

imen illustrated, not the illustration. Before the preparation and preservation of specimens was widespread and the value of specimens fully understood, many birds that were illustrated were discarded. In effect, there are no extant types for those names, and we must rely on the illustrations or other evidence to establish the populations of which the types were examples. Although we accept this for the past, we see no excuse, justification, or reason in the present or future for naming bird taxa without a useful type specimen that can be compared to standard museum specimens.

The undersigned individuals decry recently published descriptions of bird taxa without extant specimens to serve as types. That practice does a disservice to ornithology. Those who are unaware of or unwilling to abide by accepted principles and practices of systematics and taxonomy should excuse themselves from those aspects of ornithology. Therefore, the undersigned individuals make the following recommendations:

1. That the International Commission on Zoological Nomenclature specify in the next edition of the *Code* that a type must be a specimen preserved in a museum or similar institution and that an organism not so preserved but merely depicted by a photograph or other illustration be ineligible for a type.

2. That editors of journals or other literature concerning birds summarily reject and refuse to publish papers that attempt to describe and name a taxon for which no actual specimen is available and deposited in a museum.

3. That the type specimen be of such a kind that it demonstrates all characters used in the diagnosis of that new taxon.

4. That those who teach ornithology include training in taxonomy and the principles of the *International Code of Zoological Nomenclature*, in the preparation of specimens, and in the value and importance of properly preserved specimens.

5. That persons not trained in the principles of taxonomy seek the assistance and advice of trained

taxonomists if they wish to name a population of birds.

6. That agencies charged with the issuance of permits for the collecting of birds for scientific purposes routinely include provision in those permits for the collecting of specimens that the permittee considers to be taxonomically problematic.

The following ornithologists have agreed in writing to the concepts of this statement, if not its precise wording: **Argentina**, J. R. Navas. **Australia**, W. Boles, J. Calaby, M. Clayton, P. J. Fullagar, R. E. Johnstone, I. J. Mason, G. C. Richards, R. Schodde, J. C. Wombey. **Austria**, H. Schifter. **Brasil**, H. F. A. Carmargo, D. M. Teixeira, J. Vielliard. **Canada**, J. C. Barlow, E. H. Miller, H. Ouellet. **China**, Tso-Hsin Cheng. **Colombia**, H. Granados, F. G. Stiles. **France**, C. Erard. **Germany**, S. Eck, R. van den Elzen, J. H. Haffer, C. König, D. S. Peters, G. Rheinwald, K. L. Schuchmann. **Kenya**, C. Muringo-Gichuki. **Mexico**, J. E. Morales Pérez, A. R. Phillips, A. G. Navarro Sigüenza. **Netherlands**, R. W. R. J. Dekker, K. H. Voous. **Peru**, M. A. Plenge. **South Africa**, R. K. Brooke. **Sweden**, P. G. P. Ericson. **Switzerland**, U. N. Glutz von Blotzheim. **United Kingdom**, I. Bishop, P. Colston, A. Knox, D. Snow, M. P. Walters. **United States**, J. W. Aldrich, D. Amadon, A. V. Andors, J. P. Angle, R. C. Banks, G. F. Barrowclough, L. C. Binford, W. Bock, P. Brodkorb, M. R. Browning, G. A. Clark, Jr., C. T. Collins, R. W. Dickerman, J. W. Fitzpatrick, M. S. Foster, D. D. Gibson, S. M. Goodman, J. P. Hubbard, P. S. Humphrey, H. F. James, N. K. Johnson, S. Keith, R. S. Kennedy, L. F. Kiff, S. M. Lanyon, W. E. Lanyon, D. Matthiesen, B. L. Monroe, S. L. Olson, J. P. O'Neill, K. C. Parkes, R. A. Paynter, Jr., A. T. Peterson, J. V. Remsen, Jr., M. Robbins, S. A. Rohwer, K. V. Rosenberg, G. D. Schnell, T. S. Schulenberg, F. H. Sheldon, L. L. Short, C. G. Sibley, F. C. Sibley, D. W. Steadman, H. B. Tordoff, M. A. Traylor, F. Vuilleumier, G. E. Watson, D. E. Willard, D. S. Wood, G. E. Woolfenden, R. M. Zink, R. L. Zusi. **Zimbabwe**, K. Hustler, A. Kumirai.

Received and accepted 1 December 1992.

The Auk 110(2):414–417, 1993

Research, Conservation, and Collaboration: The Role of Visiting Scientists in Developing Countries

MERCEDES S. FOSTER

*National Ecology Research Center, U.S. Fish and Wildlife Service, National Museum of Natural History,
Washington, D.C. 20560, USA*

As awareness of environmental problems and the need to protect our natural resources or use them wisely has grown, scientists have become increasingly interested in conservation. Some individuals are

involved in conservation-related activities through research or teaching, but most of us participate only as citizens concerned about the world in which we live. Often, we decline to take an active role in con-

ervation issues because we think that "it will take too much time away from our science," or that it is "too much trouble." Both perceptions, I think, are inaccurate. Sometimes investigators fail to participate because they are ignorant of the ways in which scientists (or scientific organizations) interface with conservation—in other words, of how one goes about getting personally involved. Whatever the reason, this lack of involvement is unfortunate, because scientists, and especially "whole organism" biologists (including ornithologists), can make unique contributions to conservation programs, *as scientists*, without a significant increase in effort or any change in the quality of their work. At the same time, they reap both professional and personal rewards.

In this commentary, I relate some of the reasons why I believe the role of scientists in conservation is so important. I also provide suggestions about how to initiate some types of conservation activities and describe some of the rewards that may accrue. My aim is to encourage and facilitate involvement; rewards for all parties are truly vast in comparison to the effort expended. Because these comments are based largely on my own experiences, I focus on conservation activities by U.S. scientists working in other countries.

Scientists in every country sometimes hesitate to participate in conservation programs, even those directed toward their own national problems. This reluctance is even more prevalent among scientists (including ornithologists) from developed countries who work internationally. I think that many avoid involvement in host-country conservation problems because they fear that such activities will be perceived as political by their foreign colleagues and others. In this regard, scientists generally express two reservations. First, they question the appropriateness of individuals from one country participating in conservation activities in another. This is especially true when representatives of developed countries are active in developing countries. Actually, such participation may be both appropriate and desirable, as long as the focus of the activities is to assist citizens of the country to achieve the goals that they have set for themselves, and as long as the scientists operate in a way appropriate for any visitor to that country.

The second reservation involves the kinds of conservation activities pursued. Many of us, as scientists, are reluctant to engage in politics, demonstrations, lobbying, and similar endeavors. This reluctance is understandable, especially in a foreign country. We can, however, engage in many other appropriate activities and, in fact, can make a significant contribution to conservation simply by doing what we do, that is, by being scientists. Biologists in the field or the museum, taking data, analyzing them, and publishing results, can influence the management of parks and reserves, land use, and other environmental practices. We also can contribute to the recovery or man-

agement of species, captive breeding programs, ecotourism, and any number of other activities through the application of our published work. In addition, by carrying out collaborative work with colleagues and interacting with students in host countries, activities in which we commonly engage at home, we can have a significant and lasting impact on the development of conservation goals in these countries and on the ability of local scientists to achieve them.

I stress this, because I believe it is important to consider the relevance and impact of our research in the host country. Most of us, wherever we work, have specific research goals in mind. We wish to test some ecological or evolutionary principle, complete a comparative study of a particular group of birds or other organisms, or define a particular community or habitat, and generally we do not directly consider national interests. Given the current global nature of environmental problems, the lack of attention to local needs is difficult to defend. This is true: (1) in a moral sense, because we have a responsibility to make the impact of our work on the country where it is carried out positive, rather than neutral, by designing some aspect of it to coincide in some way with the needs and goals of that country or its scientific or conservation communities; (2) in a selfish sense, because we need to contribute to the maintenance of undisturbed areas or the restoration of degraded ones (or in another sense to the maintenance of museum research collections) so that our projects may continue through time; and (3) in a practical sense, because this may be the only way in which we can successfully carry out our desired projects.

Usually, research can be designed to coincide with the interests of less-developed host countries without sacrificing its primary goal. In most countries (including our own), needs are broad; with a little imagination, work can be adapted to provide information of direct value to the country. Equally, such information can often be gathered as a sideline to specific research projects. For example, local government and conservation organizations often seek basic natural-history and ecological information about species and habitats for educational materials to use in schools or in ecotourism. Geographic species lists are useful for the evaluation of areas for protection, ecological and behavioral information can be used as a basis for captive breeding or pest control, data on demography allow size and bag limits for harvest and hunting to be set, and so on. As biologists, we can provide information (through notes or publications) that our in-country counterparts can use, and we can participate directly in activities based on this information, or not.

Nevertheless, many of us do research that has no immediate, direct use in the host country. Should we abandon it? Not at all, but we can try to contribute in other ways. One of the most fruitful alternatives that I have found is collaboration. Through collaborative efforts, colleagues may have an opportunity to

carry out aspects of the research that are more relevant to their needs, or students may obtain field or museum research experience that will allow them to carry out similar projects in other areas or on other species.

For example, in some countries, many of the government or academic institutions with which potential counterparts are associated operate under financial or personnel limitations. They sometimes lack basic equipment necessary to carry out field or museum studies or the financial support to travel to and live in the field study areas. Yet often, equipment and transportation can be shared at negligible cost to the North American investigator or his/her granting agency, and equipment can be left behind when the project is finished.

The lack of access to current published information is another serious problem in many developing countries where journal subscriptions can represent 25 to 50% of a monthly salary, and travel to scientific meetings is often impossible. The American Ornithologists' Union (AOU) is attempting to help with this problem (see Jenkinson 1993), but individuals also have an important role to play. Through informal discussion and formal seminars, a North American scientist can provide a window of access to the kinds of information on particular topics available outside the host country; providing reprints and photocopies of articles, names and addresses of other colleagues, and information on granting agencies, graduate schools, and similar subjects can also be helpful. By working with counterparts in other countries, we also can identify potential students who wish to pursue graduate work in this country and individuals to participate in workshops and symposia.

Although these activities, which traditionally have been viewed as "altruistic," are laudable, there are other, obviously "selfish" reasons for collaboration that are sometimes overlooked. Here I include all the benefits accruing to the investigator from his/her interaction with interested and enthusiastic colleagues and students. These include scientific expertise, stimulating discussion, original points of view, and new insights into research problems, as well as knowledge of local organisms and habitats. In addition, host-country individuals are familiar with local officials, procedures, and customs and can often provide logistic support. My work in Paraguay, Peru, Mexico, and several other Central and South American countries has benefited significantly, in both intellectual and practical terms, from interactions with local biologists and students. These associations have been exceedingly rewarding on a personal level as well.

Interactions with counterparts in developing countries can truly benefit both parties, and researchers should approach collaboration with this in mind. Patronizing attitudes are unwarranted, are unproductive, and may lead to unrealistic expectations on the part of collaborators.

One of the problems that frequently stymies North American investigators in developing collaborative efforts is the identification of counterparts. We may be willing to give seminars, engage in joint projects, and support students in the field, but often we do not know how to make the initial contacts necessary to arrange such activities. Because each country is different, there is no single formula for developing contacts. Writing to individuals in the host country who are specifically interested in the research questions being pursued is one way to start. Such individuals can be identified from the scientific literature. Even if no one active in a particular research area is located, people generally interested in birds, in systematics, in ecology, or whatever subject can be contacted and provided with a description of the research project and the kind of collaborative relationship being sought. Among the best sources of names are individuals in this country who already work in the country of the proposed research. They usually have contacts at museums, universities, government agencies, and conservation groups, and also know to whom one writes for permits.

Other sources of information include: (1) *The Flock* (OSNA 1991), which provides names and addresses of more than 150 individuals from countries in Latin America, Asia and the Middle East, India, and Africa; (2) directories of other scientific societies, some of which (e.g. membership directory for Association for Tropical Biology [1991]) are likely to have a better representation of members from Old World countries; (3) professional listings such as *Ornithology in the Neotropics: A Directory* (Cooperband 1985; currently being updated with support from the AOU); and (4) conservation groups with national affiliate organizations (e.g. Conservation International, International Council for Bird Preservation, The Nature Conservancy, and World Wildlife Fund). Together, these sources can provide an entree into the scientific and conservation communities of the host country and lead to contact with appropriate individuals. Local organizations also may provide insight into host-country needs toward which research might be oriented.

When making contacts, I find that it is helpful to outline clearly the project to be carried out, and, particularly, the circumstances under which I can share equipment and other resources, or have local counterparts accompany me in the field. Although for a variety of reasons some host-country colleagues may not wish to collaborate, in most instances several will respond enthusiastically, particularly students at universities and museums. In developing a collaboration, it is important to be flexible, to try to accommodate the needs of counterparts, and to spell out clearly the expected contributions from and benefits to each party. Most often collaborations fail because of misplaced expectations, particularly with regard to disposition of specimens and authorship on publications.

One way for scientists to make themselves and their

research known in the host country is to present seminars, a practice that I encourage. An offer to present a seminar should specify whether it can be given in the language of the host country.

When the project is finished, an effort should be made to publish some of the results in a local journal. Although not all countries have journals specifically devoted to ornithology, most have publications directed toward natural history, systematics, vertebrate biology, or ecology that often are appropriate outlets. Information about such publications is usually available from contacts in the host country. Names of publications and addresses of editorial offices can also be obtained from directories of periodicals and serials (e.g. EBSCO 1988, BIOSIS 1990, Bowker 1992), some of which are on-line with geographic and subject matter search capabilities. The Latin American Library Enhancement Program (Jenkinson and Foster 1992, Foster et al. 1993) is currently preparing a list of Latin American publications, their subject foci, and the names and addresses of their editors. Regardless of where the results of research are published, reprints should be widely distributed to colleagues and institutions in the country where the study was done.

Some have proposed that agencies and organizations providing grants for basic research use degree of collaboration with local colleagues and, to a lesser extent, degree of positive local impact as criteria for evaluating all funding proposals for research in developing countries. Although this practice might increase international cooperation and redirect the focus of some research, coercion, even at a relatively benign level, is not always an effective way to promote productive working relationships or innovative research. Rather, I would encourage all biologists, including ornithologists, to consider the local import of their work and seek cooperative interactions with host-country colleagues because such practices are bene-

ficial to their research and personally rewarding, and because these activities contribute to the protection and maintenance of the environment, for which all of us bear responsibility.

I thank M. A. Jenkinson, T. L. Root, S. D. Strahl, B. Torres, and especially R. W. McDiarmid for comments on a draft of the manuscript.

LITERATURE CITED

- ASSOCIATION FOR TROPICAL BIOLOGY. 1991. Membership Directory. *Biotropica* 23 (4, suppl.):1-35.
- BIOSIS. 1990. 1988/1989 Zoological record serial sources. BIOSIS, Philadelphia, Pennsylvania.
- BOWKER, R. R. 1992. 31st Edition Ulrich's international periodicals directory 1992-1993 including irregular serials & annuals. Reed Publishing (USA), New Providence, New Jersey.
- COOPERBAND, L. 1985. Ornithology in the Neotropics: A directory. Am. Ornithol. Union, Washington, D.C.
- EBSCO PUBLISHING (COMPILERS). 1988. The serials directory. An international reference book, 3rd ed. EBSCO Publishing, Birmingham, Alabama.
- FOSTER, M. S., M. A. JENKINSON, AND A. ALLEN. 1993. The tools of the trade. Library enhancement in developing countries. *BioScience*. In press.
- JENKINSON, M. A. 1993. The American Ornithologists' Union's support of Latin American ornithology. *Auk* 110. In press.
- JENKINSON, M. A., AND M. S. FOSTER. 1992. The Latin American Library Enhancement Program (LAL-EP). *CBE Views* 15:71-74.
- ORNITHOLOGICAL SOCIETIES OF NORTH AMERICA (OSNA). 1991. The flock. Ornithological Societies of North America, Lawrence, Kansas.

Received and accepted 14 January 1993.