ORNITHOLOGICAL LITERATURE

THE EMERGENCE OF ORNITHOLOGY AS A SCIENTIFIC DISCIPLINE: 1760–1850. By Paul Lawrence Farber. D. Reidel Publ. Co., Dordrecht, Holland; Boston, Massachusetts; and London, England, 1982:191 pp., 4 black-and-white plates. \$39.50.—For some years Dr. Paul Lawrence Farber has been interested in the transformation of the earlier undisciplined study of "natural history" into a set of separate scientific specialities during the late eighteenth and early nineteenth centuries. This was a time of profound change in western Europe brought about by the French revolution of 1789 and the later, less abrupt but equally pervasive British industrial revolution, which made so many changes in all aspects of agricultural, commercial, and social conditions in western Europe.

In this book Farber presents a case study of the emergence of one of these disciplines—ornithology—chosen because it was among the first and most important areas of natural history to emerge as a serious and well-organized subject. The year 1760, at which this study opens, saw the publication of Mathurin Jacques Brisson's massive six-volume compendium on all that was then known about birds, "Ornithologie, ou Methode contenant la division des oiseaux en ordres, sections, genres, especes and leurs varietes." Brisson felt that all the earlier writings on birds were either too inaccurate, or too limited in scope, and generally out of date in their factual presentations, and that the time had come for a new and more comprehensive and reliable compilation. His approach to ornithology was from the perspective of a museum curator, a collection catalogue, much expanded and completed to be sure, but still a rather prosaic description of the external appearance of each of the hundreds of species treated, with emphasis on previously unknown "new" species, and with a new and greatly broadened classification.

Brisson's effort was soon eclipsed by a much larger work by Georges Louis Leclerc, compte de Buffon, whose "Histoire Naturelle . . . avec la description du Cabinet du Roi," beginning in 1749 and closing in 1804, had a total of 44 volumes. Buffon's approach to natural history was much broader (not limited just to birds), and included all available information on the habits, geographic ranges, etc., of each species treated, as well as descriptions of their plumage and general appearance. It exerted a wider influence on the intellectual classes of the time than did Brisson's less readable, less "literary" tomes. Furthermore, it caused many of his well-placed and influential readers to encourage societies and even governments to support and to send out numerous exploring and collecting expeditions to little known regions. These eventually expanded the collections of specimens and of pertinent observations about the fauna of the world. The appearance of Brisson's and Buffon's works was fortunately timed as natural history became quite fashionable at that time, and the knowledge of the birds of the world grew very rapidly as a result.

Farber gives many details of this dramatic increase in ornithological knowledge. He documents the growth of research collections, both in size and number, and the multiplication of scholarly books and journals. With these great additions there resulted first a new and improved classification, and then a diverse series of studies of the habits and distribution of birds. These developments gave ornithology a scientific and well-organized status as a serious discipline.

As an historian of science and of society, Farber examines this one science in terms of its institutional developments, its links with colonization in a period of much "empire building," and its place with other intellectual interests in a rapidly changing society. It is a book designed more for the historians of science, as a part of culture, than for ornithologists alone.—Herbert Friedmann.

THE THICK-BILLED MURRES OF PRINCE LEOPOLD ISLAND. By Anthony J. Gaston and David N. Nettleship, Canadian Wildlife Service Monograph Series, No. 6, Ottawa, 1981;349 pp., 19 color plates, 127 numbered text figs., 87 tables, 28 appendices. \$32.00 in Canada, \$37.50 in other countries (can be obtained from Printing and Publishing, Supply and Services Canada, Ottawa, Ontario K1A 0S9, Canada. Catalogue No. CW 65-7/6E).—This is an essential book for all those concerned with the ecology of seabirds. The wealth of material it condenses is remarkable and, in addition, the monograph also deals with broad considerations. As stated in the title, this is an in-depth study of a single species at a remote Canadian high-arctic location. The biological and physical environments are described in Chapter I while attendance and behavior at the colony, timing and success of reproduction, development of young, adult weight, food, and feeding areas occupy the succeeding chapters. Each chapter ends with a concise and factual summary. The book ends in a 24-page general discussion (conclusions and general considerations; Chapter VI). The empirical approach employed in the study generated truly impressive quantities of immensely detailed information that have been processed and analyzed in a thorough manner. Despite the density of the material presented, the text is easy reading and abundantly cross-referenced to increase usefulness.

Although being very favorably impressed by this book, I nevertheless have some reservations concerning it. I have the impression that the stated objective "to gather as much information as possible on the reproductive biology and ecological requirements" (p. 21) of the Thick-billed Murre (*Uria lomvia*) was so broad as to really stifle the perspective of the study. Had more specific questions been asked at the outset of the program, it would have readily become evident that many of the problems could not profitably be studied at Prince Leopold, in view of the very demanding field conditions imposed by the peculiar physical features of the island. The central questions of colony structure, site tenacity, success and failure of known individuals in successive years, sexual differences or similarities in attendance or in sharing the parental duties are all impossible to tackle without marked individuals, but the authors relied on only a handful of such birds. Not surprisingly, the interpretation of the scanty data on these themes lacks the vigor one might have expected in a monograph of this importance.

Some of the information is presented in such detailed fashion as to be of questionable use; this includes numerous "typical" excerpts from note-books. For instance, Figs. 37 and 38 show landing spots used by prospecting birds in one of the study plots in July, 1977. The 28 appendices (64 pages!) contain most of the raw figures upon which the study is based, including weather data, daily counts in various plots, growth data of individual chicks, etc. Undoubtedly, a safe repository must exist in the Canadian government where such information could have simply been stored for future reference.

Finally, the most serious criticism I have about this book concerns Chapter VI. The questions of broad feeding relations among seabird communities of the Arctic, the causes of coloniality, and the factors controlling population size are clearly matters of deep and exciting intellectual interest and importance. However, the authors themselves confess that the key to understanding these fundamental relations lies in the distribution and abundance of the marine food upon which these birds depend. Since this factor was not investigated, the entire chapter becomes rather disconnected from the major themes of the study, although it is lucidly written.

The book is splendidly produced with color photographs for the front and back covers, along with the 19 color plates. It is attractively laid out on heavy glossy paper and, considering the price, is a real bargain as books go these days. The discussion of many challenging aspects of seabird ecology which the monograph presents (including Chapter VI, despite my above comments) is well worth the money. The development of field study techniques with careful assessment of their limitations will also remain a useful, in fact essential, contribution

for years to come. Such techniques have since been applied to other colonies of the Canadian Arctic and numerous results from these comparative investigations have now appeared in print or are forthcoming.

Gaston and Nettleship have made with this book a monumental contribution to the literature on seabirds and I feel a deep sense of respect and admiration at such a massive undertaking and at such a detailed and thorough outcome. It will remain a classic contribution despite the limitations which I have pointed out.—JEAN BÉDARD.

The Birds of Borneo. By Bertram E. Smythies. Illustrated by Commander A. M. Hughes. Third edition revised by the Earl of Cranbrook. The Sabah Society with the Malayan Nature Society, 1981:xiii + 473 pp., 46 color plates, 4 black-and-white plates, 2 line drawings, 1 map. Order from the Sabah Society, P.O. Box 547, Kota Kinabalu, Sabah, East Malaysia. MR\$55. plus MR\$6. postage and handling.—For years Smythies' classic has been out of print and unavailable to all except those who could afford the time and expense to track down a copy. The demand from an increasing number of bird-watchers in Borneo and the desire on the part of conservationists to spread information on wildlife in Southeast Asia prompted Malaysia's major natural history groups, the Sabah Society and the Malayan Nature Society, to organize the publication of a third edition. Their efforts have paid off well. The new book fills a tremendous gap and ends years of frustration for bird enthusiasts and scientists alike.

Five thousand copies of this revised edition have been printed under the supervision of the Earl of Cranbrook, who as a contributor to the original work (a chapter on cave swiftlets [Collocalia]) and a long-time Bornean mammalogist and ornithologist was a logical choice as editor. For the Malaysian societies, which have limited memberships, the cost of publication of this number of books was no small problem. The success of their venture has stemmed largely from the support given by the Sabah Foundation, a quasi-governmental organization which uses money earned from an extensive logging concession to fund educational and other projects in Sabah. The Foundation agreed to buy 2500 copies at list price for use in the schools and libraries of Sabah, thereby helping to cover printing costs while contributing to a major goal of the republication—the increase of interest and awareness of local people in wildlife. The new edition must be viewed in light of this need for a bird-watching and educational guide as well as the desire of its sponsors to produce the book quickly and cheaply. Otherwise, readers who are familiar with the "book collector" quality of the earlier editions and those who expect a sophisticated, modern handbook will be somewhat disappointed.

The original book has been changed considerably by the deletion of the introductory chapters and photographs. As Cranbrook points out in the introduction to the new edition, this is largely an economy measure. Much of the supplementary information was either superfluous to a bird guide (certainly the photographs and J. D. Freeman's anthropological chapters) or outdated (Cranbrook's own chapter). Such cuts really only detract from the historical value of the book, but this is still a sad concession to modern realities.

In its new format, the third edition consists almost entirely of species accounts. Having been reproduced by a money-saving facsimile process, these appear essentially as they did in the 1968 edition. New information on selected species has been added in smaller type by Cranbrook at the end of their accounts. This method has the advantage of retaining some of the flavor of Smythies' original work, but unfortunately it also retains some of the major short-comings, not the least of which are the bird descriptions. A classic, but by no means unique, example of one of these poorer descriptions is that of the Pied Imperial Pigeon

(Ducula bicolor): "Unmistakable. Iris black, bill and feet brown." Smythies' keys to bird identification are another problem. Several are incomplete or require greater knowledge of the families than much of the public has. Others are simply irritating. For example, in the description of the Pygmy Blue Flycatcher (Muscicapella hodgsoni), the reader is sent to the key for details only to find that this species is not included there. To birders used to modern standards in bird books, this lack in information can be infuriating. Surely a more thorough revision would have addressed these weaknesses.

However, the supplementary information provided by Cranbrook helps in bringing up to date the knowledge of other aspects of Bornean bird natural history. He has drawn heavily from published and personal notes of bird watchers in Brunei and Sabah, thus strengthening the shorebird and migrant accounts and increasing the geographic scope of the book. (Previously, *The Birds of Borneo* dealt almost exclusively with the birds of Sarawak and Mt. Kinabalu, with only spotty references to other localities.) Data have been included from a few recent scientific expeditions as well, such as the Royal Geographical Society expedition to Mt. Mulu in Sarawak. Records gathered with the use of mist-nets and tape recorders on these expeditions have helped to correct misconceptions about the status of several birds. The endemic Bornean Wren Babbler (*Ptilocichla leucogrammica*) and the Chestnut-capped Thrush (*Zoothera interpres*) are examples of species formerly thought to be rare, but now known only to be secretive.

Unfortunately, the amount of information accumulated over the past 10–20 years and available to Cranbrook is really quite scanty, in spite of enormous improvements in transportation and habitat accessibility brought about by the logging boom. For an avifauna so circumscribed as Borneo's, it is surprising that so little has been learned. Breeding and nesting are particularly poorly understood. The new edition of *The Birds of Borneo* is still replete with, "Nest and Eggs. Nothing recorded from Borneo." or simply, "Unknown," even for common species. Some gaps are now being filled in Sabah, where the most active research is taking place; but Kalimantan, the Indonesian part and by far the largest section of Borneo, remains unstudied. Almost no new information has come from there since colonial days, and this dearth of knowledge is reflected in the third edition. Without extensive field work and museum and library digging (in Dutch), nothing more can be said about its birds.

These problems aside, the new *The Birds of Borneo* fulfills its chief function as a reference on Bornean birds. Cranbrook has enhanced its effectiveness by bringing Smythies' old common names into accord with the simpler, modern forms proposed in King, Woodcock, and Dickinson, *A Field Guide to the Birds of South-East Asia*, a widely used book, although not technically covering Borneo. Gone are the likes of the Brown Quaker Babbler and the Crestless White-throated Bulbul, now replaced with the Brown Fulvetta and Yellow-bellied Bulbul. In addition, Commander Hughes' excellent plates, which were a milestone 20 years ago for their quality and completeness, have been included in their entirety and are fairly well reproduced. Combined, these two books make possible the identification of essentially all the Bornean birds. Without a copy of Smythies, this just is not possible.—FREDERICK H. SHELDON.

A DISTRIBUTIONAL CHECKLIST OF THE BIRDS OF MICHIGAN. By Robert B. Payne. Miscellaneous Publications, Museum of Zoology, University of Michigan, No. 154, 1983:71 pp., 1 map. \$9.50.—This work summarizes the occurrence, breeding status, migration, and distribution of the birds of Michigan. Of 370 species known from the state, 232 have bred under natural conditions, one (Passenger Pigeon) is extinct, some have not been seen recently, and others are recent additions to the state list. The list includes 26 "hypotheticals" whose

occurrence is not considered rigorously documented by specimens or photographs. There are also a few "rejected" species of doubtful occurrence. This compilation of records by many observers and museum records will aid field workers to identify birds, and will serve as a basis for studying long-term changes in the avifauna. It includes a map of the counties in the state and an index to scientific and common names.—R.J.R.

BRITISH BIRDS. By Ian Prestt. B. T. Batsford Ltd., London and North Pomfret, Vermont, 1982:224 pp., 69 line drawings by Rob Hume. \$17.95.—This book was written by the Director of the Royal Society for the Protection of Birds to promote the widest possible interest in British wild birds. Prestt seeks to capture people's normal curiosity about birds by offering more information about each species than a field guide does while relating them in a simple way to one another and to their environment.

The text is organized by five major habitat groups and covers most regularly occurring British species (slightly over 200) at a level reminiscent of that found in Richard H. Pough's Audubon Bird Guides. The author weaves an impressive amount of information about avian biology and ecological principles around a solid base of behavioral and identification data pertaining to most of the species he treats. Thus, under "Woodland" we learn for the Lesser Spotted Woodpecker (Dendrocopos minor) that it "... is finch-size, secretive and spends much time feeding near the tops of trees.... Its light weight and small size enable it to cling to the smaller, higher branches on which it will search methodically for insects, fluttering to a neighboring branch as it finishes the one it is on. It is frequently in the same woods as the Great Spotted Woodpecker (Dendrocopos major), but the separation in feeding sites in particular excludes competition..." The book's organization by habitat, which might be disconcerting in a field guide, is effective in conveying the ecological relationships among the species covered.

If I was disappointed at all, it was in the fact that some species, mostly ones rare in Britain, were discussed only superficially. The rather succinct and unillustrated field descriptions often seemed almost superfluous in the face of the author's recommendation that readers supplement the book with a popular field guide. In the main, however, Prestt achieved his goals well. His unimposing style would appeal even to an older child. Rob Hume's delightful line drawings enhance the book's charm tremendously.

British Birds is pleasant, easy reading, and an important complement to all-too-pithy modern field guides. An American unfamiliar with European avifauna who might be planning a birding jaunt to Britain would find it particularly helpful for showing in some detail the favored habitat and normal behavior of most species to be expected. It also would be an excellent model for anyone contemplating writing a regional book intended to expand the public's awareness of birds and how they fit into the environment.— P. WILLIAM SMITH.

FALKLAND ISLANDS BIRDS. By Robin W. Woods, photographs by Cindy Buxton, Annie Price, and Robin W. Woods. An Anglia 'Survival' Book, Anthony Nelson, P.O. Box 9, Oswestry, Shropshire SY11 1BY, England, 1982:79 numbered pp., 32 unnumbered pages with 58 color and 5 black and white photographs, 1 text figure, 1 table, map end papers, index. £8.50 (approximately US\$12.75).—This attractive, sturdily bound, pocket-sized (5½" × 8") book presents non-technical species accounts for 67 birds common in the Falkland Islands and photographs, most of them outstandingly beautiful, of 53 species. There is a

useful checklist of the 152 species recorded for the Falklands, the status of each indicated by code letters.

A brief introduction describes the geography, climate, and vegetation of the islands and discusses origins and elements of the avifauna and its distribution. This is followed by a "habitat table" for the 67 common species. While not a comprehensive field guide, this work is a useful introduction to the bird life of the Falkland Islands and serves as an excellent popular guide to the common species there. A section on "Further reading" will help the enthusiast find more detailed information.—Philip S. Humphrey.

Golden Eagle Years. By Mike Tomkies. William Heinemann, London. Dist. by David & Charles, Inc., North Pomfret, Vermont, 1982:202 pp., 22 color plates, 42 black and white photos, appendices. \$24.95.—The book is basically a journal written during the time Mr. Tomkies was living in the wilderness of the western Scottish highlands making a photographic record of the breeding cycle of eagles with observations and comments on their annual cycle. While this book has limited appeal to me—it is not done with any scientific rigor—it will obviously excite some. The writing style is good, his syntax interesting, but I got bored with the chronicled detail of his sitting in blinds, stumbling down brushy mountain slopes, and notations of minor and sundry sightings of eagles flying here and there. In all, there are 17 chapters, the first four of which describe the author's various wanderings around the hills looking for nests and breeding pairs. Chapter titles indicate fairly well the content of the chapter, such as, chapter 10—"Eaglets Growing Up—Their First Flight," and chapter 11—"A New Mate For Atlanta."

The underlying theme of the book seems to be that since the Golden Eagle (Aquila chrysaetos) is a scarce bird in parts of Europe and Britain itself (other than Scotland), the author was breaking new ground. It was often hard for me to focus on his perspective and treat it objectively. For example, in my own state of Utah there is something on the order of 2500 to 3000 pairs of Golden Eagles. That number is similar to populations in the entire area of most of western Europe as a quick review of Cramp and Simmons (The Birds of the Western Palearctic, Vol. II, Oxford Univ. Press, 1980) will show. Thus Britain, with 200–300 pairs, may have as much as 10–15% of the European population (the author says 25%). And, I suppose that if I lived in a country like West Germany with 15–17 pairs, or Poland with 8–10 pairs, then I would find the Golden Eagle an intriguing and little-known species or at least rare enough that such a book would excite me.

The manner of presenting the data on all the eyries he found bothered me a bit. The eyries were simply listed and mentioned by giving them by number, e.g., "a new eyrie located between 12 and 4/5." This has little meaning for it is impossible to determine how far apart the eyries were, what the terrain was like in the area of the eyrie, etc. A good map showing the distribution of eyries relative to one another (showing which ones were alternate for a pair) would have been of scientific interest. Aside from the lack of rigorous data presentation, several noteworthy observations were made by Tomkies during his 7-year study. For example, in the autumn he saw a yearling eagle attack and grab onto a deer calf that he estimated to weigh 50 lbs. The eagle was unsuccessful in subduing it. He also noted that adult eagles flew back to their nests well after dark, as late as 11:15 pm, often with food.

The photos are of variable quality and some could have been entirely omitted. Many are blurred. On the other hand, several of the color photos are particularly good. Some clearly showed the generally paler color of the European race, as opposed to the North American one, such as I had never before seen it. I especially liked one photo of an adult with a sprig of greenery in its bill (p. 139), one of the adult landing at the nest with wings in a half opened

position (p. 174), and one of a young eagle soaring over the beautiful heather-covered Scottish landscape. All in all, this book may appeal to a certain type of ornithologist or nature lover, but I found little meaningful biology in it. This is unfortunate because, after all the time and energy the author put into his study, he could have, with a certain precision of data presentation or different organization, made a much more interesting contribution.—CLAYTON M. WHITE.

MORPHOLOGICAL SIMILARITIES BETWEEN THE MENURAE AND THE RHINOCRYPTIDAE. RELICT PASSERINE BIRDS OF THE SOUTHERN HEMISPHERE. By Alan Feduccia and Storrs L. Olson, Smithsonian Contrib. Zool. No. 366. Smithsonian Institution Press, Washington, D.C., 1982:iii + 22 pp., 17 black-and-white figs., 1 table. Price not given.—Feduccia and Olson studied the osteology of several passerine groups. They found that in the rhinocryptid genus Melanopareia the stapes (middle ear ossicle) is of the primitive type, which excludes this form from the main suboscine assemblage defined by the derived stapes previously described by Feduccia. However, Melanopareia does possess the derived tracheophone syrinx, which places it in the Furnarioidea, a suboscine subgroup. These characters are therefore in conflict. They also found that the osteology of the Menurae is unlike that of the Ptilonorhynchidae or Paradisaeidae, in contrast to recent suggestions. Additionally they report many similarities in the osteology of the Menurae and the Rhinocryptidae. Based on these studies Feduccia and Olson conclude that "the Menurae and the Rhinocryptidae are among the most primitive of the Passeriformes and are representative of the ancestral stock that gave rise to the remainder of the passerines." Being reluctant to separate the concepts of similarity and genealogy, they do not settle on a single criterion of relationship through which specific phylogenetic hypotheses might be proposed. Nevertheless, they do suggest a number of biogeographic and adaptational hypotheses about the origin of the Passeriformes and their major subgroups.—ROBERT J. RAIKOW.

WORLD INVENTORY OF AVIAN SKELETAL SPECIMENS, 1982. By D. Scott Wood, Richard L. Zusi, and Marion Anne Jenkinson. American Ornithologists' Union and Oklahoma Biological Survey, Norman, Oklahoma, 1982:224 pp. \$25.00.

World Inventory of Avian Spirit Specimens, 1982. By D. Scott Wood, Richard L. Zusi, and Marion Anne Jenkinson. American Ornithologists' Union and Oklahoma Biological Survey, Norman, Oklahoma, 1982:181 pp. \$25.00.—Computer technology and much hard work by the authors has made a major new resource available to the ornithological research community. These inventories will greatly facilitate the management and growth of museum collections of specimens, as well as the planning of collection-based projects. It will no longer be necessary for investigators to write to curators in many different museums to find out what materials are available, often overlooking collections in the process. Instead one can turn to these bound computer printouts and immediately learn how many specimens of what species are held in virtually all major collections.

The two inventories are organized similarly. After a brief introduction and acknowledgments there is a list of the museums inventoried and summaries of the numbers of specimens that they possess. This is followed by a list of the addresses and curators of the museums; an index to the orders, families, and subfamilies of birds; and an index to the genera,

including synonyms. The major part of each work is the inventory itself, in the form of a long table. To use it you merely find the desired species (aided by the indexes if necessary) and read across to see how many specimens are held by each of the museums listed. In the inventory of spirit specimens all 41 museums are included in one table. The skeletal inventory includes the 45 largest collections in the main table, plus an appendix with 44 smaller collections.

The history of the project and an analysis of the data were previously discussed by the authors (Auk 99:740–757, 1982). Every museum with anatomical collections, and every researcher using such collections will need a copy of one or both of these valuable compilations. They may be ordered from the Oklahoma Biological Survey, Sutton Hall, University of Oklahoma, Norman, OK 73019, U.S.A. The price includes surface postage; airmail is additional. Wood, Zusi, and Jenkinson deserve the gratitude of avian anatomists and systematists for producing these works, which will rapidly become indispensable to the efficient conduct of research.—ROBERT J. RAIKOW.

REVIEW UPDATE

In his complimentary review (Wilson Bull. 94:604, 1982) of "Voices of New World Nightbirds," ARA-6 (1980), a record album that I produced and narrated, R. M. Mengel briefly discusses the two examples of song of the Little Nightjar (Caprimulgus parvulus) on the disc (see his next to last paragraph) and states that the first of these is of a bird of a population now regarded as a distinct species, C. anthonyi (Schwartz, Condor 70:223-227, 1968). Dr. Mengel's statement is incorrect. C. anthonyi was, as Schwartz (1968) says, considered a race of C. parvulus by Peters (Check-list of the birds of the world, Vol. 4, 1940). C. anthonyi is a bird of western Ecuador, west of the Andes, and to my knowledge there are no recordings of its voice. Schwartz separated it in his article solely upon morphological characteristics with some discussion of possible ecological difference as well. On the record album, side 2, cut 73, example 1 is of a bird recorded by Ben B. Coffey, Jr., near Yarinacocha, Peru, on the eastern side of the Andes, in the upper Amazonian drainage. The area is within the range of C. p. parvulus (Peters 1940:202). Example 2 of cut 73 was of a Little Nightjar (race C. p. heterurus) recorded 1 mi S Petare, Venezuela, by Paul Schwartz. The Peruvian and Venezuelan birds have strikingly different songs, and so the point is that even within the currently recognized range of the Little Nightjar, there are at least two vocally different forms and possibly, therefore, more than one species "hiding" under the binomial C. parvulus. However, the matter certainly needs further investigation, as the songs of the two birds are certainly no more different than those of eastern and western Rufous-sided Towhees (Pipilo erythrophthalmus) in North America. Considering the greater stereotypy that nightbirds show in their species-specific territorial songs, it is my judgement that differences in vocalizations as great as those shown between these Peruvian and Venezuelan Little Nightjars is more significant with respect to possible unrecognized species than are differences in primary song of diurnal birds such as towhees.—JOHN WILLIAM HARDY, Curator in Ornithology and Bioacoustics, The Florida State Museum, Univ. Florida, Gainesville, Florida 32611. Received 9 June 1983.