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Jessica Lauren Kidder

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A. Whittaker

Major Professor's Signature

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RECYCLING AT HOME AND AWAY: DIFFERENCES OF RECYCLING PARTICIPATION BETWEEN RESIDENTS AND NON-RESIDENTS ON TWO NORTHERN MICHIGAN ISLANDS

By

Jessica Lauren Kidder

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ABSTRACT

RECYCLING AT HOME AND AWAY: DIFFERENCES OF RECYCLING PARTICIPATION BETWEEN RESIDENTS AND NON-RESIDENTS ON TWO NORTHERN MICHIGAN ISLANDS

By

Jessica Lauren Kidder

The influence of residency has yet to be considered as an indicator of recycling participation. Examination of community composition is important because rarely are communities homogenous populations of residents. Non-resident additions to community population are common in Northern Michigan. Participation in recycling programs may vary with non-local status. The primary question investigated in this empirical study is: do differences exist between residents and non-residents in participation of community recycling programs? I hypothesize differences to exist between residents and non-residents in community recycling programs. I also expect frequency, duration of visits, outreach, and access to influence participation of non-residents in community recycling programs. Objectives of this research include: determining whether differences in participation in recycling programs exist between residents and non-residents, identifying outreach initiatives directed at non-residents, ascertaining duration and frequency of non-resident visit within the community, and determining whether an association of residency and participation in a recycling program exists.

To all who believe they can make a difference in the world.

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CHAPTER 1: INTRODUCTION

Recycling

The Environmental Protection Agency (1999) defines recycling as the series of activities by which discarded materials are collected, sorted, processed, and converted into raw materials and used in the production of new products. In this study, I am concentrating on the activity of sorting and collecting discarded materials that are recyclable.

Recycling is one of the many ways that society engages in environmentally conscious behavior. Developed with the birth of the environmental movement of the 1960s, recycling has steadily grown as an alternative to environmentally destructive waste disposal practices such as landfilling. Recycling, with its roots in the environmental movement, is motivated by the concern that the amount of material generated and disposed of is problematic in and of itself (Carlson, 2001). Awareness of human impact on the environment and the perception that the separation of waste is essential to global long-range stability and well-being are often described using popular labels such as to 'environmental consciousness,' 'environmental patriotism,' 'environmentally friendly,' 'green-living,' and 'sustainable.' These labels tend to be a source of controversy. Here, I will use such labels only to imply awareness by an individual of her impact on the environment from the generation and disposal of waste. This is not to discount the importance of awareness. Collectively, awareness of our impact on the Earth is growing. Society is becoming more and more aware of the negative impacts we are incurring on future generations. As a result, people seek to

behave in ways that minimize impact and maximize quality of life today and of the future. Recycling has prevailed as an activity demonstrating this awareness. Recycling embodies multiple scales of awareness, collectively and globally as described above, and locally within communities (Oom Do Valle et al. 2005). Local benefits of recycling program development include reductions in waste collection, transportation, and disposal costs, economic efficiency, and expression of ecological awareness. By participating in recycling programs individuals indicate not only consciousness of the natural world, but also the potential impact recycling can have on the quality of life and community (Oom Do Valle et al. 2005).

Community

Communities are the most common sites of recycling programs. Most programs are designed to function within communities and are streamlined for efficiency. For the purposes of this investigation I will employ a definition of community based on a definition by Maser (1999). 'Community' is defined as a group of people with shared interests living under and exerting some influence over the same government in a shared locality (Maser 28,1999). Individuals within a local community interact with one another and organizations outside of local government to satisfy the full range of their daily requirements within the local area. A community is also a site of human-environment interactions. People are in a reciprocal relationship with their landscape while rooted in a sense of place (Maser, 1999). From a geographic perspective, a community can be considered the social, environmental, and political implications of humanity interacting with the landscape.

As described by Carl Sauer (1925), geography is a field of study inclusive of humans. When we look at a landscape we see human impact on the environment and this, in turn, has effects on humans. Within this area of study, geography has concern for the importance of the physical site, as well as with society's transformation of the site. In this research the site may be considered the communities on Bois Blanc and Mackinac Islands. Communities are sites of human-environment interaction and are often times under the influence of local government. To assess the political influences on the subject communities and the resultant environmental and social implications, I also take into account political ecology. Serving as a thematic approach to human-environment geography, political ecology is a framework of analysis rather than a theory (Robbins, 2004). This framework enables the inclusion of complexity while emphasizing the differences between political and apolitical ecology. Rather than holding responsible local and proximate forces, political ecology identifies broader systems and the resultant influences (Robbins, 2004). Taking political ecology and human-environment geography into account in this research is especially useful due to the interaction of local government, people and the environment. According to the general idea of political ecology, environmental change and ecological conditions are the product of political processes. In this particular instance, society is functioning within the finite communities on Bois Blanc and Mackinac Islands and their waste management programs are identified and put into operation by the local bodies of government. These local bodies of government are then subject to larger scales of governance such as the county and the State. In sum, the successive scales of government ultimately influence the people, who in turn, influence the environment. Blaikie and Brookfield (1987) take the framework of

political ecology into a schematic context referred to as the "chain of explanation" as illustrated in Figure 1.

SITE ↔ SYMPTOM ↔ PRACTICE ↔ DECISION MAKING ↔ SOCIETY ↔ STATE ↔ WORLD

Figure 1. The Chain of Explanation (Blaikie 1998).

In this scheme, the chain of explanation starts with the site of environmental processes and change (Blaikie 1998). For these changes to become an object of inquiry, recognition of impact by certain elements of society is required. Impacts may be considered slow-acting, invisible, deleterious, or advantageous for people and may have varying impacts upon them. Furthermore, these impacts may be approached as symptoms (often economic) of environmental change brought about by specific practices which must be identified (Blaikie 1998). These practices or activities carried out in the community may be characterized by the technologies utilized and linked to the environmental change. Sequentially, these activities are carried out by specific agents, often described as decision-makers within their community or immediate decision-making environment (Blaikie 1998). These decision-makers are part of a wider civil society that is affected by the state. The state may have slight or extreme influences upon both civil society and the agents that brought about environmental change and impact on society (or often the economy) (Blaikie 1998).

While I have not organized this research to test or demonstrate Blaikie's 'chain of explanation,' the scheme is effective as a theoretical foundation and framework of analysis. This research is an empirical study in human-environment geography.

In this instance the sites are the communities of Bois Blanc and Mackinac Islands. The generation and disposal of waste within these finite communities may be approached

as the symptom with recycling participation as the practice. Continuing along the 'chain', the decision makers are residents and non-residents who decide whether or not to participate. These agents, residents and non-residents, are then influenced by the pressures of a larger civil society. Both society and the decision maker are affected by government ranging from the local to the state and even the global level. The local unit of government, whether a township or a city, may receive funding from the State, which in turn may receive funding from the Federal level. Funding is often allocated for specific waste management strategies such as recycling programs. Therefore, local environmental change is ultimately a product of politics at a much larger scale than the acute problem of waste generation and disposal. Individuals, while seemingly independent, are influenced by nested scales of political power that in the end result in impacts on the local environment within a community.

The physical delineation of community is difficult to describe. "A concrete notion of community cannot extend beyond the local without becoming an untenable abstraction" (Maser, 1999:28). Where the lines are drawn to determine the boundary of a community may be of a subjective nature and surrounded by controversy. In some heavily populated areas communities seem to blend into one another where a defining line is obscure or an artificial designation is implemented such as zoning or a transportation route. On the other hand, physical attributes of the environment at the site of a community may serve as unquestioned boundaries. To avoid the indefinite demarcation of community I will be focusing on two island communities in Northern Michigan, Bois Blanc Island and Mackinac Island. In general, islands provide a geographically finite community and simplify the geographic boundary of what is to be

considered as a community. On an island an individual is either on the island or off the island, whereas on the mainland the specific boundary of a community may be indistinct.

Residents and Non-Residents

The complexity and organization of these two communities are examined here in terms of residency, who considers the community home and who is a temporary visitor. I define residents in this study as people who live in a community, in a primary residence, and consider the location home. It is important, however, to acknowledge that residents have complex rationale for residing within a community and a sense of pride and value may exist as a result. Bois Blanc and Mackinac Islands are historically and culturally significant homelands to the local residents.

Non-residents are defined as temporary additions to community population, involving relocation for a variety of motives, and ultimately returning to the location of origin, home. Determining why non-residents are present in a community involves the study of tourism geography and sociology. These areas of inquiry will not be thoroughly examined as the objectives of this research, but will be referenced. Both residents and non-residents organize and conduct their activities within a community and need facilities and services to meet their needs. As a result of this interaction negative impacts may be accrued on the physical environment. Waste generation and disposal is an example of how this interaction may be problematic. Regardless of residency status within any community, people generate and dispose of waste. The generation of waste, commonly referred to as garbage, is a direct impact of people interacting with the environment. The creation of garbage is an unequivocal sign of human presence (Rathje and Murphy 2001). This is exceptionally obvious on an island. Bois Blanc and Mackinac Islands provide a

geographically finite sense of community as well as a clear depiction of community composition. Due to the inherent popularity of islands, non-residents are frequently present within these communities, especially during the summer season.

Environment

By their very nature islands are vulnerable ecosystems and sensitive to change (Vigmostad 1999). Much like living organisms, the 'body' of an island changes shape with the inundation and regression of water levels and the forces of erosion and deposition. With the perimeter completely exposed, islands suffer violent weather events and winds sweeping across open water. Islands are also areas of ecological sensitivity due to irregularities in biodiversity. Tens of thousands of years of isolation from the mainland have resulted in a lack of new species and resident species often evolve into endemics. Islands are also vulnerable to the introduction of exotic species (Vigmostad 1999). The two islands of study are examples of the delicate environmental balance that is all too often swayed by human impact. Many issues revolving around biodiversity are present on both of these Great Lakes islands as species on the Endangered Species List inhabit Bois Blanc and Mackinac. Hine's Emerald Dragonfly (Somatochlora hineana) and the Eastern Massasauga Rattlesnake (Sistrurus catenatus catenatus) are examples of Endangered Species found in these areas (mackinaccounty.net). When the environmental sensitivity inherent on islands is combined with a strong attraction by humans the result is often devastating if not carefully managed. The generation and disposal of garbage by humans in an island community is an example of this volatile combination. With islands having a finite area, fragile ecosystem and a consistent human presence, how to manage waste becomes a complex predicament. Disposing of waste on site ultimately reduces the

total amount of land and decreases the quality of the surrounding environment. Transferring waste off island can become economically strenuous depending on the amount of waste disposed of and how frequently it is generated. The volatile combination of popularity and environmental sensitivity becomes even more precarious when community composition is taken into account. Managing the behavior of waste generation and disposal then becomes critical to the longevity of the supporting environment and community.

Recycling Participation

The existence of a recycling program is a proven means to increase recycling participation of community members (Oom Do Valle et al. 2005. Various programs are designed to improve specific attributes of recycling to increase involvement. Access is a major attribute that influences participation. When we live in a community we are often familiar with the program and process of recycling our waste. Frequently communities will provide outreach to inform and encourage participation in the recycling program. In some communities, recycling is mandatory for residents while in other localities recycling is voluntary. This presents a situation where the program design is somewhat 'weighted' in favor of those who live in the community.

Non-residents generate and dispose of as much waste as residents and possibly more due to the lack of familiarity of the area and inconveniences of being away from home. For example, on a recent trip away from home I ended up staying in the destination community for three days longer than planned. The change in duration of my visit along with a drastic change in weather increased my consumption and ultimately waste generation. Much of the garbage I produced was recyclable plastic water bottles,

newspapers, glass bottles, aluminum cans, paper, and even cardboard. I am an avid recycler at home and consciously try to be environmentally friendly, but while I was away I did not collect or sort any of my discarded materials. If this example is remotely characteristic of non-residents in a community a new element to waste management and environmental awareness may exist.

Differences in Participation

Differences in recycling participation may have dramatic effects on the waste management strategy of a community. Recycling programs may be effective for the resident members of a community, yet consistent non-resident additions could negate resident efforts if enough waste is generated and not collected or sorted for recycling. Additionally, differences could also impact local planning efforts and progress toward sustainable communities. Failing to take into consideration the influence of temporary constituents within a community might obstruct attempts to create community vision, goals, and objectives. Overlooking the agency of non-residents could very well prohibit an accurate analysis of how a community is functioning presently, let alone where a community may go in the future. These possible implications are magnified when considered within the context of island communities due to geographic isolation and environmental susceptibility.

Positive implications may also exist. There is also the possibility that by raising awareness of our environmental impacts and of recycling, a community may enhance its quality of life. Enhancement may come in the form of environmental quality, improved interrelationships between community members, and the perception that the community is environmentally conscious. If non-residents were able to experience a sense of pride

and green living from the community they come into, their behaviors and attitudes may follow suit. This may well lead to a decline in the negative impacts of specific non-resident activities such as tourism. Whether the implications of differences in recycling participation are positive or negative any investigation and analysis will be useful, as very little is currently known.

As a result, the primary question I investigate in this research is, do differences exist between residents and non-residents in participation in community recycling programs? I hypothesize that differences do exist between residents and non-residents in participation in recycling programs. I also expect frequency and duration of visit along with increased outreach to influence the participation of non-residents in the community recycling program. Objectives of this research include: determining differences of participation in community recycling programs exist among residents and non-residents by conducting questionnaires and semi-structured key informant interviews, identifying outreach initiatives directed at non-residents through field observations, ascertaining the duration and frequency of non-residents by administering the questionnaire, determining if association between residency and participation in community recycling programs exist by analysis of data from the questionnaires and field observations. This study was conducted in the state of Michigan on two islands, Bois Blanc and Mackinac in Lake Huron.

CHAPTER 2: LITERATURE REVIEW

Studies have demonstrated the benefits of recycling since its birth in the 1960s. Benefits of program development and participation are often proclaimed as: reductions in waste collection, transportation and disposal costs, and dependency upon land filling, economic efficiency, job creation, and expressions of ecological awareness during times of crisis. By participating in recycling programs consumers indicate their consciousness of the natural world and the potential impact recycling can have on the quality of the environment (Oom Do Valle et al. 2005). Governmental agencies from the local to the national level have recognized recycling as a socially and economically attractive behavior (Ackerman 1997; Schultz 2002). Legislators and units of government often implement policies to encourage participation in recycling programs using voluntary and mandatory standards and economic incentives. The Environmental Protection Agency (EPA), the federal unit of government directed at protecting human health and the environment, continues to sponsor research on multiple aspects of waste management and recycling.

In an extensive analysis, Cutting the Waste Stream in Half: Community Record Setters Show How (1999) the EPA investigates program design and success. By comparing 18 communities with record-setting residential or municipal solid waste reduction levels the report identifies successful waste reduction programs in communities, businesses, and other organizations and encourages their replication, yet does not consider the influences of non-residents. As a result of this report, factors have been identified to increase program success. Factors include targeting a wide range of materials for recovery, encouraging or requiring participation, offering service to multi-

family dwellings, and supplementing curbside collection with drop-off collection (EPA 1999). In addition, and essential to success of recycling programs, are education and outreach, as well as finding markets for materials. While these factors are valuable to planning, program success, and increasing involvement, the lack of consideration for community composition produces relevance only for resident populations.

The EPA report also examines strategies to reach high participation levels. Making programs convenient, enacting mandates, and instituting pay as you throw (PAYT) programs are illustrated (EPA 1999). Convenience is a major influence in participation. Residents are more likely to participate in recycling programs if doing so is convenient. To make participation as easy as possible communities are providing curbside collection of recyclables with the same frequency that curbside collection of trash that is provided. Providing seasonal and frequent curbside collection of yard trimmings also enhances convenience, as yard trimmings are a major contributor to municipal waste (EPA 1999). Offering service to all households and providing adequate containers for storage and set-outs for recyclables are additional measures communities take to increase participation. The establishment of recycling drop-off sites at disposal facilities is also a method of increasing involvement, especially for residents who self-haul trash (EPA 1999).

Local requirements and mandates encourage the participation of residents in recycling programs. Many communities with successful programs and high involvement have a local ordinance that either requires residents to separate waste or bans them from including recyclable materials with their trash (EPA 1999). On a larger scale, communities, including those in Michigan, may have to meet state mandates and goals.

Mandates and requirements have been shown to be useful in the success of recycling programs aimed at increasing involvement of residents of a community. These studies do not mention the possibility of participation and waste generation by non-residents. If regulations are targeted solely at residents, communities with high populations of temporary people may experience disparities in results and program success.

The utilization of PAYT systems may result from local and state requirements. These systems cover solid waste costs directly rather than through the tax base or a flat fee. PAYT serves as a direct economic incentive for households to reduce their trash (EPA 1999). Conversely, in a survey conducted by Reschovsky and Stone (1994), curbside recycling pickup was shown to increase the probability of recycling more than unit pricing of garbage. In addition, Fullerton and Kinnaman (1996) suggest communities with pay as you throw systems, or unit pricing, may be faced with the possibility of increases in illegal forms of garbage disposal such as burning, littering, or using a commercial dumpster. These studies indicate the PAYT system leads to a variety of outcomes for recycling program success and increasing involvement. These outcomes, however, do not include the existence of non-resident additions to the community. This omission could have negative influences on the local environment and waste management strategies. This may be especially problematic when non-residents are unfamiliar with the process of disposing of waste.

Even though the EPA suggests curbside collection to be a more effective way to increase collection, supplementing this service with a drop-off center can expand participation into rural areas. Residents in rural communities are more likely to self-haul garbage, therefore making a recycling drop-off practical (EPA 1999). Drop-off centers

can also be a site of non-resident participation, yet this is not considered in the EPA's examination of program success. Furthermore, drop-off facilities may sometimes accept a wider variety of materials and accordingly might be more attractive to both resident and non-resident involvement. Convenience again plays a role in the effectiveness of this type of recycling program. Access to the drop-off site is again considered in terms of resident participation, leaving non-resident convenience and waste inputs unaccounted for.

Apart from of services offered, education and outreach are ubiquitous among the communities with record-setting recycling participation included in the study by the EPA. Considering that each community has a unique program, providing residents with knowledge about 'how' and 'why' to recycle is necessary for accurate and effective participation. This illustrates a major gap in the purpose of education and outreach initiatives. While educating residents is important, the situation of the non-resident may become even more significant considering the variations among community recycling programs. Such initiatives include: fact sheets, pamphlets, newsletters, recycling guides, posters, inserts, calendars, radio and newspaper ads, hotlines, public service announcements, local cable appearances, and booths at community events. Aside from a few of these methods, most are applicable and effective for residents of a community. It could be assumed that such methods are targeted directly toward residents and non-resident interest is coincidental. Previous studies overlook specific initiatives aimed at anyone aside from residents in a community. Foltz and Hazlett (1999) also conclude outreach efforts coupled with educational and publicity campaigns assisted by local education personnel, environmental organizations, or other citizen groups are typical features of program design of communities with the most successful recycling efforts.

Based on earlier research, it is clear program design is central to success and involvement; still previous studies suggest additional indicators of public participation and recycling program performance.

Folz and Hazlett (1999) take into account local population, socioeconomic, and political characteristics as indicators of recycling performance of mandatory and voluntary community programs. The results suggest socioeconomic and political characteristics do not affect recycling success, when measured in terms of participation and diversion. Their inclusion of local population is limited to demographic, socioeconomic, and political variables of households. Reschovsky and Stone (1994) also include similar variables in their analysis of recycling indicators. Independent variables used in this study consist of income, education, age, household size, number of hours per week in paid employment, marital status, gender, policies, awareness of drop-off centers, and awareness of the recycling program. At the same time these previous studies incorporate a wide array of variables, the influences of community composition and from non-resident additions to communities and waste generation remain unaccounted for.

Oskamp et al. (1991) found living in a single-family dwelling to be the strongest predictor of participation in a curbside program in a study conducted in California. The second strongest predictor was having friends and neighbors who recycle. Peer participation and modeling have been identified as important determinants. Despite this study focusing on resident participation, this could possibly be assumed to be useful in determining indicators of non-resident involvement. This may be especially true if non-residents are acquainted with residents who recycle in the community. As emphasized by Devall (1988) and Leiss (1976), the social and cultural contexts in which pro-

environmental behavior occurs has been almost disregarded in academic studies and the effects of context on behavior are nearly unexamined. More current research has investigated social contexts in terms of demographic variations (Derksen and Gartrell 1993; Oskamp et al 1991, Schultz and Oskamp 1996; Schultz, G. 2002; Ackerman 1997; Berger 1997; De Young 1990; Fullerton and Kinnaman 1996; Foltz and Hazlett 1999; Goldenhar and Connell 1993; Howestein 1993; Lansana 1992; Margai 1997; Oom De Valle et al 2005, Oskamp et al 1991; Reshovsky and Stone 1994). Whether or not community composition and non-resident influence is considered within social and cultural contexts, the same can be said of the exclusion of community composition and non-residents inputs in academic studies.

Access to recycling places corresponds to convenience and has been examined in both resident and non-resident contexts. Lee and Ralston (n.d.) examined the influence of signage and proximity of recycling bins on the volume of recycling materials generated at a hotel in Salt Lake County, Utah. Their work considers recycling as a basic component of sustainability and sustainable tourism (see Lee and Ralston n.d. for more information regarding sustainable tourism). Closer collection receptacle proximity may contribute to increasing voluntary participation in recycling programs (Lee and Ralston n.d.). Signage is an additional factor that may provide further support for voluntary participation. The importance of accessibility and convenience is also stressed by Lansana (1992) in research aimed at distinguishing recyclers from non-recyclers. Lee and Ralston do examine recycling participation of non-resident hotel guests. An additional study by Cummings (1997) examines a similar context of hotel guest waste generation at a Las Vegas mega-resort. The contexts of a hotel or resort are instances of non-resident

presence, yet the controlled environment of a hotel may not be reflective of a community and all non-residents recycling behaviors.

In a similar area of study as access and convenience, effort has also been considered an indicator of recycling participation (Schultz and Oskamp 1996). Environmental concern was found to predict recycling involvement when the amount of effort was relatively high (Schultz and Oskamp 1996). However, when the amount of effort required was lower or when incentives were added environmental concern was not as influential. Schultz and Oskamp (1996) demonstrate when taking into account the role of attitudes in predicting behaviors, it is crucial to consider the context in which the behavior is taking place, and that the effort required for the behavior is one aspect of that context. In this study, the findings were in reference to resident participation, yet these results are applicable to non-residents as suggested by the consideration of context. The necessity of including context into any investigation related to recycling behaviors and attitudes suggests a need for examination of community composition and non-resident impacts.

In general, previous studies do not specifically focus on Michigan or Great Lakes islands as areas of study. Many states such as Michigan may have reduction goals, requirements, and policies that influence local communities. These state level polices encourage the local level to implement waste reduction programs (EPA 1999). In Michigan, policy sets the goals of 40% incineration, 25% recycling, 10% composting, 10% source reduction, 10% landfilling, and 5% reuse rates by 2005 (MRC 2001). Legislators in Michigan mandated that the Michigan Department of Environmental Quality's Waste Management Division (MDEQWMD) develop a plan to collect

recycling data in 1996. Due to a lack of funding very little progress resulted from the 1996 mandate. The MDEQWMD is currently unable to conduct annual measures that would provide an indication of how well Michigan is meetings the goals set out in the 1988 policy.

The Michigan Recycling Coalition (MRC) has discussed and addressed ways to remedy the need for recycling data. As a result, a solid waste characterization study was proposed, yet due to economic constraints the MRC narrowed its focus to the collection of information on the types and quantities of materials recycled in the State. Three main objectives to accomplish this study were acknowledged as: to develop an inventory of the State's residential recycling programs, and to gather information about businesses that move materials collected from these programs to points of processing and marketing for end-use; to collect data on the types and volumes of municipal solid waste diverted from disposal through programs in order to calculate recycling rate; to collect financial and employment information from recycling processors to demonstrate the significant contributions industry makes to Michigan's economy (MRC 2001).

In a State where tourism was a $16 billion dollar business in 2005 (Holecek 2005), the inclusion of non-resident generation and disposal of waste should be a priority and taken into account in research on recycling in Michigan. Furthermore, a report produced by the MDEQWMD in response to questions raised at the June 16, 2003, Beverage Container and Recycling Task Force meeting, the opportunities for Michigan residents to recycle were analyzed. The MDEQWMD has indicated that recycling in Michigan lags behind all Great Lakes States. In Michigan, 37% of residents have access to curbside recycling and 55% of residents have access to recycling drop-offs (MRC

2001). Every resident in Michigan has the opportunity to return deposit beverage containers that normally get recycled (MDEQWMD 2003). The report proposes improvements such as increased statewide support for increasing recycling opportunities, expansion of the current beverage container deposit system, and creation of a dialog on recycling issues among stakeholders in communities, recycling and waste industries, and state government (MDEQWMD 2003). Inclusion of non-resident contributions to the generation and disposal of recyclable materials was not discussed in this report.

A 2002 article published in the Wall Street Journal (Fialka 2002) asserts that for the first time in 20 years Americans are throwing away more aluminum cans than they recycle. Data used in this article show Americans are recycling less now than they did in 1990 even with overwhelming support for recycling. More cans are being emptied away from home and Americans are more likely to recycle at home than at the office and on the road. On top of beverage container challenges, non-resident impacts are left out of the wider discussion of increasing participation, convenience, incentives, and market expansion in Michigan as well as the nation at large.

Despite previous research insufficiently accounting for and addressing non-resident generation and disposal of waste in communities the topic is slowly coming to the forefront. Only months ago, in April 2006, the EPA released a brief article titled Recycling on the Go: Recycling Places in Public Spaces. The article reveals Americans seem to forget about recycling when they entertain themselves at venues such as the National Cherry Blossom Festival, at sporting events, or in theaters. The reason for the disparity of recycling participation is linked to a lack of public places other than trash bins for bottles, cans, and other materials normally recycled (EPA 2006). Two startling

facts are presented. First, Americans take and toss about one-third of all single beverage containers away from home and nearly 90% of the plastic water bottles used get tossed out or become litter. Second, in the years spanning 1990-2000 Americans wasted more than seven million tons of aluminum cans, which is enough to manufacture 316,000 Boeing 737 airplanes (EPA 2006). These facts may represent the inconsistency of including community composition in related studies.

As a result of the 2006 report, the EPA is launching a national campaign to put recycling places in public spaces by making recycling easy and convenient. The EPA presumes national level policies and incentives and educational campaigns are required to increase the institutionalization of recycling in public spaces. State and local communities must also devote the same resources and research into public-space recycling as they currently apply to residential recycling programs (EPA 2006). The same is particularly true for communities such as Great Lakes Islands in Michigan, with high volumes of non-residents and fragile ecosystems. Recycling away from home is the challenge.

CHAPTER 3: METHODS

This section describes how I carried out the research objectives presented in Chapter One. To begin, I provide the rationale I used for choosing the study site. Next, I describe each of the two study sites and how data was acquired. Finally, I explain the field observations made during this study.

Rationale

Four key reasons justify my decision to study differences of recycling participation between residents and non-residents on Bois Blanc Island and Mackinac Island. First, islands tend to be attractive places to live and visit. In Michigan, islands are top tourism (non-residents) destinations. Islands seem to capture people's imaginations as romantic, historical, natural or secluded places. Considering the vast majority of the nation's population now lives in urban areas, the remoteness of islands is often sought (for various reasons) to get away from it all. In addition to being attractive to visitors, islands in Michigan are home to many residents. The combination of residents and non-residents within these island communities makes for the ideal location to examine differences in recycling participation. Secondly, the geography of Bois Blanc and Mackinac Islands allows for a concise definition of community. Islands are naturally geographically isolated; as a result defining the boundaries of the existent communities is straightforward. There are also no issues of whether an individual is in between communities or within multiple communities, for you are either on or off the island. The third rationale for studying the two islands is their natural environment. In general, islands are vulnerable due to ecological sensitivity and are prone to irreversible changes.

This creates a significant environmental predicament when many people desire to experience these islands. The predicament is complicated by the fact that many individuals are attracted to Bois Blanc and Mackinac for the quality of the environment, yet their presence has dramatic impacts on the ecosystems. Finally, Bois Blanc and Mackinac Islands are within the same county, Mackinac, in Michigan. This is useful because both islands are subject to the same policies and regulations that counties (may) impose on their townships.

Mackinac County encompasses two cities and eleven townships and contains 691,000 acres, 1,093 square miles, 230 miles of shoreline, and 135,000 acres of federal forest (Mackinaccounty.net, 10/28/06). State and federal land ownership accounts for 54% of the total land area. According to the 2000 census, the population of Mackinac County was 11,943 and the labor force consisted of 7,450 people with a summer unemployment rate of 1.6 and winter rate of 21.7.The largest seasonal employer is the Grand Hotel on Mackinac Island and the largest year round employer is the Sault Tribe of Chippewa Indians.

This study was a result of personal experience with recycling participation differences while I was on vacation. This led me to contemplate the behaviors of others. It is worth noting that I grew up on Bois Blanc Island and have also frequently visited Mackinac Island over the course of 20 years. My personal experience within these two communities was beneficial to research, as I was already familiar with the geography and people. As a result, I felt that residents were socially accessible.

Permission to conduct this research on Mackinac and Bois Blanc Islands was granted by the Michigan State University Institutional Review Board; Committee on

Research Involving Human Subjects (UCRIHS). My UCRIHS application, IRB # X06-551 Category 1-2 EXEMPT, was approved on July 10,2006 and is valid through July 9, 2009.

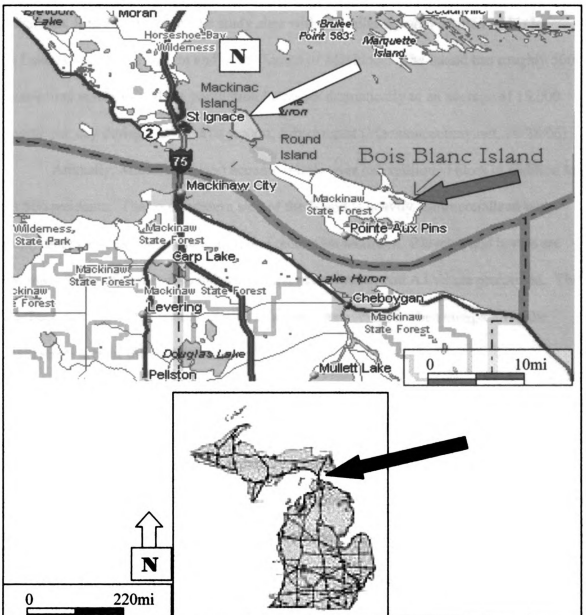

Figure 2: Geography of Mackinac and Bois Blanc Islands. The black arrow, bottom inset, shows the location of Bois Blanc and Mackinac Islands in relation to the State of Michigan. The gray arrow (center) shows the location of Bois Blanc Island in the Straits of Mackinac situated between the lower and upper peninsulas. The white arrow (upper left) shows the location of Mackinac Island northwest of Bois Blanc (MapQuest 1/29/06; consultwebs.com 10/30/06).

Mackinac Island

Mackinac Island is located at 45 51'04"N, 84 36'59"W in Mackinac County, Michigan. It is the smaller of the study sites with 4.4 miles squared in area and is located in Lake Huron, at the eastern end of the Straits of Mackinac. The Island has roughly 500 year-round residents and the population increases dramatically to an average of 15,000 people per day during peak tourist season, July-August (Mackinaccounty.net, 10/28/06).

Annually, Mackinac Island accommodates over one million visitors in addition to its 500 residents. The southwestern side of the Island is heavily commercialized with many stores, hotels, bars, restaurants, and recreation facilities. Bicycles and horses are the main mode of transportation here as cars, motorcycles, and ATVs are prohibited. The northeastern side of the island remains relatively undeveloped when compared to the main street area of the southern side.

Waste disposal and recycling are highly regulated on Mackinac Island. Recycling is mandatory for island residents. A curbside program is provided for residents and businesses. Blue curbside bins for separated recyclable materials are provided by the city and residents must purchase bags for non-recyclable waste. A drop-off site is located at the public boating facility. This site accepts plastic 1, 2, and 4, metal/aluminum, glass, and newspaper.

The local government of the City of Mackinac Island is composed of an Assessor Assessor Elect, City Alderman, Clerk, Fire Chief, Mayor, Mayor Assistant, Supervisor and Treasurer (Mackinaccount.net, 10/28/06).

Figure 3: Mackinac Island. An oblique aerial photo of Mackinac Island (hunts-upguide.com, 10/30/2006). This image illustrates the development along the southern shore. North is located at the top of the photo.

Bois Blanc Island

Bois Blanc Island is located at 45 43′57″N, 84 28′40″W in Mackinaw County, MI. The island is approximately 12 miles (19km) long, 4 miles (6.4k) wide and is in Lake Huron almost directly north of the City of Cheboygan, Cheboygan County. Bois Blanc has a total area of 49.0 miles squared and 35.3 miles squared of it is land and 13.7 miles squared of it is water (28.04%). The local government on Bois Blanc consists of a planning commission and township board made up of an assessor, clerk, deputy sheriff, supervisor, treasurer, and two trustees (Mackinaccounty.net, 10/28/06). According to the 2000 census, there were 71 year-round residents and a population density of 2.0/mi^2

($0.8km^2$). Tourism increases island population beginning in May and tapering off in November with close of rifle season. The local ferry boat company estimates three thousand visitors during July and August, however, this estimation is unsubstantiated.

The current waste management program provided by the Bois Blanc Island Township utilizes a PAYT system. Users are charged $2.00 for each bag of garbage. Metal items and appliances are separated for disposal. A private waste removal company located in the City of Cheboygan comes by ferry boat once a month to empty the dumpsters. The dumpsters are located within a fenced in area known as the Transfer Station. The Transfer Station is operated on a schedule and is not available 24/7.

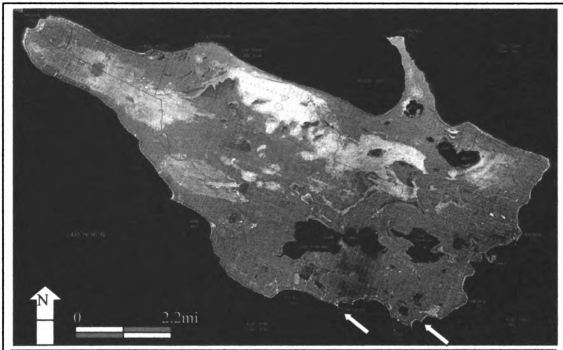

Figure 4: Bois Blanc Island. A satellite image of Bois Blanc Island (www.bois-blanc.com 10/30/06). North is located in the upper left center of the image. The right arrow indicates the relative location of the recycling drop-off site provided by a local non-profit organization. The arrow to the left indicates the location of the township dock and transfer station.

Figure 5: **The Bois Blanc Island Transfer Station**. Note the fence in the background. This image only captures half of the area. The other half includes a reefer for metal waste as well as a large horizontal cylindrical burning barrel. Also note the man in the background (upper right) for scale. (photo by J. Kidder, 2006)

Recycling is voluntary on Bois Blanc Island as the local non-profit organization, the Bois Blanc Island Stewardship Institute (BISI), recently launched a recycling drop-off site in September, 2006. Glass, plastic 1 and 2, and tin/aluminum are accepted. Data on volume and use are not available therefore; most of the data collected on Bois Blanc does not reflect this new program. The drop-off site is located roughly two miles east of the township dock on Bois Blanc. Materials collected at this site are transferred off island to Emmet County by the organization's staff. Staff distributes the materials at a drop-off center provided by Emmet County, roughly 90 minutes from Bois Blanc Island.

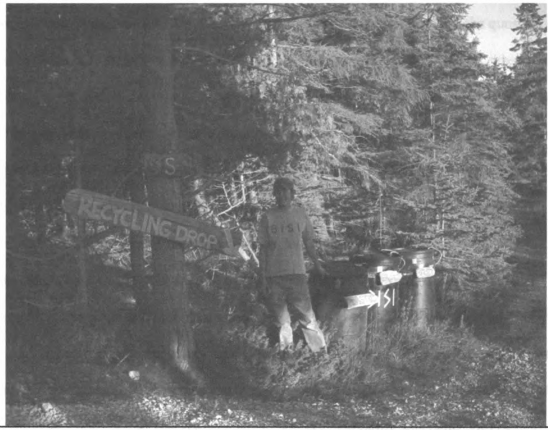

Figure 6: The Bois Blanc Island recycling drop-off. The drop-off bins (right) are made from reused 55 gallon drums (photo by N. Hole, 2006).

Data Acquisition

Two questionnaires were distributed between July and September of 2006. Participants were approached indiscriminately and based on their perceived availability, asked to complete the questionnaire. I did not approach or inquire of individuals who appeared to be busy or preoccupied. One questionnaire was tailored specifically to residents (QR) and the other toward non-residents (QNR) (see appendix A and B for actual questionnaires). The QR is consisted of nine questions. Question 1 asked participants if they are a resident of the Island and if so how long. Question 2 asked if the

participant owns property on the island, while question 3 asked how often off island travel occurs. Questions 4-4e are related to recycling participation. Within the question 4 series, participants are asked why they recycle, if they recycle when off island, what materials are recycled, how they became aware of recycling on the island, and whether or not the questionnaire increased their awareness of recycling. Questions 5-9 were intended for participants who do not recycle and asks why they do not recycle, how is garbage disposed of if not recycled, do they recycle off island, and if the questionnaire has increased their awareness of recycling at home and away. In addition, question 8 asks respondents what would help them to participate in recycling programs and provides examples such as curbside pickup, drop-off bins, incentives, more information and other.

QNR was also composed of nine questions. Questions 1 and 2 asked participants if they are residents, if they own property, and if so how long. Questions 3 and 4 looked into frequency and duration of visits by non-residents. Recycling was dealt with in questions 5-7b and asked if they recycle while on the island, at home, what is recycled, why they recycle, and how they became aware of recycling on the island. Non-recycling participation was covered in questions 8-9 and inquired about why respondents do not recycle, how waste is disposed of if not recycled, what would help them to participate (the same examples were provided as in QR) and whether or not the questionnaire has increased their awareness of recycling at home and away.

On Bois Blanc Island non-residents were surveyed during the 45 minute ferry boat ride back to the mainland. This setting provided an ideal setting to administer the questionnaire, as individuals were a captive audience for the duration of the ferry ride. Residents on Bois Blanc were more difficult to measure due to their small population. A

local unconfirmed estimate of residents is roughly 25 people, however the 2000 census reports 71 residents. Residents were commonly asked to participate while waiting for their meals at the general store. Questionnaires were administered from July-September, 2006.

Due to the massive increase in population during peak tourist season, July-September, Mackinac Island participants were surveyed mid- September, 2006. During the peak months, July and August, both residents and non-residents were too busy to be contacted. Administering the survey instrument in late September, 2006 proved to be worthwhile as the large crowds and busy commercial areas had subsided enough to where I was able to talk to respondents for more than a few seconds. Residents were surveyed while working in the commercial establishments on Main Street. Due to the decrease in visitor populations, residents were often idle and eager to participate. Non-residents were asked to complete the questionnaire in a variety of settings. The central park, main street area, commercial establishments, and line for the ferry boat were the most common places I found volunteers.

I analyzed the data collected in this study using a descriptive approach. I did not consider quantitative approaches such as regression and modeling due to the nature of the study and my small sample size. In addition, previous studies heavily relied on quantitative methods that resulted in moderately inconclusive data. The data in this investigation are ultimately an expression of awareness. Choosing to recycle originates from an awareness of behavior and perceived environmental and social benefits. Awareness of behavior is ultimately a matter of an individual's values; therefore this study does not rely on quantitative methods for data analysis. The majority of previous

studies have used statistical methods to analyze data and draw conclusions. These studies have produced various results but also with a significant amount of inconclusiveness.

It is also a goal of this study to approach the research question, do differences exist between residents and nonresidents in participation in community recycling programs, from a different angle using a new perspective and mindset. The decision to forge an alternative course of investigation is due to the understanding that the same mindset that created the problem cannot be used to solve the problem if there is any expectation of a functional solution. An awareness of self or an awareness of the role of the individual in the collective is perhaps the underlying question behind differences in recycling participation. Participating in a community recycling program is a way of demonstrating awareness of the individual's role and impact in a community. Participating in recycling programs is a manifestation of personal awareness of ones impact on the environment and society. An individual's sense of values are expressed in the collective mirror; the environment (Masser, 1999). The amount of waste generated by an individual is a tangible expression of their relationship with the environment.

Field Observations

In addition to the two questionnaires, I conducted field observations from July – September, 2006. To conduct these observations I casually lingered around the waste receptacles, drop off sites, and transfer station during daylight hours on fair weather days. On Mackinac Island I observed individuals in a public setting disposing of waste in the provided trash bins. I also observed boaters using the drop-off site at the public marina. The individuals were aware of the signage placed around the drop-off site and separated their waste accordingly. The three small signs at the drop-off area were the only visible

methods of outreach observed. Residents were not observed placing materials into curbside bins, yet the bins were seen full out on the curb. It is also worth noting that a significant amount of litter was seen on the southwestern shores of Mackinaw Island. Some of the observed litter was recyclable materials such as empty water bottles and aluminum cans.

On Bois Blanc Island I walked around the public marina and transfer station area. Methods of outreach such as signs and flyers were not existent for the PAYT system within the Transfer Station. A small sign with hours of operation exists at the gate of the Transfer Station. I had the opportunity to dispose of my own waste at the Bois Blanc Island Transfer Station where I also was able to observe other individuals. The Transfer Station attendant meets every vehicle and provides instructions on which dumpster to place bags and directs metal waste, appliances, and burnable waste to the corresponding receptacles. The attendant also counts the number of bags thrown away and collects the $2.00 per bag fee.

During July and August, 2006 no visible methods of outreach were observed to encourage and inform residents of recycling. In late September, 2006, with the launch of the recycling drop-off by the local non-profit organization, the Bois Blanc Island Stewardship Institute (BISI) placed a large hand-painted sign along the road. The sign is made of driftwood to accommodate the local character and is placed directly above the drop-off bins (see figure 6). The September/October 2006 issue of the non-profit's newsletter featured the recycling drop-off and provided information with instructions about how to participate. Staff indicated that approximately 60 newsletters had been distributed by October, 2006.

CHAPTER 4: RESULTS AND DISCUSSION

The biggest difference between study sties is that recycling on Mackinac Island is mandatory for residents, whereas on Bois Blanc any efforts to recycling are voluntary. Non-residents on both Islands are not required to participate and a drop-off site exists to encourage voluntary involvement. At total of 55 questionnaires were completed. On Mackinac Island fifteen residents and fourteen non-residents participated. On Bois-Blanc Island thirteen residents and thirteen non-residents completed questionnaires. In my hypothesis I speculated frequency, duration, outreach, and access to influence possible differences of recycling participation between residents and non-residents.

The following two tables (Table 1 and 2) illustrate data related to frequency of visit, duration of stay, and outreach. Access was also a hypothesized variable to influence possible differences of recycling participation between residents and non-residents. On Mackinac Island recycling is mandatory for residents; therefore, access was not influential due to its availability and requirements. Non-residents, however, indicated employment in a commercial establishment and housing requirements to provide access to the local mandated recycling program. One non-resident described unintentionally discovering the public drop-off site at the boating facility. Overall, non-residents, who were not employees on Mackinac Island did not recycle while on the island. Those reporting no affiliation with the mandates indicated curbside pickup, more information, a community recycling program, clearly marked drop-off bins, and incentives as approaches to access that would increase their participation.

On Bois Blanc Island, recycling is a voluntary endeavor. Residents reported curbside pickup, clearly marked drop-off bins, a community recycling program, local

mandates and requirements, and incentives as types of access desired. Two residents described taking recyclable materials off island to downstate locations to gain access to a recycling program. One non-resident reported not wanting to have to pay for recycling, while two other non-residents were completely unaware of any variation of access to recycling on Bois Blanc. In general, non-residents on Bois Blanc Island indicated curbside pickup, clearly marked drop-off bins, a community recycling program, incentives, and more information as desired means of access.

Results

Tables 1 and 2 present the information pertaining to recycling participation. The data related to frequency, duration, and access are explained in detail within the discussion section on page 37. The survey instruments are included in the Appendices.

Table 1.
Mackinac Island Recycling Participation

Mackinac Island (n = 29)	Recycles at home	Recycles Away	Awareness of recycling increased by survey
Residents (15)	15 (100 %)	13 (86%)	60% yes
Non-Residents (14)	12 (80%)	11 (73%) recycle on the island	64% yes

Table 2.
Bois Blanc Island Recycling Participation

Bois Blanc Island (n = 26)	Recycles at home	Recycles Away	Awareness increased by survey
Residents (13)	9 (69%)	9 (69%)	77% yes
Non-Residents (13)	10 (77%)	9 (69%) recycle on the island	84% yes

Discussion

The data generated from the questionnaires have resulted in a number of findings. The original hypothesis suggested the existence of differences in participation of recycling programs between residents and non-residents. As illustrated in Tables 1 and 2, differences are present between residents and non-residents on Mackinac Island surveyed in this study. All of the 15 participating residents either recycled at home or sometimes recycled at home. This is likely due to the mandatory recycling participation enforced by the local government on Mackinac Island. Access is influential, yet only because it is provided and required. Off island recycling by Mackinac Island residents did not seem to be influenced by frequency of travel as much as experience and family/friends. This may suggest the social and experiential contexts of recycling participation are more influential than outreach, yet this may also be inconclusive due to the requirements on Mackinac. The questionnaire itself did not seem to influence residents to participate both

home and away. This could likely be due again to the local mandates and consistent experience with a recycling program.

The mandated program on Mackinac Island may have been stimulated by funding from the Solid Waste Alternative Program (SWAP). The Quality of Life Bond proposal was approved in 1988 and authorized $150 million, in the form of grants and loans, to be made available to both public and private entities to help reduce the amount of solid waste disposed of in Michigan landfills (MDEQWMD, n.d.). SWAP was intended to make grants and loans available to public and private entities to develop and maintain projects that diverted or assisted in diverting solid waste from Michigan sanitary landfills and incinerators. The goals of SWAP funded projects would be to benefit the environment, provide jobs, save energy, and decrease Michigan's dependence on landfills (MDEQWMD, n.d.). During the fiscal years 1988 to 1990 Mackinac Island received a final grant expenditure totaling $1,072,000.00 for the closure of landfills, composting program and recycling program (MDEQWMD, n.d.). This funding may be the initial foundation of the current mandated program for residents on Mackinac Island.

Non-residents on Mackinac Island reported a high frequency of recycling with 11 of the total 14 reporting either recycling or sometimes recycling. This may be due, in part, to the fact that many of the non-residents work on the Island; therefore, they are required to recycle and are provided access to the program. In addition, as a result of data acquisition in mid-September, many of the respondents were mostly employees. Of the three non-residents reporting they do not recycle on the Island, one indicated a lack of concern for recycling. The remaining two respondents indicated a lack of places to recycle. Despite the presence of the public drop-off site at the public boating facility,

more drop-off sites in additional, highly frequented areas may encourage and increase participation. Twelve of the fourteen non-resident participants reported recycling at home. They also described family/friends, experience, and signs/posters/fliers as reasons behind their awareness and are considered outreach for the purposes of this study. The influence of frequency and duration were inconclusive for non-resident recycling participation. This could be a result of survey design and the variations among non-residents. For example, non-residents employed on the Island have a higher frequency of travel to the island and a longer duration of stay, yet their participation is forced due to the places of their employment being mandated to participate. The actual administration of the questionnaire did appear to influence awareness of recycling and act as a means of outreach. However, this is only the case for non-residents who did not work on Mackinac Island. On Bois Blanc, this distinction was not evident.

Overall, the main difference between residents and non-residents in participation in the community recycling program was the result of local mandates. If non-residents were associated with the regulations, through family/friends or employment, they participated in recycling on the island. Non-residents outside of the regulations participated less in the recycling program.

Bois Blanc Island is the opposite situation of Mackinac due to the lack of local regulations requiring participation in the recycling program. During the fiscal year 1989/1990 Bois Blanc received final grant expenditure from the SWAP totaling $139,274.00 toward the closure of the landfill located on Bois Blanc Island.

Bois Blanc also does not have a community recycling program, but does have a small non-governmentally supported drop-off site. However, this site was not present

during the collection of data, yet the non-profit sponsoring the drop-off has published information regarding recycling in its newsletters during the period of questionnaire administration. As a result, many participants reported an awareness of recycling due to the organization. Nine of the thirteen residents on Bois Blanc reported recycling at home. Recycling away from home, or off island, was reported by nine residents. These results are inconclusive due to only one resident indicating that recyclable materials were taken off island to be recycled. Where these respondents are taking their recyclable materials is not clear. This may be a result of poor survey design or inaccurate responses by participants. There is the possibility of more off island transfers of recyclable materials than indicated, yet this possibility is not supported by the data. Frequency of off-island travel is also inconclusive or residents may wait to transfer recyclable materials until they have collected a large amount, yet this too is not evident in the data. For residents who reported recycling on and off the island, social and experiential contexts along with the influence of the non-profit organization appear to be the most common sources of awareness. These sources of awareness are considered a form of outreach in this study, although not sponsored by the local government. Family and friends may inform participants about how and where to recycle and past experiences with recycling programs in other communities may also be forms of awareness and encouragement. Ten of the thirteen volunteers indicated the questionnaire itself to be a source of awareness.

Of the non-residents surveyed on Bois Blanc Island, ten of the thirteen indicated recycling while at home. Nine of the thirteen non-resident respondents recycled while away or while on the island. Frequency of travel did not influence how non-residents recycle on Bois Blanc, as results range from once a year to over twenty visits a year.

Duration, however, appears to be slightly more influential on non-resident participation with the majority of respondents staying on the island longer than for a weekend. The degree of influence is not evident, but it could be suggested that the longer a non-resident is present within the island community, the more familiar she becomes with alternative means of waste disposal. Non-residents staying longer than weekends may also be affected by outreach such as family/friends, experience, signs/posters/fliers (in this case provided by the non-profit organization) than visitors only staying weekends. A longer duration of presence in a community likely increases the probability of encountering outreach. Overall, data from non-residents on Bois Blanc Island were inconclusive in determining if participation in recycling occurred more at home or away. This may be due to the lack of access to a community recycling program on Bois Blanc Island during data collection.

Furthermore, the meaning of recycling at home and away for both residents and non-residents on Bois Blanc becomes ambiguous due to this lack of access. If residents of Bois Blanc Island are recycling at home, yet taking recyclable materials off island, the meaning of recycling at home and recycling away becomes obscure. The same can be said about non-residents recycling while on the island and taking their recyclable materials home to be dispersed. It can be said, however, that both residents and non-residents are aware of recycling while on Bois Blanc. Where and how they recycle cannot be determined. Therefore, the differences in recycling participation between residents and non-residents on Bois Blanc Island are ambiguous and may be result of lack of access. The differences are not so much in the actual participation but rather in where participation ultimately occurs. The voluntary situation combined with a lack of access

on Bois Blanc has created this unanticipated circumstance. Regardless of the data being generally inconclusive regarding the influence of the proposed variables affecting differences in recycling participation, both residents and non-residents on Bois Blanc are aware of recycling. The fact that awareness exists despite of access and convenience shows potential for the establishment of a community recycling program on Bois Blanc. This also may suggest a sense of responsibility for the community.

CHAPTER 5: CONCLUSION

Participating in a community recycling program whether at home or away is a sign of awareness of the environment as well as personal waste generation and disposal. Recycling can also considered a basic component of sustainability. Individuals who recycle can be thought of as making an effort to ensure the quality of life for the future. The future and quality of life in communities such as islands is particularly important, as history has illustrated the consequences of unmanaged growth and development and lack of consideration for the future in areas such as the Caribbean. The Caribbean is an example of the negative impacts incurred on the physical environment and society as a result of unmanaged growth and concern for the future.

Recycling participation by both residents and non-residents in this study was predominantly affected by access. This finding is similar to the information provided in the report by EPA (April 2006) suggesting an increase in recycling places in public spaces. The mandatory recycling program on Mackinac Island is the most influential variable due to consistent access. Much like the findings in many previous studies (Derksen and Gartrell 1993; Oskamp et al 1991, Schultz and Oskamp 1996; Fullerton and Kinnaman 1996; Foltz and Hazlett 1999; Lansana 1992; Oom De Valle et al 2005, Oskamp et al 1991; Reshovsky and Stone 1994) the presence of a recycling program strongly influences recycling participation. However, it is the lack of recycling places in public spaces that prohibits non-residents from participating, as was emphasized by the EPA (2006). Curbside recycling pickup was shown by Reschovsky and Stone (1994) to increase the probability of recycling more than unit pricing of garbage. This stems from the variable access and may account for the differences in participation between

Mackinac and Bois Blanc. On Bois Blanc Island, access created a different kind of participation variation due to the absence of a steady community recycling program. This is not to overlook the efforts of the Bois Blanc Island Stewardship Institute, the local non-profit organization, who has, since the close of this study, launched a recycling drop-off. The influence of the non-profit organization has obviously affected both residents and non-residents. Similar findings by Foltz and Hazlett (1999) concluded outreach efforts coupled with educational and publicity campaigns assisted by local education personnel, environmental organizations, or other citizen groups are typical features of program design of communities with the most successful recycling efforts.

I have come to conclude that my original expectations for the outcome of this investigation are supported by the data but not in the manner I had anticipated. Instead of finding a situation of concise differences in participation between residents and non-residents, I have uncovered a deeper and more complex situation that deserves supplementary research. I have also discovered an awareness of recycling not previously accounted for in Northern Michigan. The two islands are within Mackinac County with Cheboygan County and Emmett County as the next closest. Aside from the anomaly of Mackinac Island, Mackinac County does not offer or mandate recycling. The same is true for Cheboygan County, which does not offer recycling to its community members and is geographically closer to Bois Blanc than Mackinac County and connected by ferry service. Emmet County, however, is the nearest governmentally supported jurisdiction that offers an extensive recycling program. The benefit of this program is evident in the fact the non-profit organization on Bois Blanc travels 90 minutes to transfer recyclable

materials there. Perhaps an additional implication of this research is to help bring up to date the Counties surrounding these unique islands.

Access is the most influential variable among these two communities. The opportunity to recycle is often provided by the local government of a community, as seen on Mackinac Island. Local units of government often receive funding from the State to develop and streamline recycling programs. In turn, the State may receive portions of these funds from the Federal level. In the case of Mackinac Island, receiving over a million dollars in funding may have been the initial stimulation and foundation for the current recycling mandates. Concurrently, the differences in SWAP funding between Bois Blanc Island and Mackinac Island may be the source of differences in recycling participation between residents and non-residents. Future studies may find it necessary to investigate funding history and success on both islands.

This is similar to what Blaike (1998) is portraying with the 'Chain of Explanation.' The finite communities of Bois Blanc and Mackinac Islands are the sites of environmental change. Land is being used, or has been used, for the storage of waste generated and disposed of by humans. The recognition of these environmental changes is evident in the awareness of recycling as an alternative to landfilling solid waste. Residents and non-residents are then faced with the decision of whether to participate in the recycling program. In communities such as Mackinac the decision is influenced by economics, as it is more expensive not to recycle than it is to recycle due to local mandates. On Mackinac, the opportunity to recycle is created by the local units of government, which received funding from the State and possibly Federal levels. As a result, environmental impacts from the generation and disposal of waste are mediated by

political influences rather than the immediate decisions of individuals within the community. A similar situation may be present on Bois Blanc even though recycling is voluntary and sponsored by a non-profit organization. Here, the deficit of political influence is having a negative effect on the immediate environment.

The idea that broader systems are influencing these communities is associated with the concepts of political ecology. According to the general idea of political ecology, environmental change and ecological conditions at the local level are the product of political processes at various scales. By holding local and proximate forces responsible, such as the investigation of frequency of visit and duration, the complexity of political influence may be excluded. Therefore, the environmental change, both positive and negative, experienced in these communities is a result of human-environment interaction at various scales.

In conclusion, a better understanding of the complexity of the human-environment interaction occurring within these communities requires an investigation into the political influences. The study of geography provides the tools and theoretical foundations to address the continuum of human-environment interactions. This may yield further insights into differences in recycling participation between residents and non-residents. Where and why people are generating and disposing of waste is the fundamental issue causing environmental change. Likewise, it may be the influence of political power from the Federal level down to the local, as well as from the local to the federal. Funding and support from the top down may result in program development and policies that may increase participation of both residents and non-residents. Local efforts, like those of the Bois Blanc Island Stewardship Institute, also have impact on the

community by raising awareness and offering alternatives to what the local government provides. Raising awareness within the community may then lead to public pressure on the local unit of government which may in turn look to the state for funding opportunities and support to develop programs and policies. Regardless of which approach is taken, recycling opportunities are needed for residents and especially non-residents.

Finally, the opportunity to conduct this research has positively expanded the general knowledge of recycling participation at home and away. This knowledge, while only the tip of the iceberg, is extremely important as society continues to generate and dispose of waste. Considering the popularity and necessity of travel, the information gained here can only be helpful to both increasing the awareness of our impacts on the Earth and to future studies that may help to evolve our understanding of how we deal with waste. The generation and disposal of waste is transforming the environment and everyday landscapes. Recycling is one of society's responses to these changes. Society will continue to impact the environment and as a result be affected by the transformations. Understanding how we deal with waste will be a huge step in the revolution of human consciousness and the quality of life for the future.

Future Studies

Studies stemming from, or related to, this investigation should uphold the importance of survey design as priority. Survey design is an aspect of this study that has given way to new insights on the most efficacious method of conducting research of this character. The design is crucial to the usefulness of the data, as I had many responses that were the products of misinterpretation. The length of the survey is also important, as volunteers are leery of potentially time-consuming responses. On top of these findings,

the very nature of survey/questionnaire responses should be considered when asking volunteers about a behavior such as recycling. There is a cloud of social endorsement surrounding the idea of recycling that may shade results. No one wants to admit they do not partake in such a widely accepted and beneficial activity like recycling. As a result, the honesty assumed to be present in the questionnaire responses must also be considered. Future research may find actual observations of residents and non-residents recycling or not recycling more valuable to data generation. At the very least, recycling participation observation should be supplemented with the questionnaire.

Another aspect of the survey instrument that could be improved for future studies is the delineation of residents from non-residents. This was particularly a concern on Bois Blanc Island. Respondents were allowed to determine whether they were residents or non-residents. This may have resulted in inaccurate representation of resident responses due to the subjective nature of declaring residency. Additional studies may find a comparison of registered voters to non-voters more beneficial to data than residents vs. non-residents.

Any future research related to differences in recycling participation on Bois Blanc Island should unquestionably generate more conclusive data, as residents and non-residents will have a place to recycle on the island without having to transfer materials off island themselves. An in depth examination of the policy behind current waste management programs and the history behind these policies may also yield useful results.

Future studies should also incorporate a broader set of variables and larger sample size. Other influential variables aside from frequency, duration, access, and outreach may also affect participation on these islands. Additional variables may include family

history on the island, reasons behind coming to the islands, why individuals are recycling on these islands, environmental values, and what actions could be taken to encourage participation. Furthermore, links to community vision and planning could be made to expand this study. Many suggestions for planning initiatives can be established from the findings of this study. The need for recycling places in more obvious public spaces is apparent on Mackinac Island. On Bois Blanc, the need for a program has been identified and the efforts and awareness of the community documented. The effort and awareness put forth by both residents and non-residents may be useful in planning efforts, building community vision, and sustainability on Bois Blanc.

Along with planning implications, an expansion of the study area may also be beneficial to generating more convincing results. Including additional islands with similar characteristics and recycling program situations may advance this research. Adding additional islands with mandatory recycling could broaden and diversify findings. The same could be true for including additional islands with voluntary programs. Mackinac and Bois Blanc Islands have provided useful preliminary information about the differences in participation of recycling programs between residents and non-residents. The differences in development may be affecting the outcomes due to Mackinac being heavily populated and therefore possessing the accommodating infrastructure and ability to mandate and provide a recycling program.

APPENDICES

APPENDIX A

Resident Questionnaire

1. Are you a resident of (circle one) Mackinac, Bois Blanc Island?
   Yes, No, other_____
   If yes, how long? _____

2. Do you own property on the Island?
   Yes, No, other _____
   If yes, how long? _____

3. How often do you leave the Island?
   _____ per week, _____ per month, _____ per year

4. Do you recycle? (if No skip to question 4e)
   Yes, no, sometimes, other _____

4a. If yes, why? _____

4b. If yes, what do you recycle? (check all that apply)
- ___ paper/newspaper
- ___ aluminum
- ___ glass
- ___ plastic
- ___ Styrofoam
- ___ batteries
- ___ metal
- ___ compost
- ___ other (please describe_____)

4c. If yes, do you recycle when not on the Island?
Yes, No, sometimes, other _____

4d. If yes, how did you become aware of recycling on the Island?
- _____ family/friend
- _____ experience
- _____ mail/email
- _____ sign, flier, poster
- _____ other (please describe _____

4e. If no, why? _____

4f. If no, how is garbage disposed of? (check all that apply)

____thrown in garbage bag/can
____ trash compactor
____ burn
____ bury
____ garbage disposal
____ other (please describe _____)

4g. If no, do you recycle off Island?

Yes, No, sometimes, other _____

If yes, where? _____

4h. If no, what would help you recycle more frequently and more material? (check all that apply)

___ curbside pickup
___ clearly marked drop-off bins
___ incentives
___ more information
___ a community recycling program
___ other (please describe _____)

5. Has this survey increased your awareness of how you dispose of your garbage/waste at home and away?

Yes, No, somewhat, other _____

APPENDIX B

Non-resident Questionnaire

1. Are you a resident of (circle one) Mackinac, Bois Blanc Island?
   Yes, No, other_____

2. Do you own property on the Island?
   Yes, No, other _____
   If yes, how long? _____

3. How frequently do you visit the Island?
   _____ per week, _____ per month, _____per year, other _____

4. On average, how long do you stay on the Island?
   _____weekends
   _____ 3-7 days
   _____1-3 weeks
   _____1-3 months
   _____ + 3 months
   _____ other

5. Do you recycle at home?
   Yes, No, Sometimes, Other _____

6. Do you recycle while on the Island?
   Yes, No, sometimes, other _____

7. If you DO recycle (circle one) at home, on Island, both, why?
   _____

7a. How did you become aware of recycling on the Island? (check all that apply)
   _____family/friend
   _____experience
   _____mail/email
   _____sign, flier, poster
   _____other (please describe _____)

7b. What do you recycle on the Island? (check all that apply)
   _____ paper/newspaper
   _____ aluminum
   _____ glass
   _____ plastic
   _____ Styrofoam
   _____ batteries

_____ metal
_____compost
_____ other (please describe_____)

8. If you DO NOT, recycle (circle one) at home, on Island, both, why?

_____

8a. If you DO NOT recycle on the Island, how is garbage disposed of?

_____ toss in garbage bag/can
_____trash compactor
_____ burn
_____ bury
_____ garbage disposal
_____ other (please describe _____)

8b. If you do not recycle, what would help you to participate in a local recycling program (check all that apply)

_____ curbside pickup
_____ clearly marked drop off bins
_____ incentives [such as?]
_____ more information
_____ a community recycling program
_____ other (please describe _____)

9. Has this survey increased your awareness of how you dispose of your garbage/waste at home and away?

Yes, No, somewhat, other _____

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