist, help and feed them [seized animals] and of course, it was the same diet for all parrots species because that's just... it's frustrating. So, we all would help feed because they didn't have enough staff. Then on Saturday and Sunday they had like skeleton staff. We come up [on Monday] and find five dead, six dead, because they weren't fed enough…If 50 [birds] came in, if 10 survive, that was a lot. [P047]

Participating informants were also broadly aware of resource shortfalls at the MALF and its FD in Trinidad and DNRF in Tobago. For instance, one conservationist and former honorary game warden reflected:

> So, nine out of ten vehicles are non-functional, 90%. So, if there is a situation now in the field, no one can come…Before there was an honorary Game Warden program that

> worked excellent. You had 280 pairs of eyes spread throughout the country to help this team of thirteen Game Wardens…and that program has been suspended. [P133]

Figure 39: An area of the Emperor Valley Zoo dedicated to the management of seized wildlife. From *Seized Wildlife Ward* [Photograph], by M. C. Gibson, 2019. CC BY 4.0.

The motivations of governmental actors were also not directly explored, but many informants and observations of government operations suggest that many are not motivated by specific concerns for animal welfare, biodiversity conservation, or public health, but instead other policy priorities or personal interests. For instance, observation of a TTPS patrol led one officer to reflect:

> You have some guys doing it because they care, but most just take it [their position] for the income. Or worse, you find them doing things they shouldn't, taking money. So, then you have to move them to an administrative job.

Similarly, observation of a TTCG station operation led another official to reflect, "We seeing drugs, guns, girls traded for a few dollars. So, we aren't really thinking much about the animals or what it could mean." Additionally, observation of a Trinidad FD patrol led another officer to

remark, “We can’t go chasing every person because many of us aren’t precepted [i.e., authorized to carry firearms]. It can be very dangerous.”

Ostensibly, government intervention in songbird keeping and trade results in the reduction of harms to animal welfare, biodiversity conservation, and public health by limiting the underlying behaviors. However, the regular euthanasia of songbirds substantially compounds animal welfare harms, while the release of seized wildlife by enforcement officers without quarantine and rehabilitation likely results in the transfer of diseases to wild populations. Additionally, the seizure of songbirds and processing of them through the Emperor Valley Zoo may result in substantial harm to animal welfare through poor care practices.

The inability of the state to reduce the primary harms of songbird keeping and trade may further contribute to the erosion of state legitimacy. Notably, many participants expressed that Trinidad and Tobago is not managed for the rule of law, but instead the rule of elite interests. For instance, one songbird keeper expressed, “Trinidad is a ‘bobol’…that is what they say to mean running racket, like an underhanded government” [P028]. Another veterinarian reflected that the government is unable to challenge the greater global economies that drive its illegal trade, “It’s a multimillion-dollar trade, big money, the government can’t stop that” [P055]. More broadly, limited social survey research suggests that many Trinbagonians have lost confidence in their governance institutions. Specifically, research by Gallup (2017) indicates that less than half of Trinidad and Tobago residents have confidence in the courts (29%), financial institutions (41%), the local police (42%), or the national government (27%) (Gallup, 2017).

4.8. Conclusion and Recommendations

This green criminological and mixed methods assessment has sought to establish a baseline of information on the harmful songbird wildlife trade in Trinidad and Tobago and the

wider world in order to promote action that might reduce, end, or otherwise mitigate the problem at local and international scales. Following analysis of the trade's species and products, the trade is revealed to involve at least 34 species and focus most of all on a single species, the chestnut-bellied seed finch. By both species count and volume, the trade is primarily wild-caught in origin and has resulted in a conservatively estimated captive population of 12,000 to 36,000 wild-caught songbirds in residences across Trinidad and Tobago. This trade also occurs almost entirely outside of the CITES regime, involves species that are almost all 'least concern' from the perspective of the IUCN, and involves species that are relatively difficult for ordinary keepers to successfully keep in captivity.

A review of regulation also highlights that most of the songbird trade occurs illegally in Trinidad and Tobago and results in regulatory severe performance issues associated with respect to songbird welfare, local songbird conservation, zoonotic disease transmission, and broader the rule of law. Within trade mortality is perceived to be particularly high by all stakeholder groups, from wildlife conservationists, animal welfare advocates, and veterinarians to songbird keepers, pet shop sellers, and wildlife traffickers. For decades, local experts in Trinidad and Tobago have reported substantial declines in national songbird populations due to excessive illegal trapping, and many species are now scarce and may be made locally extinct without intervention. Local veterinary experts also perceive zoonotic diseases to be particularly common and poorly understood within the songbird trade and broader trade in illegal wildlife from Venezuela.

Analysis of the trade chain further indicates that the songbird trade occurs across the Caribbean and South America involving multiple production countries, consumer countries, and intermediating routes. With few exceptions, the primary trade chain is consistently harmful to the welfare of songbirds, conservation of songbird populations, the health of the public environment,

and the rule of laws that regulate songbird keeping and trade. Songbird mortality is especially high in the exchange stage of the trade due to poor care standards among traffickers, wholesalers, and retail sellers. Intervention effort, meanwhile, is limited and does not appear to be developing proactively to address issues of animal welfare, conservation, or public health. There further appear to be issues associated with government intervention and the rule of law.

A key conclusion of this report is that a long-term program of intervention work is needed to address the harmful keeping and trade of songbirds in Trinidad and Tobago and its trade partners in the Caribbean and South America. This is strongly indicated by the cultural and organizational foundations of songbird keeping and the scale and complexity of the trade. Nevertheless, the authors found encouragement in how most of the study's focus group and interview participants perceived the songbird trade to be highly problematic and offered detailed ideas for intervention. For instance, as a follow-up analysis, the authors conducted secondary coding of key informant interview data in NVivo and ultimately identified 165 ' perceived problems' and 90 'corrective actions' from the perspective of different participants.

In this context, the authors recommend a set of five intervention strategies that may be further tailored for implementation and should be periodically evaluated to establish new objectives and activities. Importantly, these strategies align broadly with recommended strategies to address harmful wildlife trades (e.g., USAID, 2017) and general conservation issues (e.g., Salafsky et al, 2018). These six strategies are:

1. Improve strategies through better information on status and trends.
2. Change behavior through education, outreach, and social marketing.
3. Restore populations through area protection and rehabilitation and release.
4. Reform laws for cost-effective regulation of songbird keeping and trade.

5. Build enforcement capacity through transparent monitoring programs and resources.
6. Establish transparent and participatory funding and project management.

Each strategy is briefly described below according to its underpinning theory of change, the authors' justification, specific objectives, and practical considerations. In this way, the general strategies may be appreciated and an initial action plan is available to local stakeholders, policymakers, and interested donors.

4.8.1. Improve strategies through better information on status and trends

A strategy to "improve strategies through better information on status and trends" is recommended based on a theory that more information is needed to make fundamental decisions about how to best intervene to reduce, end, or otherwise mitigate the harmful keeping and trade of songbirds in Trinidad and Tobago and associated countries. This strategy is offered on the basis of broad observations of information insufficiency in the course of research. In particular, official assessments of wild songbird populations are lacking in Trinidad and Tobago and its main producer countries, Venezuela and Guyana in spite of anecdotal expert reports of substantial population declines. The breeding of songbirds, both for release and captive sale, was popular among participating stakeholders, yet there exists little scientific or economic understanding of how such breeding might be done successfully. Songbird keeping and hunting communities are relatively large and organized in Trinidad and Tobago, yet many within these communities feel marginalized and misunderstood by society. There also exists a relatively unknown risk associated with the transmission of zoonotic diseases through the songbird trade, but one recent study indicates at least one novel virus to science (Suepaul et al., 201).

Observations of lacking key information collectively indicate this may be resolved through four objectives. First, an assessment of wild populations of traded songbirds should be

conducted to establish estimates of population ranges and abundances. Discussion with local technical experts suggests that such a survey would take approximately two years of field surveying and another year to account for start-up and report writing and presentation. Notably, this objective could be implemented by the TTFNC, which has a sizable naturalist community and technical capacity to implement bird population surveys.

Second, the captive breeding of chestnut-bellied seed finch should be evaluated for its potential to meet local keeper demand and restore wild populations. The University of the West Indies (UWI) has already demonstrated its capacity to evaluate the feasibility of commercially breeding red-rumped agouti (*Dasyprocta leporina*), while there are increasingly public models of breeding and release of songbirds in Asia (IUCN, 2022a) that may be drawn upon. Importantly, the authors emphasize that breeding for commercial sale should be carefully considered according to the best available evaluation frameworks (e.g., Tensen, 2016).

Third, a representative survey of knowledge, attitudes, and practices among songbird keeper communities should be undertaken to understand their support for actions to improve animal welfare, biodiversity conservation, public health, and the general rule of law. Such a survey could be implemented by the Nurture Nature Campaign in partnership with the Trinidad FD and Tobago DNRF. Ideally, such a survey would be implemented in a highly participatory manner so as to support formal clubs and the BATT to develop their own policies on harmful songbird keeping and trade.

Fourth, an expanded survey of zoonotic diseases should be undertaken to understand the range of diseases affecting traded songbirds and other avian species and their risk to wild populations, agricultural operations, and human communities. Such a survey could be implemented by the local veterinary science community (Suepaul et al., 2019) and initial

discussions suggest that such a survey could be conducted within 18 months inclusive of sample collection, analysis, and results reporting.

4.8.2. Change behavior through education, outreach, and social marketing

A strategy to "change behavior through education, outreach, and social marketing" is recommended based on a theory that important stakeholder audiences need more knowledge, dialogue, and encouragement to reduce the harmful keeping and trade of songbirds in Trinidad and Tobago. This strategy is offered on the basis of broad ethnographic research suggesting that many animal welfare advocates, national policymakers, and regional policymakers are unaware of the harmful songbird trade in the wider Caribbean and South America. Meanwhile, some songbird keepers highlighted that they did not understand the harmful nature of the songbird trade until they had already engaged in the practice and learned more from songbird keeping communities, suggesting that potential songbird keepers could be discouraged from ever engaging in the practice with the right messaging.

Education, outreach, and social marketing may be implemented through three objectives. First, deliver broad messaging and introductory education on harmful wildlife keeping, inclusive of songbirds, to schools across Trinidad and Tobago. Notably, the Animal Welfare Network (AWN) already provides in-school education programming on animal welfare issues on both islands, while Corbin Local Wildlife Park (CLWP) and El Socorro Centre for Wildlife Conservation (ECWC) provide on-site tours and lectures on conservation issues in Tobago and Trinidad respectively.

Second, deliver targeted education on the harmful songbird trade to all pet keepers through veterinary clinic messaging and education. Though songbird keepers do not typically obtain veterinary services for their songbirds, many keepers reside in homes where they and

others obtain veterinary services for dogs and other domesticated animals. Importantly, a similar activity is already underway by the Trinidad and Tobago Veterinary Association (TTVA) and the Nurture Nature Campaign in order to educate veterinary clinic clients on the harms of keeping wild-caught parrots and macaws, primates, and red-eared slider turtles through engaging posters and veterinary care and messaging guides.

Third, promote broad public dialogue on the harmful songbird trade through popular advertising, including billboards, social media videos, and club presentations. The harmful keeping and trade of songbirds is, unfortunately, one of many social issues of concern in Trinidad and Tobago and, as a result, there exists little political will to address it beyond the 13 member organizations of the Nurture Nature Campaign. Nevertheless, the past activities of the coalition demonstrate that new collaborations can be fostered through broad public awareness raising and content creation targeted at specific communities.

4.8.3. Strengthen remaining populations through area protection and rehabilitation and release

A strategy to "strengthen remaining populations through area protection and rehabilitation and release" is recommended based on a theory that remaining wildlife populations of traded songbirds in Trinidad and Tobago can be protected and possibly underpin future increases in range and population numbers. This strategy is offered based on of evidence that there remain certain areas where songbirds like the chestnut-bellied seed finch can still be found (e.g., White et al., 2015) and that many traded songbirds are likely of the same subspecies found in Venezuela and Guyana and so could be carefully released if suitable carrying capacity can be determined.

Area protection and rehabilitation and release may be implemented through four objectives. First, establish a special songbird poaching enforcement to evaluate poaching trends

and conduct targeted operations to stop poaching of remaining wild populations of trade songbirds. Notably, the FD and DNRF have recently increased their patrol officer numbers, such that there are now 42 patrolling game wardens in Trinidad and seven in Tobago. The MALF is also considering reinstating its honorary game warden program with as many as 340 honorary game wardens to support enforcement monitoring.

Second, the potential for seized songbird release should be evaluated by conducting genetic comparisons of traded specimens with native specimens. Importantly, genetic research on traded and wild primates is already underway with the support of the MALF and other research groups, and contemporary genetic analysis tools make it feasible for even low-cost evaluations by the local research community (e.g., Peterson & Weber, 2012). The conduct of a songbird survey would also facilitate this initiative (see strategy 1).

Third, a secure facility should be established for the acute care, ethical euthanasia, quarantining, and rehabilitation of seized songbirds. Though all seized wildlife is currently taken to the Emperor Valley Zoo operated by the ZSTT, this poses substantial risks to endangered wildlife kept on-site for zoological exhibition. A new facility for seized animals, meanwhile, could be established near a savanna or forest area to permit habitat acclimatization in rehabilitating songbirds. Additionally, the ECWC is already affiliated with the International Wildlife Rehabilitation Council (IWRC), offering a meaningful avenue to link international best practice with local songbird rehabilitation.

4.8.4. Reform laws for cost-effective regulation of songbird keeping and trade

A strategy to "reform laws for cost-effective regulation of songbird possession and sales" is recommended based on a theory that existing laws and treaties are inappropriately designed to manage a harmful songbird trade in Trinidad and Tobago and regionally. This strategy is offered

on the basis that a majority of traded songbirds are not listed under any CITES appendix, and there currently exists a non-functioning permitting system for captive songbirds in Trinidad and Tobago.

Legal and regulatory reform for improved songbird regulation may be achieved through four objectives. First, a proposal should be made at the CITES Conference of Parties to list at-risk traded songbird species under either Appendix II or III. Such a process could be undertaken by the Wildlife Section in the Trinidad FD, which has staff that have been specially trained in developing CITES listing proposals. This initiative may also be supported by the CITES Secretariat, which is increasingly concerned by harmful songbird trades globally.

Second, establish a more cost-effective permitting system for the keeping of songbirds in Trinidad and Tobago. Importantly, permitting is listed as a broadly discretionary activity overseen by the MALF and so could be revised through internal policy changes. Nevertheless, a more equitable and transparent change could involve the development of formal regulations for songbird possession permits. Key factors to consider in permitting reform should be staff implementation capacity, if a permitting fee should be instituted, and whether a permit should be issued yearly or over more extended periods of time.

Third, new investigative powers, rules, and fines should be established to counter rampant illegal sales over social media. Notably, in comparison to the TTPS, the game wardens at the Trinidad FD and Tobago DNRF lack the authority to secure evidence of illegal online sales and legal grounds to request special action be taken by Meta and other social media companies. Meanwhile, there exist an array of resources to facilitate a reform such as this (e.g., Okutan, 2019).

Fourth, necessary legal and regulatory changes should be made so that police officers and game wardens are clearly mandated and supported in the enforcement of animal welfare provisions of the newly reformed Animals (Diseases, Importation, Health and Welfare) Act. Notably, the MALF is mandated to assist in the enforcement of this law, but its patrolling game wardens lack any specific powers or authority in relation to the law. Similarly, the TTPS is mandated to enforce all laws of Trinidad and Tobago, but is given an abundance of discretion in what laws it enforces and there are no specific reporting requirements for the TTPS to notify the MALF in the event of that mistreated songbirds are encountered while on patrol.

4.8.5. Build enforcement capacity through transparent monitoring programs and resources

A strategy to "build enforcement capacity through transparent monitoring programs and resources" is recommended based on a theory that there is insufficient capacity to enforce existing and new laws to reduce the harmful songbird trade in Trinidad and Tobago and regionally. This strategy is offered given direct observation of there being low enforcement capacity, including a lack of formal monitoring, a lack of community support, and a lack of essential resources including patrol vehicles, uniforms, and printing supplies. This situation is further compounded by broad reports of misconduct among government personnel.

Enforcement capacity building for improved songbird regulation may be achieved through four objectives. First, formal monitoring programs should be established between the FD and DNRF to specially regulate three key actors: online sellers, pet shops, and songbird possession permit applicants and holders. The monitoring of online sellers may benefit from the expertise of the TTPS cybercrimes team, while the monitoring of pet shops and permit applicants and holders could be facilitated with a basic field monitoring system built in a free tool such as SMART (https://smartconservationtools.org/) or Kobo Toolbox (https://www.kobotoolbox.org/).

Importantly, this program should be subject to transparent processes of reporting activities and results and regularly permit stakeholders the opportunity to meet and express any concerns with the FD and DNRF.

Second, once functional, formal monitoring programs should be developed to incorporate the support of concerned communities. Honorary game wardens, if newly enlisted, would be ideal candidates for providing community monitoring support of online sales and pet shops. Meanwhile, the local veterinary community could support home inspections of permit applicants, especially if a fee is newly included to cover their services. The broader public could also be engaged to assist in monitoring social media sales as they are accessible to anyone with a smartphone or home computer.

Third, basic resources must be provided to the FD and DNRF game wardens so that they are able to fulfill the requirements of their jobs. It is very encouraging that the MALF has more than tripled its number of game wardens in recent years, from 18 to 49 nationally, but these officers now require essential resources and equipment to patrol and engage with the public. This includes the provision of sufficient numbers of working vehicles and associated maintenance, sufficient uniforms for patrol officers to communicate their role and authority, and sufficient office supplies to print permit applications and approved permits.

Fourth, a workshop should be convened for the governments of Trinidad and Tobago, Guyana, and Venezuela to discuss the regional trade in songbirds and how they may work together to reduce its harms. Such a workshop could be further supported by Brazil, Colombia, and French Guiana given their lower volumes of trade with Trinidad and Tobago. Importantly, there already exist various models for regional, inter-government cooperation to reduce harmful wildlife trades (e.g., ICCWC, 2020) and other organized environmental crimes (e.g., White,

2016) that could be formally considered in this workshop. A particularly important issue to be considered is how to safeguard the welfare of indigenous communities in the Venezuelan Orinoco Delta.

4.8.6. Establish transparent and participatory funding and project management

A strategy to "establish transparent and participatory funding and project management" is recommended based on a theory that increased transparency and participation in funding and project management is needed to effectively implement projects to reduce the harmful songbird trade in Trinidad and Tobago. This strategy is offered given broad ethnographic research indicating low citizen trust in government intervention generally and low songbird keeper trust in the MALF specifically. Additionally, as a post-colonial country, it is important that international collaborations are designed to proactively address issues affecting national sovereignty and participatory development.

Transparency and participation in funding and project management may be improved through three objectives. First, a special collaborative structure should be newly devised or reformed for increased transparency and participation. Notably, the Nurture Nature Campaign provides an essential leadership role on the harmful keeping and trade of songbirds and other pet wildlife animals in Trinidad and Tobago, but this body is exclusively designed for non-governmental organizations. This structure may be maintained and expanded given its existing social capital with local stakeholders, or alternatively a governmental or intergovernmental management structure may be created, such as was recently employed for the Improving Forest and Protected Area Management project that was operated by the Food and Agriculture Organization (FAO) from 2015 to 2020 (see https://www.protectedareastt.org.tt).

Second, project management should seek to be progressively transparent and employ the best-available project management framework. Importantly, the Nurture Nature Campaign has been managed through the Open Standards for Conservation since 2018, which has supported broad sensitization and understanding of its use among wildlife trade-concerned civil society and governmental organizations in Trinidad and Tobago. The authors also note that no other alternative management frameworks have yet been identified, which is consistent with the innovative nature of the Open Standards (Bower et al., 2018). If the Nurture Nature Campaign were to lead in implementing some of the proposed recommendations, the Open Standards approach can be continued and expanded through additional community planning workshops and annual reporting.

Third, Trinidad and Tobago should implement a regular consultation process with songbird keepers and pet shops. From a conservation perspective, the MALF and its sub-agencies of the FD and DNRF would be ideal organizations to maintain a regular consultation process within these two communities that report feeling alienated from the governance of their resources and industries. In this way, concerns held by regulators and those being regulated may be shared, reflected upon, and ideally addressed in a way that would re-establish trust in the songbird regulatory system.

APPENDICES

APPENDIX A

Members Organizations of the Nurture Nature Campaign

The Nurture Nature Campaign is supported by a coalition of 13 local and regional NGOs on issues related to animal welfare, biodiversity conservation, and public health management that are further described below.

Animal Welfare Network

The Animal Welfare Network (AWN) is an animal welfare advocacy group and service provider operating in both Trinidad and Tobago. They partner with the TTSPCA to promote rescue animal adoption, primary school education, and low-cost spaying and neutering of dogs and cats with more than 30 participating veterinarians across the country. They also engage in social marketing to improve animal care and promote legal reform. More can be learned at https://animalwelfarenetwork.com/.

Animals 360 Foundation

The Animals 360 Foundation (A360) is an animal welfare organization based in Trinidad and Tobago whose work focuses on three main pillars of action: humane and responsible dog and cat population control through spay and neuter assistance to lower-income homes, advocacy for responsible and evidence-based animal welfare legislation, and education and awareness on animal welfare and responsible pet ownership. The foundation also provides technical and financial support for the sustainability of shelter operations. More can be learned at https://animals360tt.com/.

Animal Alive

Animals Alive (AA) is a "no-kill" animal shelter in south Trinidad and is the largest of its kind in the Caribbean, housing over 500 dogs and cats. The organization contributes to legal reform of animal welfare and offers animal rescue, care and rehabilitation, pet adoption and mentorship opportunities, and subsidized spay and neutering programs. More can be learned at https://www.facebook.com/AnimalsAliveTT.

Centre for the Rescue of Endangered Species of Trinidad and Tobago

The Centre for the Rescue of Endangered Species of Trinidad and Tobago (CRESTT) was established in 1993 and is today incorporated in Trinidad and Tobago and the United States. This NGO specializes in community-based education and conservation of Trinidad and Tobago's threatened and endangered species. Its best-known project reintroduced the Blue and Gold Macaw in Nariva Swamp as the original population of this bird species was removed by habitat loss and poaching for the pet trade.

Corbin Local Wildlife Park

Corbin Local Wildlife Park (CLWP) is a wildlife education, rehabilitation, and propagation center based in Tobago. It was created in 2015 as a partnership between former-hunter Roy Corbin, and conservationist Ian Wright. They offer regular tours of wildlife and periodically release rehabilitated and captive-bred, locally-endangered animals back into the wild. They are a small but rapidly growing organization and are the sole provider of wildlife education and rehabilitation in Tobago. More can be learned at https://www.tobagowildlife.org/.

El Socorro Centre for Wildlife Conservation

The El Socorro Centre for Wildlife Conservation (ECWC) is a wildlife education and rehabilitation center based in Trinidad. Since 2005, El Socorro has offered education and

rehabilitation programs implemented by a large volunteer network. The center also offers oiled wildlife volunteer training, tours of rescued wildlife, and school visits with animal ambassadors and aims to open the first wildlife hospital in the Caribbean. Learn more at https://www.wildliferescuett.org/.

Environment Tobago

Environment Tobago (ET) has been operating since 1996 and is the most influential conservation advocacy group in Tobago. They are a service provider to initiatives concerned with conserving and improving local and regional ecosystems, including meeting Trinidad and Tobago's Sustainable Development Goals. They manage projects across the entire twin-island country and a variety of school-based education programs. More can be learned at https://www.environmenttobago.net/.

Sustainable Innovation Initiatives

Sustainable Innovation Initiatives (SII) is a conservation NGO that enables scientific and cultural collaborations for ecologically regenerative tropical forest economies. Its current projects include ecological research in the southeast Caribbean region and the creation of parallel educational programming in biology and geosciences. In Trinidad, recent outputs include the Trinidad Ocelot Project and the inaugural Latin America & Caribbean Congress for Conservation Biology. SII also serves as the lead managing organization of the Nurture Nature Campaign and coalition. More can be learned at https://www.sii-inc.org/.

Trinidad and Tobago Field Naturalists' Club

Trinidad and Tobago Field Naturalists' Club (TTFNC) is a highly-influential conservation organization in Trinidad and Tobago, with over 100 years of operation and an active role in discovering many new species. The organization engages in intensive ecological

surveys, offers naturalist hikes, provides public lectures, and publishes many respected field guides. The TTFNC also operates Trinidad and Tobago's only scientific journal for field naturalism, *The Living World*. More can be learned at https://ttfnc.org/.

Trinidad and Tobago Society for the Prevention of Cruelty to Animals

The Trinidad and Tobago Society for the Prevention of Cruelty to Animals (TTSPCA) is a widely-respected shelter for dogs and cats in north Trinidad and in Tobago. The organization offers animal care and rehabilitation, pet adoption opportunities, and subsidized spay and neutering programs. TTSPCA has an extensive volunteer and small donor network and a seasoned understanding of animal welfare issues in Trinidad. More can be learned at https://ttspca.org/.

Trinidad and Tobago Veterinary Association

Trinidad and Tobago Veterinary Association (TTVA) represents the interests of veterinarians and aims to advance the standards of animal care in Trinidad and Tobago. Its mission supports a multifaceted approach to address veterinary issues related to agriculture, public health, conservation, the environment, and the biological sciences. The organization offers professional training, networking events, and public education events. More can be learned at http://www.ttva1.org/.

Venus Doggess of Love

Venus Doggess of Love (VDL) is a Tobago-based animal welfare organization that promotes the humane treatment of animals and the establishment of higher local standards for animal welfare. Their activities include rescue, rehabilitation, and rehoming of dogs, cats, spay and neuter programs, and public education. VDL also provides limited rehabilitation services to

injured wild animals when other care providers cannot be found. More can be learned at https://www.facebook.com/VenusDoggessOfLove/.

Veterinary Students' Association of Trinidad and Tobago

Veterinary Students' Association of Trinidad and Tobago (VSATT) is the student association for registered veterinary students at the University of the West Indies. Their goal is to provide a holistic experience of veterinary education to their members which will produce competent, well-rounded veterinarians in Trinidad and Tobago. They provide student support as well as networking, professional, and training opportunities, and assistance to animal shelters. More can be learned at https://www.facebook.com/groups/242091655834848/.

APPENDIX B

Kept and Traded Songbirds in Trinidad and Tobago

Table 20: Selected information on kept and traded songbirds in Trinidad and Tobago. IUCN category abbreviations: EN=Endangered LC=Least Concern, NC=Near Threatened.

Common Name	Taxonomic Identification	Perceived Relative Volumes	Perceived Relative Pricing	Method of Sourcing	IUCN Category	EMODE Category	CITES Listing
Vermilion cardinal	*Cardinalis phoeniceus*	Very Rare	High	Wild-caught	LC	Difficult	Not Listed
Gouldian Finch	*Chloebia gouldiae*	Rare	Average	Captive-bred	NT	Difficult	Not Listed
European Greenfinch	*Chloris chloris*	Very Rare	High	Captive-bred	LC	Difficult	Not Listed
Yellow-hooded Blackbird	*Chrysomus icterocephalus*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed
Ultramarine Grosbeak	*Cyanoloxia brissonii*	Very Rare	High	Wild-caught	LC	Difficult	Not Listed
Blue-black Grosbeak	*Cyanoloxia cyanoides*	Rare	High	Wild-caught	LC	Difficult	Not Listed
Common Waxbill	*Estrilda astrild*	Rare	Average	Mostly captive-bred	LC	Moderate	Not Listed

Table 20 (cont'd).

Trinidad Euphonia	*Euphonia trinitatis*	Rare	Average	Wild-caught	LC	Difficult	Not Listed
Violaceous Euphonia	*Euphonia violacea*	Uncommon	Average	Wild-caught	LC	Difficult	Not Listed
Venezuelan Troupial	*Icteria icterus*	Very Rare	Average	Wild-caught	LC	Difficult	Not Listed
Common Chat	*Icteria virens*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed
Tricoloured Munia	*Lonchura malacca*	Rare	Average	Mostly captive-bred	LC	Difficult	Not Listed
Java Sparrow	*Lonchura oryzivora*	Rare	Average	Captive-bred	EN	Difficult	Appendix II
White-rumped Munia	*Lonchura striata*	Rare	Average	Captive-bred	LC	Difficult	Not Listed
Barbados Bullfinch	*Loxigilla barbadensis*	Very Rare	Average	Wild-caught	LC	Difficult	Not Listed
Shiny Cowbird	*Molothrus bonariensis*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed
Kiskadee	*Pitangus sulphuratus*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed
Saffron Finch	*Sicalis flaveola*	Rare	Low	Wild-caught	LC	Difficult	Not Listed

Table 20 (cont'd).

Grassland Yellow Finch	*Sicalis luteola*	Rare	Low	Wild-caught	LC	Difficult	Not Listed
Red Siskin	*Spinus cucullatus*	Very Rare	High	Wild-caught	EN	Difficult	Appendix I
Lesser Goldfinch	*Spinus psaltria*	Rare	Average	Wild-caught	LC	Difficult	Not Listed
Dickcissel	*Spiza americana*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed
Chestnut-bellied Seed Finch	*Sporophila angolensis*	Very Common	Average	Mostly wild-caught	LC	Difficult	Not Listed
Lesson's Seedeater	*Sporophila bouvronides*	Uncommon	High	Wild-caught	LC	Difficult	Not Listed
Double-collared Seedeater	*Sporophila caerulescens*	Very Rare	High	Wild-caught	LC	Difficult	Not Listed
Large-billed Seed Finch	*Sporophila crassirostris*	Rare	High	Wild-caught	LC	Difficult	Not Listed
Gray Seedeater	*Sporophila intermedia*	Common	Average	Mostly wild-caught	LC	Difficult	Not Listed
Lined Seedeater	*Sporophila lineola*	Very Rare	High	Wild-caught	LC	Difficult	Not Listed
Ruddy-breasted Seedeater	*Sporophila minuta*	Rare	High	Wild-caught	LC	Difficult	Not Listed

Table 20 (cont'd).

Yellow-bellied Seedeater	*Sporophila nigricollis*	Uncommon	Average	Wild-caught	LC	Difficult	Not Listed
Plumbeous seedeater	*Sporophila plumbea*	Rare	Average	Wild-caught	LC	Difficult	Not Listed
White-lined Tanager	*Tachyphonus rufus*	Very Rare	Average	Wild-caught	LC	Difficult	Not Listed
Zebra Finch	*Taeniopygia guttata*	Rare	Average	Captive-bred	LC	Moderate	Not Listed
Blue-gray Tanager	*Thraupis episcopus*	Very Rare	Low	Wild-caught	LC	Difficult	Not Listed

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CHAPTER 5

CONCLUSION AND REFLECTIONS

> We can stand mute, or expand our vision, join our platform with popular, activist, progressive platforms and in doing so hopefully expand the scope and impact of criminology in developing a humanistic social orientation.
>
> —Lynch (1990, p. 12)

5.1. Overview

This concluding chapter presents a range of reflections on the dissertation's contributions to real-world action, the practice of action-oriented green criminology, the effective management of intervention projects, and the researcher's perspective on promoting science-based activism to address green crimes. The method of autoethnography, a broadly defined approach to reflection and writing, is used to frame and stylize this chapter, so its general and specific applications are first briefly described. Where meaningful, additional next steps for the dissertation research and broader green criminology community are identified. These next steps may be summarized as follows: develop guidance and programs for green criminological graduate research, tailor and elaborate the Open Standards framework for action-oriented green criminology, promote readily available training and tools for intervention project management, and develop specialized resources for nonprofit coalition-building and mixed methods research on green crimes and harms. Finally, the chapter concludes with a final reflection on the green criminological experience.

5.2. Autoethnography

Autoethnography is an increasingly popular and broadly defined research method in the social sciences (Chang, 2013, 2016). The method uses the researcher's personal experiences as

primary data upon which reflections are produced on a social reality or realities. As such, the contemporary applications of autoethnography vary widely from providing thick descriptions of social phenomena (e.g., Johnson, 2013) to promoting the development of an academic field (e.g., Goldschmidt, 1977) to even sharing guidance on the use of autoethnography in professional settings (Holt, 2003). The techniques of autoethnography also vary widely and may include the use of journaling, the collection or review of other data, interviewing one's own self, or simply writing with hindsight on an experience (Crawley, 2012; Ellis et al., 2011; Pandey, 2013).

For the preparation of this chapter, the dissertation researcher has engaged in holistic reflective writing on their experience of three social realities—this dissertation, the green criminology paradigm, and the reduction of harmful wildlife trades—with a particular view on how future research could further promote their positive development. This writing is supported by extensive journaling conducted throughout the course of research, which has been focused on four sensitizing concepts: action, green criminology, intervention project, and subjectivity. Each of these concepts was specially defined for reflection. 'Action' was broadly conceived as the purpose of this dissertation and is defined as the use of science to produce change in real-world settings (Adelman; 1993; Lewin, 1946). 'Green criminology' was defined as the scientific study of harms and crimes involving the natural world, non-human species, and the human communities that depend upon them. An 'intervention project' was defined as a collaborative enterprise to reduce, end, or otherwise mitigate a problem. 'Subjectivity' was defined as the relationship between the research and their experience of action, green criminology, and an intervention project.

The results of reflective writing are presented in the remainder of this chapter. Four sections specifically allow reflection on the dissertation as a form of action, the practice of

action-oriented green criminology, the use of projects to reduce harmful wildlife trades, and the researcher's evolving conception of self as a science-based activist. Consistent with autoethnographic practice, the reflections are presented using the first-person perspective and consideration of key events and learnings in the course of research.

5.3. A Dissertation as a Form of Action

In this section, I reflect on the use of doctoral dissertation research to produce action. This research has taken inspiration from both action-oriented and green criminological perspectives that now invite me to consider the academic and real-world impact of my work. Through this consideration, I believe the most significant impacts of my doctoral research are still to come and that others might also contribute if resources and programs for green criminological graduate research were to be developed.

As indicated in Chapter 1, my central aim in engaging in this dissertation has been to produce and support action for change, particularly such change is needed to address harmful wildlife trades and other green crimes and harms. In this effort, I have tremendous inspiration from the foundational action-oriented perspective of Kurt Lewin and the original green criminological perspective of Michael Lynch (1990). Each of these perspectives offers insights into the practice of science for action. In the Lewinian perspective, those concerned with action are reminded that "[r]esearch that produces nothing but books will not suffice" (Lewin, 1946, p. 35), while in the Lynchian perspective, we are challenged to "join our [criminological] platform with popular, activist, progressive platforms" to address green crimes and harms (Lynch, 1990, p. 12). Therefore, in reflection, I consider the relative "book" of dissertation chapters that has been produced as an important but insufficient form of action, and I further evaluate how well this work has joined with other "platforms" for social progress.

Within this conceptual framing, I reflect that this dissertation "book" offers knowledge falling within the two principal categories of action research: research *for* action and research *on* action. Chapters 2 through 4 specifically fill significant information gaps for the possible treatment of an extensive pet wildlife trade in Trinidad and Tobago and, just as importantly, they potentially offer inspiration and guidance for how similar research for action may be produced in the future. With respect to Chapter 2, I note that my team's use of mixed and mostly primary research methods to describe illegal pet keeping in Trinidad and Tobago is novel both locally and globally. Locally, such information has not previously been produced, while such information is rare within Latin America and the Caribbean (except see: Drews, 2001). Furthermore, I believe this chapter broadly acknowledges the expert critique that "many figures [of wildlife crime] circulated in various reports and articles are the result of guesswork rather than of systematic analysis" (ICCWC, 2012, p. 169). Though much remains to be learned, my co-authors and I have thankfully produced far more than "guesswork."

With respect to Chapter 3, I cautiously submit that this manuscript offers an important contribution to developing meaningful local and global theories of pet wild animal keeping and other forms of consumption. By exploring the previously unexplored normative dimensions of Neutralization Theory, new avenues of research have been opened for quantitative surveying among songbird keepers in Trinidad and Tobago (i.e., to evaluate the prevalence of normative commitments and neutralizations). Furthermore, from a global perspective, the manuscript responds to an emerging critique that wildlife trade researchers have ignored the study of consumer motivations and decision-making (MacMillan & Challender, 2014; Thomas-Walters et al., 2021) and that there exists a substantial mono-theory bias in available consumer research through an embrace of the Theory of Planned Behavior (e.g., Sánchez-Mercado et al., 2022).

With respect to Chapter 4, I am particularly pleased to have crafted a wildlife trade assessment report that builds and expands upon best-practice analytic approaches to provide a comprehensive description of a harmful trade in songbirds in Trinidad and Tobago. This long-form manuscript particularly aligns with a 'systems' approach recommended for green criminology (Tourangeau, 2022), wildlife crime research (Travers et al., 2019), and natural resource management research (Young et al., 2006). Additionally, the set of recommendations provided at the end of this document broadly support, synthesize, and build upon local expert recommendations for intervention into the harmful songbird trade (e.g., TTFNC, 1984) and global best practices for wildlife trade intervention (USAID, 2017).

Beyond the research *for* action contained within this dissertation, I believe this dissertation also contains important knowledge for research *on* action. The introductory chapter arguably provides a novel and comprehensive description of how a dissertation project was developed and implemented. This includes an explicit accounting of a previous dissertation project that had to be suspended for safety concerns and broad considerations of paradigm and process. This concluding chapter also provides reflections highly relevant for other green criminological researchers seeking to produce action, while the use of autoethnography implicitly promotes this novel and emerging method for criminological research (Wakeman, 2014) and green criminological research specifically (Sollund, 2017). I further note that the inclusion of a detailed researcher positionality statement appended to Chapter 1 is a recommended best practice for describing social science research (Bourke, 2014), while the formal identification of contributor roles in chapters 2 through 4 is consistent with emerging best-practice in all of the sciences (Allen et al., 2014).

Through reflection upon this dissertation as a body of research *on* and *for* action, I admit satisfaction with the scientific results. Yet, in the spirit of Kurt Lewin, I feel a degree of dissatisfaction with its production of change. The harmful wildlife trade in Trinidad and Tobago and its trade partners continues essentially unchanged from when this project began in August 2018. Similarly, a long history of applied research assures that the production of dissertations, scientific articles, and gray literature reports provides no guarantee of real-world change. I have particularly found it useful to reflect on one published dissertation, in particular, that of Christie (1999), which I believe is an exemplary demonstration of action research to promote natural resource conservation in coastal Nicaragua. More than two decades later, coastal Nicaragua remains deeply troubled with illegal and unsustainable resource use, something I have seen firsthand myself (Gibson, 2015).

A larger question, therefore, remains as to how this dissertation may support real and lasting change for the natural world, non-human species, and dependent communities. I honestly admit that I still do not have a confident answer. Even after several years of extensive applied research and activism, I hold great uncertainty as to how to garner the necessary governmental and public support needed for local reform in Trinidad and Tobago and its wildlife trade partners. Trinidad and Tobago continues to struggle with serious issues of violent crime (Den Held, 2022), while Venezuela continues a decadal economic and political crisis (Armas & Polanco, 2022). These issues and other largely "anthropocentric concerns" dominate the policy agendas in these countries, while issues of green crimes and harms are relatively ignored.

Though I remain uncertain of the real-world trade outcomes from this project, I nevertheless remain optimistic in a relative sense. In the span of my career as a science-based activist, I have never once observed such a concerted concern for a wildlife trade as

demonstrated by the Nurture Nature Campaign and its coalition partners. I recall participating in the community organizing efforts that gave rise to the campaign and coalition, and we never once imagined having more than four or five supporting civil society organizations. Meanwhile, the coalition stands at 13 member civil society organizations, and other impactful Trinbagonian organizations have since expressed interest in joining as well. This poses a unique challenge of possibly having too many interested organizations to meaningfully integrate into a coalition structure.

The launch of the Nurture Nature Campaign has also strongly supported meaningful, though still as yet insufficient, changes in government. The recent increase in domestic wildlife patrol officers, from 19 to 49 game wardens, presents unique opportunities to begin to implement a myriad of laws that have long gone unenforced. My experience in other wildlife trade projects in Ecuador, Nicaragua, and other countries has taught me that such reforms are rare and not to be discounted, even if enforcement monitoring levels remain woefully inadequate for the wildlife trade problem at hand. Additionally, the work of the Nurture Nature Campaign has clearly produced meaningful new learning and dialogue in key stakeholder groups in Trinidad and Tobago. In particular, campaign posts on the harms of songbird keeping have been shared broadly within keeper communities and have yielded substantial interest in reform among leaders in the community.

Beyond the Nurture Nature Campaign, I find further relative optimism in another potential Lynchian "platform" for progressive change: the community of researchers and supporting body of research that has emerged from this dissertation and encompassing intervention project. The seven co-authors collectively supporting this dissertation's three manuscripts represent a range of early- and mid-career researchers from Trinidad and Tobago,

and there remains a substantial amount of additional data for our group to develop into associating manuscripts. In addition to the research on the keeping and trade in songbirds featured in chapters 2 and 3, the research supporting this dissertation has also produced publishable data and insights on the keeping and trade in amazon parrots, macaws, primates, and red-eared slider turtles. This presents an opportunity to continue publishing for the promotion of meaningful change.

Finally, though this dissertation is now complete, I reflect upon how others may still use doctoral research to address wildlife trades and other green crimes and harms. I recall how, prior to beginning my doctoral research at Michigan State University (MSU), I found early inspiration for action-oriented doctoral research in a book, *The Action Research Dissertation: A Guide for Students and Faculty*, by Herr and Anderson (2014). This book was important in providing me with an early model for my dissertation research and offered a template to follow for my dissertation proposal. This work further encouraged me to seek other guidance for dissertation research that uses mixed methods research (e.g., Ivankova, 2002), which helped me realize how such guidance, or even general methodological textbooks, do not yet exist to support green criminological dissertations.

Perhaps relatedly, there is also a surprising lack of supporting graduate programs to guide doctoral research in green criminology. The MSU Conservation Criminology Program was essential to my own research and, at the time of my application in 2013-2014, I found it encouraging that the Rutgers University's Center for Conservation Crime Science also offered directed graduate research. Though each school offered somewhat antagonistic variants of green criminology—conservation criminology and wildlife environmental criminology, respectively—I was able to engage with graduate students and even a few graduates from each of these schools

to find a common perspective. Sadly, the MSU program has since been disbanded, while the Rutgers center appears to no longer be active.

Reflecting on this dissertation experience, I ultimately conclude that green criminologists may strongly support their paradigm and real-world action through the creation of additional guidance and graduate programs for early-career researchers. Ideally, such resources may be created in a mutually supporting way, with written guidance for green criminological dissertations contained with one or more associated graduate programs. However, as discussed below, I believe a greater benefit would be achieved if such programs and resources were also tailored to non-university science-based activists. In this way, I believe we might also be able to move beyond the "books" and "pure science" considered to be insufficient by Kurt Lewin and other action-oriented researchers in order to embrace new "popular, activist, progressive platforms" for an expanded "scope and impact of criminology" as called for by Michael Lynch and other green criminologists.

5.4. Action-oriented Green Criminology

In this section, I reflect on the use of green criminology to produce action. Looking back, I see that my own experience in action-oriented green criminology has been circuitous and fundamentally tied to the evolving use of process frameworks to produce action. Such a use of a process framework is itself a hallmark of action-oriented research more generally (Kemmis et al., 2014). This reflection allows me to conclude that there is an important opportunity to develop a formal action-oriented framework for green criminology out of the Open Standards for Conservation and that this, in turn, might support the use of an 'action-oriented' variant of green criminology beyond this dissertation.

My initial exposure to action-oriented process frameworks happened early in my coursework at MSU's School of Criminal Justice. From the beginning, I embraced the green criminological variant of conservation criminology that defined the Conservation Criminology Program. I found that this variant somewhat prioritizes real-world action but that it does not formally embrace any existing action-oriented paradigms or broader action-oriented research traditions. For instance, the designers of conservation criminology argued that conservation criminology can "can broaden the suite of potential policy interventions, their evaluations and ensure that more diverse stakeholders are included in decision-making processes" (Gibbs et al., 2010, p. 15). Nevertheless, the designers have yet to articulate any processes for participatory-decision making and seem to completely ignore the potential for conservation criminologists to engage in real-world action directly.

Initially, I believed that I might use my research to resolve some of conservation criminology's weaknesses with respect to the production and practice of action. Several professors directed me to explore an array of literature on problem-oriented policing (POP), a paradigm for proactive police-based law enforcement that has been the focus of more than four decades of practice and almost two decades of evaluation (Goldstein, 1990; Hinkle et al., 2020). This paradigm was particularly appealing given evaluations suggesting that the use of POP can result in statistically significant reductions in crime and disorder. Nevertheless, I found it difficult to adapt POP for my initial research site in Nicaragua. I came to agree with some criminologists that the most popular process framework for POP—scanning, analyzing, responding, and assessing (SARA) (see Figure 1)—was too simplistic for real-world project implementation and so other frameworks should be explored (Sidebottom & Tilley, 2011).

As I developed my second and ultimately successful field site in Trinidad and Tobago, I decided to retain the SARA process framework and to use it in conjunction with two other process frameworks: the Open Standards framework and the more general mixed methods design framework. The Open Standards were familiar to me through past professional conservation work and their use was a required aspect of receiving funding from the U.S. Fish and Wildlife Service (USFWS) and the U.S. Agency for International Development (USAID). Meanwhile, the mixed methods design framework was introduced to me through coursework at MSU and stood out to me as an ideal way to improve the social scientific quality of my research.

Though I initially found it a challenge to employ three process frameworks, I believed that the use of several recommended frameworks for action-oriented enforcement, conservation, and mixed methods research might help me choose the best framework to support an action-oriented green criminology. Both of the newly added frameworks offered me a degree of optimism. Like SARA, the Open Standards framework also embraces a cyclic design (Figure 4). Meanwhile, the mixed methods design framework embraces a more linear design but enables the explicit design of how research methods can be integrated into a given project. Ostensibly, the flexibility by which mixed methods design is used also suggested that a more cycle-based use of mixed methods design would not be inappropriate.

Ultimately, I found that all three of the selected process frameworks were insufficient for my purposes. However, my application of these three frameworks also allowed an important dialectical exchange that provides insights into how to possibly create a useful process framework. In particular, the Open Standards inclusion of a ‘planning’ stage produced a conceptually rich and practically useful strategic plan for the dissertation study (see Chapter 1, Appendices A and B), yet consideration of planning is absent from the SARA framework. I also

appreciated how both the SARA framework was designed to address any variety of criminality, while the Open Standards framework could be used for any variety of illegal and legal harms associated with conservation. Together, both frameworks suggested ways to expansively consider harm, which was in keeping with my increasingly pluralistic conception of green criminology (see Chapter 1, Section 1.3).

The use of a mixed methods process framework meanwhile highlighted how all the frameworks were limited in their design for action research. Specifically, common notation for mixed methods designs permitted me to usefully distinguish between research methods that occur in parallel and sequentially, that include both major and minor research applications, and methods that are qualitative, quantitative, or mixed in nature (Creswell & Plano Clark, 2017, p. 62). I found this notation system particularly useful for planning action-oriented research and was particularly surprised that similar notation has not yet been developed for SARA or Open Standards. Where SARA appeared to subsume such detail within broad stages of analysis and assessment, the Open Standards approach to the theory of change modeling appeared to avoid the generalization of research methods (e.g., Chapter 1, Appendix B).

Nevertheless, I also found that the mixed methods design framework was rather limited in terms of its action orientation. In fact, for this very reason, some mixed methodologists today advocate for a joining of mixed methods and action-oriented frameworks (Ivankova, 2015; Ivankova & Wingo, 2018). Specifically, by comparing the three frameworks, I found that POP and the Open Standards offer rather sophisticated guidance for planning research methods as well as interventions. For instance, the POP Center at Arizona State University offers a guide to POP that describes the "evaluation methods that are most important to police when addressing problems" (Eck, 2017, p. 6). The Open Standards framework further stands out for offering a

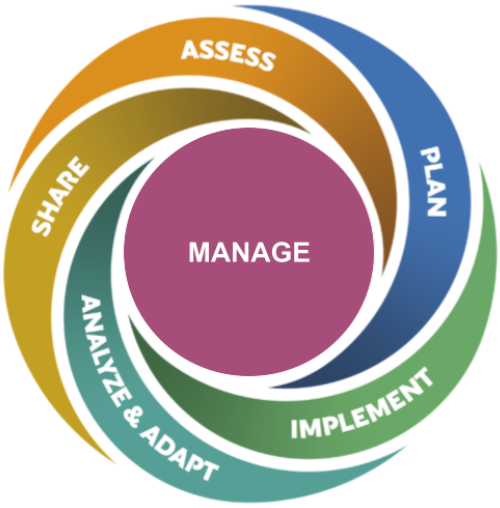
taxonomy of "conservation actions" (CMP, 2019), such as "outreach & communications," "detection & arrest," and "basic research & status monitoring." By comparison, the planning for research methods that are qualitative, quantitative, or mixed in nature appears to be relatively simplistic, if not overly academic.

The dialectical exchange permitted by using three process frameworks ultimately led me to engage in technical innovation that offers insights into future action-oriented green criminological work. In particular, including a planning stage such as in the Open Standards framework seemed to be essential to me. This led to experimentation with the SARA framework to have a centralized planning stage (Figure 2), yet this seemed to create two forms of planning: project and stage-specific. This eventually led to a perspective that a linear stage of planning, as well as a centralizing 'management' stage, would instead make the most sense for any future process framework. Such a stage would focus on the practical aspects of each stage in the cycle. This notion of having a separate stage for management may be depicted using a modified Open Standards framework (Figure 40), and its tools and methods are further considered in the next section.

The varying notation and taxonomic schemes of the three process frameworks further suggest that action-oriented green criminology could benefit from its own specialized notation and taxonomy for research methods and interventions. In my own dissertation, I have partly achieved this through reconceptualizing the Open Standards *for Conservation* as instead Open Standards *for Green Crime and Harm Reduction.* In fact, I have particularly found inspiration for this modification of the Open Standards itself, which has gradually come to have both conservation and human well-being targets for its projects (CMP, 2020). In my own modeling, I have conceptualized targets for green criminological projects as having at least four normative

dimensions beyond biodiversity conservation, specifically: animal welfare, biosecurity, human rights, public health, and the rule of law (see Chapter 1, Appendices A & B).

Figure 40: An Open Standards project cycle framework modified to include a centralizing management stage. Based on CMP (2020).



Through reconceptualization of the Open Standards, I believe that an action-oriented green criminology can be greatly supported by the standard's already existing threat and intervention taxonomies (CMP, 2016, 2019). However, as suggested by POP guidance and the mixed methods design framework, the Open Standards remain deficient in its standardization of research methods and use of project design notation. A common explanation for this deficit is that the field of conservation is only beginning to meaningfully consider the varying methods and methodologies of social science (Bennett et al., 2017). Nevertheless, some researchers have already put forward meaningful taxonomy of social science methods for the monitoring of illegal natural resource use (Arias, 2015; Gavin et al., 2010).

Inspired by emerging methods taxonomies and mixed methods notation, I have further experimented with developing my own taxonomic and notational system to better design and keep track of my own research. This system may be described as having a taxonomy and notation for methods (Table 21) and their connections (Table 22). Specifically, the methods

component of this system outlines all 11 of the distinctive methods used throughout this dissertation and indicates notation for when these methods have major or minor roles in a study or study component. Meanwhile, the connections component of this system is directly borrowed from Creswell and Clark (2017, p. 62) and is what they use to link major and minor research methods. Thus, for example, Chapter 3 in this dissertation would be represented by a notation of (INFORM + FOCUS). Though this experimental system is far from exhaustive, it has served me well in communicating to an array of stakeholders and co-authors on how the research project was designed and how the resulting manuscripts would be presented.

Table 21: An ad hoc taxonomy and notation system for methods used in action-oriented green criminology.

Research Method	Major Notation	Minor Notation
Direct Observation	OBSERVE	observe
Focus Group Discussion	FOCUS	focus
Government Records Review	RECORDS	records
Household Surveying	SURVEY	survey
Key Informant Interviewing	INFORM	inform
Literature Review	LITERATURE	literature
News Media Review	NEWS	news
Reflective Writing	REFLECT	reflect
Social Media Observation	SOCIAL	social
Taxonomic Legal Inventory	LEGAL	legal
Software-supported Qualitative Analysis	SOFTWARE	software

Table 22: A taxonomy and notation system for research methods used in action-oriented green criminology. Adapted from Creswell and Clark (2017, p. 62).

Connection Type	Notation	Example
Concurrence	+	SURVEY + records
Sequence	→	SURVEY → focus
Recursion	→ ←	INFORM → ← reflect
Union	[]	SURVEY → [focus + inform]
Staging	Stage ()	Assess (SOCIAL → ← legal)

Following my experience and experimentation in process frameworks, I believe that action-oriented green criminology can be strongly supported and broadly promoted if it were to have its own formal process framework and supporting taxonomic and notational system. My hope is that I might play a future role in developing such a framework and supporting system, either through the development of my "prototypes" or through the elaboration of more appropriate tools. However, should I not have such an opportunity, I would encourage all green criminologists to more carefully consider how they structure their activities for the greater standardization and expansion of science-based action against the many green crimes and harms that concern them.

5.5. Intervention Project Management

In this section, I reflect on the use of a formally organized project to affect change in Trinidad and Tobago. In all, my experience highlights the relative difficulty, or perhaps potential difficulty, of managing intervention projects as a graduate researcher and the importance of leveraging donor-supported grant writing approaches and project management tools. This further suggests that action-oriented green criminology could be greatly supported through the provision

of special training for the funding and management of intervention projects among green criminologists.

Without question, this dissertation and the broader intervention project within which it was embedded have provided me with some of the most rewarding and challenging experiences of my life. I do not write this lightly, but instead with the experience of having managed other intervention projects at international nonprofit organizations operating across Europe, Latin America, and the United States. Some of the most notable rewarding experiences have included gaining valuable experience in the management and coordination of a large team of professionals, access to a meaningful operational budget, and an unparalleled opportunity to try to enact change in a country with decades, if not centuries, of harmful wildlife trade occurrence. Meanwhile, the most challenging experiences have included a "permanent" shut down of the project due to donor policy change in the final days of the Trump administration, a hard "reboot" of my research and project teams once policies were reverted under the Biden Administration, and the management of young professionals inexperienced in project work.

Through my many project experiences, however, I believe I have been particularly fortunate in the wealth of training and resources that have been made available through professional and university programs, technological development, and global societal development. Without a doubt, the scale of this dissertation and encompassing intervention project would have never been possible without my prior training in the design of conservation projects using the Open Standards and in the elaboration of accounting systems for business enterprises. I gained training in the former through participation in the Emerging Wildlife Conservation Leaders (EWCL) program, while I gained training in the latter originally through accounting and management coursework through the Wharton School as an undergraduate at the

University of Pennsylvania. This collective training enabled me to submit competitive and ultimately successful funding proposals for medium-scale projects to the USFWS and USAID in 2018 and 2020.

As for essential resources, I have been tremendously fortunate to have available a range of contemporary technologies for project management and team communications, most of all Asana (https://asana.com), Clockify (https://clockify.me/), and Zoom (https://zoom.us/). Asana, a project management platform, has particularly helped me structure, plan, and participate in a wide array of research and campaign activities across Trinidad and Tobago, all amazingly for no cost under the basic subscription plan. Clockify, a time tracking platform, provides a simple and effective way to track effort across the research and project team and various projects. Zoom, a video conferencing platform, has meanwhile supported the conduct of remote meetings for a relatively low fee for unlimited meeting times. Without a doubt, these now rather commonplace tools have enabled a far greater degree of collaboration and productivity than I have ever achieved in past projects and have further been essential to overcoming the barriers imposed by the COVID-19 pandemic.

I have additionally been very fortunate given the development of a global professional coaching community for project management. Even with all of my experience in managing projects, I have at times found myself at a loss on how best to manage challenging situations in Trinidad and Tobago. From a corrupt government official asking to "buy" my research for their own publication to finding a research assistant who has fabricated results to negotiating the return of my dog kidnapped by a local poacher—I can say that there are situations for which no amount of prior training or experience could have prepared me. In these cases, I have greatly benefited from the support of a trained and experienced coach, both as a source of guidance and

as an opportunity to reflect upon situations outside of the ordinary settings of research and activism.

Through this reflection, I am grateful for the training and resources that have been available to me, and I am further concerned that many others seeking to implement action-oriented green criminological projects may not be so fortunate in their experience, access, or awareness. Notably, for all the training and resources provided by MSU, I have found specialized training for grant writing and project management to be particularly limited. However, this is not to fault MSU. In fact, I have both experienced and heard of similar limitations at many other universities and even international nonprofit organizations. As I think of the future of action-oriented green criminology, I imagine that the delivery of more targeted training and resources will be essential to project success.

Beyond general project management training and resources, however, I will admit that my project has benefited only in small ways from past efforts to reduce wildlife trades in other contexts. For instance, though there exists a growing body of case literature on the use of the Open Standards (https://conservationstandards.org/case-studies/), there appears to be an absence of case studies on how Open Standards can be used to address wildlife trades. Similarly, as I started out research in Trinidad and Tobago, I was somewhat surprised by the lack of publicly available research instruments to use in wildlife trade investigations. In my previous work at the World Wildlife Fund (WWF), I was able to call up a small database and network of in-house scientists willing to share their research instruments for tailoring to other contexts and projects. It was only after leaving this environment that I realized how rare such a set of resources really is, and I again consider myself lucky for the support offered by other researchers who were willing

to share with me their own research instruments for inspiration and even tailoring for Trinidad and Tobago.

In sum, this reflection on my intervention project experience highlights that there is a substantial need for training and resources for both general project management and wildlife trade intervention among green criminologists and other concerned scientists and activists. As I consider my future roles, I hope that I might be able to support the development and provision of such training and resources. However, given the range of training and resources already available for Open Standards and project management tools, it is possible that the greatest need is for relevant university programs and organizations to be made aware of the many ways that intervention projects can be better managed.

5.6. The Promotion of Science-based Activism

In this section, I reflect on my own evolving personal beliefs about how best to promote science-based activism on green crimes. After more than 17 years of near continuous engagement in the study and practice of science-based activism, I reflect that in many ways I have once again come "full circle." My many positive experiences with nonprofit activism encouraged me to continue forward, but my many negative experiences also led me to believe that governments and scientific institutions must inevitably take a leadership role on green crimes and harms. Nevertheless, my experiences in developing this dissertation and encompassing project have led me to believe that nonprofit, nongovernmental organizations (NGOs) remain the only viable option for such leadership in the short and perhaps even long term.

Admittedly, an important reason for me pursuing a Ph.D. specializing in green criminology at the MSU School of Criminal Justice was that I had been greatly dissatisfied and

disappointed by the performance of nonprofit organizations. In many cases, such organizations are the only source of work on issues that need attention and awareness, yet too often, such organizations struggle with low capacity for science-based activism. I have seen firsthand how such issues limit project success in all manner of nonprofit organizations, from the smallest of grassroots organizations to the largest of international organizations. This led me to hope that, perhaps one day, these shortfalls could instead be met by governmental and scientific institutions.

My relatively recent pessimism on nonprofit NGOs' role in addressing green crimes and harms was further supported by an array of research on their weaknesses and potential contributions. In particular, there exists a body of literature highlighting how conservation organizations can fail to appreciate issues of human welfare and ultimately undermine the social sustainability of wildlife management (e.g., Dowie, 2011). Additionally, various international development experts argue that long-term solutions require NGOs to encourage the growth of state capacity, not supplant it (e.g., Devarajan et al., 2014). Meanwhile, some members of the scientific community increasingly advocate for scientists to take up advocacy roles as part of a greater transition to "post-normal science" (Funtowicz & Ravetz, 2018).

Due to my particular subjectivity on the effectiveness of nonprofit NGOs for green crimes, I not only pursued an academic degree within a specialized green criminology program, but I also pursued a dissertation project directly consulting and supporting a government agency in coastal Nicaragua. Unfortunately, these pursuits ultimately led me to directly experience how governmental and scientific institutions also struggle with similar capacity issues. Furthermore, I have seen how such institutions further struggle with issues of internal political will. Sadly, I have now seen how specialized academic programs can fail and how even the best-intentioned

government actors can fail to act even when much of the investigative work has been done by a collaborating external actor. Such experiences might have left me disillusioned with the prospects of any organized responses to the global crisis in green crimes. However, as a saving grace, I have also found renewed hope for nonprofit organizations through the Nurture Nature Campaign.

In many respects, the Nurture Nature Campaign may serve as a model for nonprofit science-based activism on green crimes. The research conducted by the campaign and its supporting organizations has incorporated a novel multidimensional approach to harm analysis, while a diversity of research methods have also been employed to an extent far greater than I have seen in other projects. The results have channeled directly into public advocacy across multiple channels, including social media, lectures, radio and television presentations, and specialized training workshops for governmental actors. The union of thirteen local and regional organizations in a common coalition further offers hope that science-based action will continue for many years to come. Thus, the Nurture Nature Campaign has helped me see how the flaws of nonprofit NGOs might be overcome with more sophisticated design and training.

Considering this experience, I have increasingly adopted a more nuanced view of nonprofit NGOs and their role in addressing green crimes and harms. Specifically, I now hold that nonprofit NGOs have a central role to play, provided that they can address particular capacity gaps related to collaboration and methodological expertise. With respect to gaps in inter-organizational, I note that there exists an array of research highlighting how civil society is organized around "silos," or distinct and separate areas of concern and action that often limit how NGOs interact with one another and develop solutions (e.g., Hossain, 2011). Furthermore, in spite of decades of calls to break down such civil society silos, I have personally observed

how efforts are more often superficial than substantive. This siloing poses particular challenges to addressing the green crime crisis precisely because it ordinarily transcends a single dimension of harm. For instance, as highlighted throughout this dissertation, the wildlife trade in Trinidad and Tobago causes a diversity of harms to animal welfare, biodiversity, public health, and the rule of law.

As I have experienced through the Nurture Nature Campaign, I believe it is possible to develop real "silo-busting" projects through coalition-building. This has allowed me to reflect upon the potential for additional expansions in mission scope for other organizations through coalitions. Nevertheless, as a co-founder of the Nurture Nature Campaign, I have also seen how there is a need for additional resources for the design and creation of nonprofit coalitions to address harmful wildlife trades as well as other green crimes. Certainly, useful toolkits exist for the general creation of NGO coalitions (e.g., Center for Community Health and Development, 2022), yet my collaborators and I could not locate guides or case studies specific to the needs and concerns of the Nurture Nature Campaign. Because of this, I hope that the campaign might serve as a model for the creation of coalitions on wildlife trades elsewhere.

With respect to gaps in nonprofit methodological expertise, I note that many nonprofit NGOs struggle to utilize basic research methods to understand green crimes and harms, explore their potential solutions, and evaluate the outcomes of interventions. Though this appears to be an issue unexplored in published research, it has been readily apparent throughout my career. Even during my time with international organizations, I have rarely found individuals who could teach or guide me in the practices of primary research. Thus, I have spent a great deal of effort learning how to apply methods like key informant interviewing and direct observation. This poses particular challenges to NGOs' engagement on issues of green crime and harms because,

very often, there is an absence of available data on them. This is further substantiated by my research experience in Trinidad and Tobago, where little information previously existed on a trade that occurred for decades, if not centuries.

My experience conducting research in support of the Nurture Nature Campaign offers a range of insights into how the "expertise gap" may be better overcome among nonprofit NGOs. Most importantly, given the scale of research to be undertaken, a range of protocols, research instruments, and training curricula were developed such that non-expert investigators could play key supporting assistant roles. As most project assistants had only before used natural sciences research, these resources had to be specially designed to quickly move assistants from basic concepts and techniques to sophisticated applications in short spans of time. Though I was not always successful as a trainer, the vast majority of interested assistants ultimately participated in field research. As a result, I can now imagine how the project's methodological resources might be meaningfully deployed as a training course for other NGOs interested in researching pet wildlife trades. Such a course could meaningfully be developed as an online course with instrument templates and field exercises.

Reflecting on this project's promotion of science-based activism, I ultimately conclude that nonprofit NGOs may provide the only meaningful leadership for research on green crimes and harms. Though they remain limited by capacity, such organizations possess the concern and often the willingness to grow and try new approaches. Certainly, government agencies and scientific institutions shall continue to play essential roles in enforcement and technical and theoretical innovation, respectively. However, I now believe that these roles are unlikely to ever be appropriately fulfilled if NGOs are unable to document the nature and scale of green criminological problems.

5.7. A Final Reflection on the Green Criminological Experience

In closing, I conclude from my dissertation experience that there continues to exist a great need for broad societal engagement to address illegal and legal harms affecting the natural world, non-human species, and the human communities that depend upon them. Furthermore, criminologists can play an essential role in responding to this need, but only if the community finds a way to more fully embrace action-oriented research and find common ground as green criminologists. More than thirty years have now passed since Lynch (1990) first called for a green criminology paradigm to address real-world problems, and more than seventy years have passed since Lewin advocated for more action-oriented research (e.g., Lewin, 1946). Perhaps then it is time for an action-oriented green criminology to unite and guide criminologists and broader communities of concern and practice. As I have experienced firsthand, such a green criminology is possible and can be supported with an array of highly actionable next steps.

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