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ESSAY REVIEW

AN IMPORTANT MILESTONE IN ZIMBABWEAN ORNITHOLOGY*

THE PUBLICATION OF Irwin's book, *The Birds of Zimbabwe*, the result of more than thirty years of study of Zimbabwean birds, is without doubt an important milestone in the development of ornithological knowledge in this country and probably marks the end of the main period of intensive exploration of the local fauna. The work is a direct descendant of an earlier check-list of birds from the same area (Smithers, Irwin and Paterson, 1957), but it covers a wider range of topics in a less terse style than its predecessor. Comparison of the two publications makes it possible to assess the progress in exploring the local fauna that has taken place in the twenty-two years between the appearance of the check-list and the closing date (1979) for the inclusion of information in Irwin's present book. Part of this review will be devoted to a consideration of progress assessed in this way.

In the introduction to his book, Irwin states bluntly (p. 1) that it 'should not be mistaken for a field guide' and that 'there are already a number of such works available which cater fully for the ordinary observer to distinguish one bird from another'. No specific book is suggested by Irwin but the most widely used guide to southern African birds, including those of Zimbabwe, is Roberts's *Birds of South Africa*, which has appeared in four editions, respectively first published in 1940, 1952, 1970 and 1978 and each reprinted many times, the last three editions having been edited by McLachlan and Liversidge. Since Irwin's (1981) and Roberts's books will probably be used together, it is appropriate to extend the scope of this review to include a consideration of their relationship and suitability for joint use.

Irwin's book is intended as a summary of 'all that is known about the distribution, habitat, migration or seasonal movements, and what may be termed the gross ecology of the birds of Zimbabwe . . . the particular niche that they occupy or how they partition the environment between them in relation to their nearest relatives' (p. 1). Information is also provided on breeding seasons and, where more than one subspecies of polytypic species occurs in Zimbabwe, on the characters that distinguish them. There are no descriptions of the bird species dealt with, no indications of inter-specific field identification characters, no details of calls, no systematic data on kinds of food utilized, and no systematic information on breeding behaviour other than on the host species exploited by brood parasites. For information on these topics reference must be made to other works, such as that of Roberts. Irwin's book is clearly a serious and scientifically based one, yet despite the importance of documentation in science, only very rarely does it reference the sources of the information that it summarizes. The reason for this is that publication of the book was preceded by publication of *A Bibliography of the Birds of Rhodesia 1873–1978* by the same author (Irwin, 1978). The stated purpose of this bibliography was to 'assist the serious research worker or interested layman in the retrieval of information'(p. iii). Thus Irwin's (1981) book does not really stand alone but needs to be used with at least two others. It is unfortunate that the bibliography does not cover the period from 1977 (when its compilation ended) to 1979 (the closing date for the 1981 book) but this omission is compensated for to

*M.P.S. Irwin, **The Birds of Zimbabwe** (Salisbury, Quest Publishing, 1981), xvi, 464 pp., illus., maps, Z$265.00 (special limited edition, 125 copies); Z$65.00 (special subscribers' edition, 250 copies); Z$16.00 (standard, case-bound); Z$9.00 (standard, limp).

some extent by occasional references which appear in the text of the book, usually in the introductory paragraphs to each family. Regrettably these are not anywhere collected together to form a consolidated list. Clearly the relationship between bibliography and book is something that also needs to be considered in this review.

Irwin (1981), in the introduction to his book, writes (p. 4) that the development of ornithology in Zimbabwe 'has been, and remains largely an amateur affair' and in his bibliography notes (p. vii) that 'it continues to be a preoccupation of the European, whether resident or expatriate'. It has been the combination of a widespread network of observers constituted by interested laymen, together with the magnificent collection of more than 88,000 specimens housed in the National (Natural History) Museum at Bulawayo (in the building up of which Irwin himself played a major role) that has made the present book possible. A.N.B. Masterson, in his preface to Irwin's book, writes that he considers it important that it should 'retain the dual function of building new bridgeheads on our ornithological frontiers while, at the same time, catering for the public' (p. v); but if the general public rather than the knowledgeable layman is meant, then this seems impracticable in a book of this type. Irwin himself has made very clear the restricted scope and objectives of his work and I am inclined to think that a disservice, both to him and to the public, is rendered by anything which creates the impression that the book is not a specialized one. In this respect the title, the omission of all but a very few references, the preface, and to a large extent the garnishing of the work with coloured illustrations of a limited number of species seem ambiguous, inviting, as they do, the impression that it is a popular and comprehensive regional book like the similarly titled *Birds of South Africa*. It is true that Irwin's book has been influenced by, and has much in common with, a work by Benson, Brooke, Dowsett and Irwin (1971) that is similarly titled *The Birds of Zambia*, but Roberts's book antedates both of the others and this reviewer would have preferred an expansion of their titles so as to emphasize their more limited scope. Irwin's excellent book will nourish and broaden the interests of an already knowledgeable group of established local ornithologists but, unlike Masterson, I do not believe that it can provide 'a basis for popularizing a convenient re-introduction of all our people to the value of their own environmental heritage' (p. vi). It is certainly true, as Masterson says (p. vi), that 'bird life is a most accessible entity . . . being present in both rural and urban areas'; but the critical task at this time in our history of awakening a general environmental awareness in our people, and of doing so through the study of birds (and thereby recruiting a new cohort of ornithological observers to replace the depleted network of older ones) needs to be given entirely separate and very serious consideration. It does not seem to have been Irwin's aim to address these objectives through his 1981 book and while the 'popularizing' features mentioned may increase its sales to the uninitiated, they seem unlikely to recruit any substantial new support for ornithology.

Turning to the actual bird fauna of Zimbabwe, it is worthwhile noticing first that about 1,850 species have been recorded in and around the continent of Africa taken as a whole (Brown, Urban and Newman, 1982). Table I summarizes the number of species listed in the 1957 check-list, in Irwin's (1981) book, and in the latest (1978) edition of Roberts. It can be seen that Irwin (1978) considers that 635 species of bird have been acceptably recorded from Zimbabwe, that is, slightly over 34 per cent of the total known from the continent and 75 per cent of the total considered by McLachlan and Liversidge (1978) to be acceptably recorded from

Table I

NUMBERS OF BIRD SPECIES IN ZIMBABWE AND SOUTHERN AFRICA

Region Covered	*Already Acceptably Recorded*	*May Become Acceptably Recorded*	*Source and Date*
Zimbabwe	565	19	Smithers *et al.* (1957)
Zimbabwe	635*	40*	Irwin (1981)
Southern Africa †	845	23 ‡	McLachlan and Liversidge (1978)

* Represents the increase in knowledge over a twenty-two-year period.

† Represents the approximate size of the avifauna of the southern African subcontinent.

‡ This figure is derived from a consideration of the list of 37 'doubtful species' given on pp. xxxi–xxxii of this source.

southern Africa. This figure is all the more remarkable when it is realized that Zimbabwe's land-locked position automatically excludes some ten families of sea-associated birds found along the southern African coasts as well as many species of two other such families: moreover Zimbabwe lacks not only any real arid areas (comparable to those of Somalia and Namibia) but also any extensive system of saline pans, both of these habitats having characteristic bird faunas.

Table I also indicates the surprising fact that in the twenty-two years since the publication of the check-list of Zimbabwean birds in 1957, there has been a net increase of some 70 acceptably recorded bird species (a 12 per cent increase on the earlier figure). The actual situation is that 72 such additional species have been recorded, while two of the original supposed species have been lost by being combined together as subspecies of single polytypic species. While it is true that the figures from the three sources are not precisely comparable since their authors have used slightly different criteria for acceptable records, discrepancies from this source are not large. McLachlan and Liversidge (1978) write (p. xi) that 'obviously every aviary escapee or storm-driven bird cannot be included' and have adopted as a guide-line for the future the admission of a species 'on the basis of five specimens except for birds which occur just across the border when fewer are acceptable'. Smithers *et al.* (1957) based the admission of species to their check-list firmly on the existence of museum material collected within the country, but Irwin (1981) has relaxed this somewhat; and, although he says (p. 3) that 'ideally a specimen collected within the geographical limits of Zimbabwe should be available', he believes (p.3) that 'such requirements are no longer considered absolutely necessary and records based on photographs, birds trapped for ringing or otherwise well-documented occurrences are considered sufficient for inclusion'. Where Smithers *et al.* (1957) considered that sufficient grounds existed for believing that a species did occur in Zimbabwe even though no specimen existed, they included such species as unnumbered italicized entries pending further proof. There were 17 such entries in their list. Irwin (1981) likewise includes, as unnumbered entries, placed within square brackets, some 40 species believed likely to be acceptably recorded

in Zimbabwe in the future. McLachlan and Liversidge (1981) give a list of 37 'doubtful species' some of which relate to southern African records that have definitely been rejected. The figure of 27 given in Table I is therefore derived by this reviewer by extracting only those entries that appear to him to be comparable to those given in the 'possible' category in the other two works.

In considering the advances made in Zimbabwean ornithology during the last twenty-two years, it is instructive to examine the fate of the 19 possible species given by Smithers *et al.* (1957). All but 3 have in fact been admitted by Irwin (Nos 18, 38, 63, 93, 116, 130, 171, 177, 178, 184, 198, 199, 209, 258, 373 and 580); 2, the Blue Crane (*Anthropoides paradisea*) and Burchell's Glossy Starling (*Lamprotornis australis*), remain as possibles while the last, the Pink-throated Twinspot (*Hypargos margaritatus*), has either been rejected or may perhaps have been overlooked since it is mentioned in neither Irwin (1978) nor Irwin (1981), although the stated grounds for considering that it may eventually be found in Zimbabwe would appear to be as valid now as they were in 1957.

A comparison of the entries for 1957 with those of 1981 for the first three species on the 'possible' list of Smithers *et al.* (1957) is fascinating in its revelation of the changes, not only in our knowledge but also in the actual status, in Zimbabwe in recent years, of the species concerned:

> *Egretta vinaceigula* Slaty Egret.
> 1957: This doubtful species, probably a colour phase of *M.* (sic) *ardesaica* has been taken at Kabuta, Caprivi Strip, adjacent to the . . . border and may therefore be expected in swampy areas in the west and north-west (p. 25).
> 1981: Favours the periphery of shallow expanses of receding water with a good growth of stranded aquatic vegetation, moving away when the level rises. In Botswana, where it is now relatively well-known, it is believed to undergo movements outside the breeding season, returning in mid-summer. Such a dispersal would accord with two sight records, in the same season, probably of the same bird from Rainham Dam . . . and from Lake McIlwaine . . . Another was seen on a number of occasions on the flood plain of the Zambezi River at Kazungula . . . Confusion in the past with the Black Egret *E. ardesaica* may be partly responsible for the poor documentation of this species' status, but it must remain the rarest of all the African herons (p. 34).
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> *Plegadis falcinellus* Glossy Ibis.
> 1957: Occurs in the Zambezi Valley at Kabuta, Caprivi Strip adjacent to the . . . border and undoubtedly, therefore, will in time be shown to occur in the north-western area. Seen on a dam near Salisbury and at Selukwe and Bindura (p. 29).
> 1981: On edges of pans and dams, feeding in the shallows. It appears once to have been a scarce or irregular vagrant, but in the last decades its occurrences have become increasingly frequent and it can now be seen regularly in flocks of a dozen or more, some remaining over an extended period . . . All must come from beyond our borders, probably from South Africa, although there seems no reason why it should not breed as it does so in neighbouring countries (p. 44).

Neophron percnopterus Egyptian Vulture.
1957: No material is so far available from the Territory but it may be expected to occur as it has been recorded to the south (p. 35).
1981: Was originally found on the open, highveld grasslands of South Africa . . . Once widespread, it has since declined to virtual extinction throughout the sub-continent, the last known breeding record from the Transkei more than half a century ago . . . unlikely ever to have been common in Zimbabwe . . . there are only three records in the post–1945 period which may be acceptable . . . (pp. 57–8).

These examples make it clear that if 16 of the 19 'educated guesses' about probably-occurring species made by Smithers *et al.* (1957) have now become 'acceptable records', these changes in status have not been brought about merely as the result of a relaxation of criteria for acceptability by Irwin (1981) but rather as the result of a real increase in knowledge, sometimes accompanied by changes in range and commonness of occurrence of the bird concerned.

It is surprising how much there remained to be learnt in 1957 not only about the occurrence of particular bird species (and subspecies) within Zimbabwe but also of their taxonomy. Of the total of 72 additional species that Irwin considers to have become acceptably recorded in Zimbabwe between 1957 and 1981, at least 34 breed, or probably breed, in the country and are not, therefore, mere migrants that may pass through or reach the area on more or less rare occasions. Some of the most interesting of these are the appearance and breeding or possible breeding of the Great Crested and Black-necked Grebes (*Podiceps cristatus* and *P. nigricollis*) on artificial impoundments in Matabeleland; the breeding of the Red-tailed Flufftail (*Sarothrura affinis*) in the eastern-border mountains, of the Bronze-naped Pigeon (*Columba delegorguei*) in the Makurupini Valley; of the possible breeding of the Barred Long-tailed Cuckoo (*Cercococcyx montanus*) in the Vimba forest; of the Cape Eagle Owl (*Bubo capensis*) on the eastern-border mountains and in the Matopos; of the Cliff Swallow (*Hirundo spilodera*) near Bembezi; and of the Bokmakerie (*Telophorus zeylonicus*) in the Chimanimani Mountains. Only one of the newly recorded species, the pelagic Sooty Tern (*Sterna fuscata*) arises as the result of being driven inland in numbers on several occasions, by tropical cyclones, from the Moçambique coast. One of the breeding species, the House Sparrow (*Passer domesticus*), has colonized the country from expanding populations of Palaearctic taxa introduced originally at Durban and Cape Town, appearing first in Zimbabwe in the mid–1950s and completing its now widespread but patchy occupation in association with man, within a decade. Four of the newly listed species have appeared as the result of reassessment of the taxonomic status of subspecies or groups of subspecies that were grouped together, in 1957, as single species. The African Hobby (*Falco cuvieri*) which breeds in Zimbabwe, has been separated, at the species level, from the migrant European Hobby (*Falco subbuteo*); the African Cuckoo (*Cucularis gularis*), which also breeds in Zimbabwe, has been separated from the migrant European Cuckoo (*C. canorus*); the Acacia Grey Tit (*Parus afer*) and the Miombo Grey Tit (*P. griseiventris*), both of which breed in Zimbabwe, have been recognized as distinct species; the Chirinda Apalis (*Apalis chirindensis*) has been separated from the Black-headed Apalis (*A. melanocephala*) as a distinct species that also certainly breeds in Zimbabwe. In contrast, two species-rank taxa from the 1957 list have been

removed from the 1981 list as the result of being combined with their nearest relatives. These are Delagorgue's Green Pigeon which has now been grouped as a subspecies of the African Green Pigeon (*Treron australis*); and the Grey-backed Glass-eye, now combined with the Green-backed Glass-eye under the English name of Bleating Bush Warbler (*Camaroptera brachyura*).

A new Zimbabwean species record arises from the simultaneous recognition of the African Marsh Harrier (*Circus ranivorus*), which breeds locally, as a species distinct from the European Marsh Harrier (*C. aeruginosus*) and the acceptance of some local sight records of the latter from Zimbabwe, although McLachlan and Liversidge (1978) regard these as doubtful.

A number of taxa formerly regarded as subspecies of polytypic species have become elevated to full species rank but, because the species to which they were originally assigned have not been recorded in Zimbabwe, these changes do not affect the total number in the list of records. These include the Augur Buzzard (*Buteo augur*) formerly considered a subspecies of the South African Jackal Buzzard (*B. rufofuscus*); the Black-breasted Snake Eagle (*Circaetus pectoralis*) formerly considered a subspecies of the European Short-toed Eagle (*Circaetus gallicus*) (neither of which changes are accepted by Brown, Urban and Newman, 1982); and the Miombo Double-collared Sunbird (*Nectarinia manoensis*) which has often been listed, in the recent past, as a subspecies of the South African Lesser Double-collared Sunbird (*N. chalybea*). This last taxon has had a very chequered history in the popular southern African ornithological literature. This history is worth outlining because it illustrates some of the difficulties faced by the amateur in using this literature. For a full appreciation of the situation, however, Clancey and Irwin's (1978) paper must be consulted. Roberts (1940) originally gave it full species rank (No. 759) as the Rhodesian Double-collared Sunbird (*N. brachiatus*); subsequently, McLachlan and Liversidge (1952) listed *brachiatus* as a subspecies of *N. chalybea* (No. 760(b)), as did Smithers *et al.* (1957). Later this population was referred to as *N. chalybea manoensis* (McLachlan and Liversidge, 1970, 1978; Mackworth-Praed and Grant, 1963; Benson *et al.*, 1971). Now, following a review by Clancey and Irwin (1978), it has again been accorded full species rank. Only the acquisition of much more detailed knowledge of the various populations will allow a full assessment of the extent to which the new taxonomic arrangement reflects biological reality. Records formerly attributed to the Black-winged Plover (*Stephanibyx melanopterus*) are now attributed to the Lesser Black-winged Plover (*Vanellus lugubris*). Only one of the new species added to the Zimbabwean list, the Lemon-breasted Canary (*Serinus citrinipectus*) has been described since the publication (1960) of the check list. A second such recently described species, the somewhat controversial Brown Firefinch Indigobird (*Vidua incognita*), is listed as possible in Zimbabwe.

Enough detail has been given to show that while the period 1957–81 has not been marked by the recognition of many previously undescribed species in southern Africa, the new features of Irwin's book reflect large advances in knowledge of the extent of the Zimbabwean fauna over this period and not simply changing views about the taxonomic rank to be accorded to local populations, though these too are taken into account. Changes in knowledge of the extent of the Zimbabwean fauna are not likely to be so marked in the future, but that they will continue to occur is testified by the recent recording, on the basis of a collected specimen, of the Short-tailed Pipit (*Anthus brachyura*) at Beit Bridge (Donnelly,

1982), a species that was not even included as a possible record by Irwin (1981). Neverthless the main advances in the future will be in increased knowledge of the biology (in its widest possible sense) of species already recorded and in the detection and recording of the changes in their status that will inevitably accompany the development of Zimbabwe. For these tasks Irwin's (1981) book, his (1978) bibliography and one of the available field guides (here assumed, on the grounds of preponderance of use, to be McLachlan and Liversidge, 1978) must form the background. This being so, how do these books relate to one another and how conveniently can they be used together for information retrieval?

Scientific biological classifications, through their hierarchichal arrangement of successively more inclusive taxa (e.g. species, genera and families), are intended to facilitate information retrieval by grouping together, in more inclusive taxa, those subordinate taxa that are considered to be related in an evolutionary sense. Unfortunately, since the evolutionary relationships of even the best known groups of animals have not, as yet, been adequately investigated, changes in classifications intended to improve them are likely to continue to appear for a long time to come. The taxa that are classified need individual labels and are therefore named according to a set of rules laid down in the International Code of Zoological Nomenclature (1964). These rules are intended to promote the stability and universality of the names of animal taxa and also to ensure that each such name is distinct and unique. However, we live in a period of continuing nomenclatorial change: firstly because the provisions of the Code have been widely applied only in relatively recent times, so that much research into the validity of currently applied names remains to be done; and secondly because the Code is designed specifically so as not to impede freedom of taxonomic (i.e., classificatory) judgement and action, and some kinds of classificatory changes automatically affect the combinations formed by generic and specific epithets in the names of species. At this time it is still very unlikely that two publications on southern African birds will employ identical nomenclature and classification. Indeed such closely related works as Irwin's (1978) bibliography and his (1981) book differ as the result of changes in both the generic and specific epithets of 2 species, of changes in the generic epithets of 14 species and of changes in the specific epithets of 8 species. Even the sequential numbers assigned to the species listed as acceptably recorded in the two works do not correspond over considerable sections. The differences between McLachlan and Liversidge (1978) and Irwin's works are far greater: the families recognized are not identical; a number of genera are actually placed in different families (e.g. *Nicator* in LANIIDAE (Shrikes) instead of PYCNOTIDAE (Bulbuls); *Pinarornis* in TIMALIDAE (Babblers) instead of TURDIDAE (Thrushes and Robins); *Parisoma, Hyliota, Chloropeta, Seicercus* and *Stenostira* in MUSCICAPIDAE (Flycatchers) instead of SYLVIIDAE (Warblers)); scientific names and common names may be very different and, of course, there is no correspondence between the serial numbers. With a little experience an interested layman quickly learns to bridge such difficulties but much time can be saved in establishing identities, if as has been done in Irwin's (1978) bibliography, a cross-reference (usually to the serial number where one exists) is given to treatments of the same taxon in other standard works. It is much to be regretted that this practice has not been followed in Irwin (1981).

The successive editions of Roberts's work have not kept fully abreast with

current taxonomic practice and nomenclature, but since Clancey (1980) has edited a new check-list of southern African birds, the scientific names of which have been adopted for use in *Ostrich* (the Journal of the South African Ornithological Society), and since this list also forms the basis of Irwin's (1981) book, it is to be expected that the next revision of Roberts's work will show a much greater correspondence with Irwin's (1981) one. The coloured figures in McLachlan and Liversidge (1978) cover almost all of the species dealt with by Irwin although the relevant Zimbabwean subspecies are not always the ones illustrated. Only four of the species acceptably recorded for Zimbabwe are not illustrated in this latest edition of Roberts. These are the Lesser Cuckoo (*Cuculus poliocephalus*), the Red-rumped Swallow (*Hirundo daurica*), the Golden Pipit (*Tmetothylacus tenellus*) and the Miombo Sunbird (*Nectarinia manoensis*). Useful figures of the first and third are, however, given in Irwin (1981). The Miombo Sunbird was figured (as No. 759) in the three earlier editions of Roberts but has been eliminated from the re-arranged and revised plates of the fourth edition. If useful additions to biological knowledge of the Miombo, Lesser and Greater Double-collared Sunbirds (*N. manoensis, N. chalybea* and *N. afer*) are to be made by laymen, then widely available figures showing the differences between them, as does the plate in Clancey and Irwin (1978) for males, together with notes on field marks, are essential. This of course applies to other difficult species which, because of identification problems, are neglected by field-workers.

Irwin's (1981) book begins with a brief but useful introduction setting out its objectives, constraints and background and describing the land surface and climate of Zimbabwe and its vegetation as seen from an ornithological point of view. The kinds of vegetation recognized are illustrated by 22 black and white photographs by Peter Steyn but unfortunately these have not reproduced well, those of the Inyanga Downs, Pungwe Gorge and Chimanimani Mountains being particularly poorly printed and probably quite useless for conveying to anyone who has not visited these places the nature of the vegetation existing there. The book closes with a gazeteer of localities and is furnished with indices to scientific and English names. There are 25 coloured plates, including the frontispiece, and these fall into two categories: 13 are full-plate paintings of favourite single species in their natural habitats (Taita Falcons, Helmeted Guinea Fowl, Rock Pratincole, Narina Trogon, Red-billed Wood Hoopoe, Silvery-cheeked Hornbill, African Pitta, Heuglin's Robin, Boulder Chat, Paradise Flycatcher, Scarlet-chested Sunbird, Red-headed Weaver and Red Bishop), while 12 are composite plates covering a number of species in more conventional field-guide style. The original paintings by Peter Fogarty were clearly very fine indeed but some have unfortunately suffered considerably in the process of reproduction. A number show a tendency to an overall dull bluishness which detracts badly from the rich brown colourations in many representations. This defect is variable in different copies of the book, some examples of some plates being far worse than others. In many cases, especially in the composite plates, the paintings have been reproduced on slightly too large a scale so that the tail-ends and beak-tips of the birds represented have been lost at the page edges. Almost all the bird species shown are figured in Roberts and on strictly utilitarian grounds most could therefore have been dispensed with but, as already noted, there are useful figures of the Lesser Cuckoo and Golden Pipit as well as figures of the females of the Bronze-naped Pigeon and the Lesser Seedcracker (*Pyrenestes minor*) and of two subspecies of Green Pigeon which

complement those in Roberts. The figures of the natural hybrids between species of francolin are of extraordinary interest and the plate illustrating immature plummages in certain species is very useful; both convey information not readily available in field-guides.

The distribution maps are clear and serve to illustrate some of the kinds of pattern seen in Zimbabwean birds as well as areas of sympatry, allopatry or parapatry in related species, these being of particular interest in the cases of the pairs of hybridizing francolin species (*Fracolinus natalensis* and *F. adspersus; F. swainsonii* and *F. afer*). Perhaps in some cases the maps could have been more imaginatively used to illustrate the correlation between actual records and key factors that may be hypothesized as determining distributions, for instance by including selected contours or the boundaries of particular vegetation types. Two kinds of time-related distribution maps might have been of interest: one in which the symbols are varied to indicate the season of the record and one in which they are varied to show the historical period of the record, for instance pre-1920, 1920–45, and post-1945.

The real merit of the book lies, of course, in the 403 pages that constitute the Systematic List. This is well produced with only very few typographical or other errors. (The common name of *Haliaeetus vocifer* appears as the 'African Eagle Fish'.) The authors and dates of publication of specific epithets are much more accurately cited than in Roberts. In a few instances they have been enclosed in brackets when the specific epithet seems not to have been originally published in a different combination, which such enclosure is intended to show (e.g. *Anas hottentota*). There is also a curious and slightly confusing use of brackets to enclose only the date of publication of subspecific epithets that were not originally published in different combinations: it would surely have been better merely to have separated the author's name from the unbracketed date by a comma as recommended in the Code. In certain places, especially in the introduction, there is a tendency to make use of the words 'race' and 'form', the former apparently as an alternative to subspecies and the latter as a term covering taxa of both specific and infraspecific rank. Neither has any status in the Code and both may have quite different connotations in the literature of other animal groups. The dropping of both of these imprecise terms is long overdue in serious ornithological writing.

In summarizing all that is currently known in relation to the birds of Zimbabwe in the areas of his chosen topics, Irwin has, in effect, set out or developed innumerable current hypotheses about the taxonomic status, distribution, habitat preferences (seen in terms of altitude and vegetation), long-distance migrations, short-distance seasonal movements, niche limits and breeding seasons of populations of Zimbabwean birds. These hypotheses are now available for testing, by attempted falsification, through surveys or experiments according to the usual procedures for advancing and refining scientific knowledge. The book is a goldmine for any Zimbabwean interested in birds and who is seeking a research project at any level of complexity. To give a very few examples:

> Ringing returns suggest that Southern African populations of the White-breasted Cormorant (*Phalacrocorax carbo*) of inland waters may have little or no direct contact with the populations of the species (not even recognized as a different subspecies) breeding along the coasts. In what

physiological, behavioural and ecological adaptations do these populations differ? Is it possible that we are dealing with unrecognized sibling species?

Why has the Reed Cormorant (*Phalacrocorax africanus*) responded more dramatically, by increase in population, to the creation of Lake Kariba and other dams than has the White-breasted Cormorant, other than on the 'highly eutrophic Lake McIlwaine', where the reverse has been the case? What effect have recent measures to reduce nutrient flow into Lake McIlwaine had on this situation?

Can it really be true that Darters (*Anhinga melanogaster*), while feeding in the same areas and on the same fish species as the Reed Cormorant (*Phalacrocorax africanus*) avoid competition through the employment of different feeding and capture techniques? If so, what predator–prey population characteristics are involved?

What factors determine the fact that the Black-bellied Sunbird (*Nectarina shelleyi*) occurs in *Brachystegia* woodland in Zambia but not in Zimbabwe?

Why do the Yellow-bellied Sunbird (*N. venusta*) and the White-bellied Sunbird (*N. talatala*) appear to co-exist without obvious ecological differences in the middle Zambezi Valley but remain segregated elsewhere? If this can be confirmed, is the ability to co-exist in the Zambezi Valley causally related to the unusually diminutive bill-size of the Yellow-bellied Sunbirds in this area?

The approximately thirty-year seeding ('masting') cycle of the Bindura Bamboo (*Oxytenanthera abyssinica*) is commonly thought to be a device to avoid seed-predation, yet the Pied Mannikin (*Spermestes fringilloides*) has evidently become very closely associated with this plant, whose seeds are believed to be its preferred food. What effect does the availability, or otherwise, of bamboo seed have on the population dynamics and behaviour of the Mannikin?

Enough detail has been given to illustrate the extraordinary interest of this book for anyone with an enquiring mind and it is appropriate to turn finally to the importance of the book as a background to the urgent task of safeguarding Zimbabwe's fascinating bird fauna. Irwin deals with a considerable number of cases where the population levels of certain water birds have been favourably affected by the creation of artificial impoundments (e.g., certain cormorants and herons). He makes it clear in his introduction (p. 12), however, that there are widespread negative effects: 'great inroads have been made in the wooded savannahs in this century . . . large areas . . . have been cleared of their original woody vegetation or severely degraded . . . Overstocking has denuded large areas of grass cover . . . Clearly if this book has a successor, there will be a very different story to tell'. Despite this, the Systematic List gives surprisingly little indication of the effects of these negative influences and the question arises as to whether the current methods, recording practices and indeed the overall orientation of Zimbabwean ornithologists are really suitable to monitor and detect such changes. It is always exciting to record the addition of a new, previously unrecorded species to an area list, but much less exciting, and indeed much more difficult, to establish

that one is absent from a habitat in which it was previously known to occur. This is where a system of regular biological recording involving distribution maps with period-specific record symbols might help to provide an early warning. No species of bird on the continent of Africa as a whole is yet known to have become extinct but, as the quotation on the Egyptian Vulture given earlier indicates, the time is not far off when this will occur. The next period of ornithology must rapidly develop recording methods that will signal the decline of what may, at present, seem to be ubiquitous birds in Zimbabwe.

In conclusion, Irwin's book, despite its restricted objectives, is an exceptionally valuable publication which anyone interested in birds in this country needs ready access to in order to supplement information in existing field guides. Its standard hard cover and soft cover editions are reasonably priced and, in view of the wealth of information and ideas that it contains, it is well worth purchasing.

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