

Regulations and the future of entomological collections in the 1990's

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(This is the text of a talk given by Dr. Miller at the 1993 annual meeting of the Entomological Collections Network, December 11-12, in Lafayette, Indiana - Editor)

As scientists and entomologists, we live in a time of increasing complexity with a number of problems that confront us. Available habitats for insects are rapidly disappearing and conservation and management measures theoretically calculated to stem this loss of recorded species are not always effective in some cases. The call for faunal surveys throughout the world to record the untold number of new species, make observations on their life histories or aspects of behavior, and determine their ecological requirements indeed broadens the study of entomology on an international scale and holds promise for the future. Some have called this the biodiversity crisis, but really there are other crises and problems that loom on the horizon which might make it rather difficult for us as entomologists to continue to operate as we have in the past and complete these projected research studies.

First, all entomologists, whatever their specialization (applied or economic), associated with universities, museums, state and federal agencies are asked to meet the challenges of this biodiversity crisis at a time of decreased funding and other financial support. Reduction in available staff to address the increased workload in terms of the numbers of inquiries, research visitors, meetings, etc. has also resulted in a limited amount of time for actual field work and research studies. Second, field work, whether in the U. S. or abroad, and the transport of specimens on loan with appropriate documentation has become a frustrating nightmare of paperwork, endless delays, and what sometimes appears to be interminable red tape. Welcome to the study of entomology in the 1990's. I would like to present here some of the problems associated with the current application and interpretation of laws governing entomological collections within museums and universities, to review some of the procedures involved, and offer a few areas for discussion to resolve some of these problems.

Since the inception of the Endangered Species Act (ESA) in late 1973, the emphasis has focused on protection of individual species rather than on a suite of species in a unique or specialized habitat. The latter was originally proposed as the Megazoo concept of Sullivan and Schaeffer (1975) in which a unique ecological habitat and associated species can be set aside as a reserve.

This concept was used in initiating a number of biological parks and reserves in Brazil and in several Central and South American countries. A similar program was instituted in the U. S. and is now frequently employed with ESA in the protection and conservation of entire ecological communities, such as the chaparral areas in California. However, there are those within the scientific community and conservation organizations who believe that threatened and endangered species should be protected on a species by species basis. This may be the operative procedure in the higher phylogenetic categories, but is it really practical in some groups of invertebrates represented literally by hundreds of species, particularly in insects? Perhaps we need to revise or at least arrive at some sort of compromise solution in this area.

Legislation for the international cooperative protection of endangered and threatened organisms was implemented with the CITES treaty (Convention on International Trade in Endangered Species) in 1981, and insects are indeed included. Although the original intent of CITES is admirable, in some foreign countries the original concept has been misinterpreted, and it has made it difficult for any scientific research. Thus, since its inception, entomologists and other scientific personnel actively involved in field work have walked an interesting bureaucratic tightrope between the scientific and enforcement authorities of various countries, including the United States.

For those who want to review the federal and state permitting procedures, I strongly suggest that you invest in the three volumes on controlled wildlife currently available through the Association of Systematic Collections (Estes & Sessions, 1983; King & Schrock, 1985; Littell, 1993). These will explain in detail the general requirements, permitting processes, appropriate application forms, and the multiple applications of the law in regard to the current federal and state permit procedures concerning the study, transport, and observations of wildlife. You can also obtain information directly from U. S. Fish and Wildlife Service (USFWS) in Washington (Phone (800) 358-2104). However, laws and procedures do change and the next step is to call your state wildlife management agency or USFWS permit office and determine if the legal requirements have changed recently. For foreign travel check at least six to nine months prior to travel, and forward the completed application to the appropriate agency while retaining

two copies for your files in case the originals are lost. Maintain a working log of the date of application, record the date of telephone conversations, to whom you spoke, and the important points discussed. The latter documents the fact that you have made every effort to comply with current guidelines and laws and should further protect you and your project in the event that incorrect information is received. If you have not received a response within three months, call the agency again. Sometimes applications have been lost, misplaced, or may be in processing. When you receive your permit, recheck it for possible inaccuracies and be sure that it includes the proposed objectives of the project. Even if you have received the appropriate documentation, call the USFWS permit office or state agency prior to initiating your field work. This may appear redundant, but if the U. S. regulations have changed during your field trip, you may have the unfortunate experience of losing specimens and data derived from an entire field trip. Museum and university personnel working in cooperation with staff in the host country had such experiences in two separate incidents this past summer.

Upon arrival at your foreign destination and before initiating any field work, be sure you can obtain clearance for your two sets of permits: one for collecting insects and a second for exporting the specimens out of the respective country. This should be the top priority item during the first day of your trip. Depending upon the country, most are cooperative provided they have received enough lead time in meeting your permit requests. In some cases you may have to make an initial visit strictly for the purpose of establishing contact with respective personnel and institutions and obtain permits. Requests should be specific, and an outline of the research to be completed generally must be provided. As a courtesy, it is also normal to forward the host country or associated institution a brief summary of your research activities or other information that might be helpful in the conservation of insect groups. Before departing, be sure that you have two separate sets of permits, collecting and export. Finally, and not in the least, please file a USFWS form 3177, declaration of importation or exportation of wildlife at the designated port of entry when requesting wildlife clearance. This form has a box for your current U. S. license or permit number. You can expedite the clearance procedure by contacting USFWS concerning your proposed arrival date and time.

For those of you involved in field studies in foreign countries, recheck the CITES and Endangered Species Permits (either personal or with an associated institution) and be sure that these are current. Request copies of the permits and read associated information. A number of university staff have been blithely applying for permits, put them in the drawer, and never bother to read the current guidelines or restrictions. I would also encourage all museum and faculty to reread your current collection policies and especially review those areas concerning the final disposition of faculty and student research materials. If you do not have such formal

policies, develop a set of guidelines. Also take the time to explain the collection policies to your research colleagues and students who may be involved in field studies. There should be a clear-cut protocol and guidelines between museum specimens and personal collections. An article in a recent *ASC Newsletter* (1993b) provides further guidelines on foreign collecting and research. Whatever the case, become well educated and savvy about these wildlife regulations.

There are a number of problems involved in the current interpretation of these regulations in regard to scientific endeavors and collections, and the ramifications of these laws predict some difficult times ahead for entomologists and perhaps for collections as well. The first of these has been discussed by many collectors within some of the smaller societies such as the Lepidopterists' and Coleopterists' groups and more recently by Carl Cook through The International Scientific Collectors Association. As a past president of the Lepidopterists' Society and having worked in museum collections for a number of years, I, like you, have noted the significant contributions that amateur collectors have made to the field of entomology. They often have been able to complete life history, ecological and other studies that university and museum staff have not been able to touch due to other responsibilities. Through their untiring efforts, they have also contributed countless numbers of specimens to these institutional collections over the years. Often, the growth and increased taxonomic representation in these collections has occurred through the generosity and good will of these fine entomologists. There may be a few unscrupulous individuals among them, but as professionals in the field, we need to continue to foster this unique working relationship. We must initiate every effort to change the laws in regard to amateur collectors and be able to bring this important segment of the entomological community under the scientific umbrella.

The perception of collectors and the use of dead insects in scientific endeavors noted by the public in general must change, and we can only hope to accomplish this through education. At the recent meeting of ASC in May, a committee was established to address the need for public relations for museum and systematic collections. This committee was charged with developing a national effort with simple effective themes directed toward promoting the human value of collections. Other societies such as the Lepidopterists' Society have instituted a standing educational committee with a similar focus in 1990, and ESA and the Florida Entomological Society has instituted similar outreach programs within the last two years. Despite your own time limitations, I strongly encourage you to become actively involved in these national and local outreach programs. This is also our life-line in attracting people into the profession and providing for future generations of entomologists. In addition, the public must be reeducated about natural history, the importance of doing research and documenting the distribution of species by making collections. In recent years, governmental orga-

nizations have been lobbied hard by some national conservation organizations and animal rights groups demanding prosecution of any violations. We need to inform our state and federal representatives of the vital importance of current studies and collections as research resources.

One of the most crucial aspects of the current enforcement regulations deals with the receipt of specimens that were presumed to have been collected legally, passed from one collector to another, and then ultimately donated to public institutions. Again museum and other public collections exist at the good will of the public and the generosity of donors. Dr. Elaine Hoagland of ASC met with John Doggett, Chief of the Law Enforcement Division, U. S. Fish and Wildlife Service, and covered this aspect in detail in a recent *ASC Newsletter* (1993a). It suggested that as problems concerning potential unpermitted or illegal specimens are discovered, museum authorities can contact the USFWS for help in resolving these situations. Unfortunately, there is no similar avenue of resolution for the private collector at this point.

As scientists, we have been ingrained with the scientific method to do the appropriate research, provide the supportive documentation, perhaps including information on the ecological requirements to sustain populations, make this information available to the scientific community, and finally, but not in the least, to conserve these specimens under appropriate conditions in collections for future research. However, before the almost automatic program boots into our memory bank, we are now asked to be sure that the specimens have been obtained legally rather than to query the scientific importance of said specimens to the field. In effect, we must now change our approach to science.

The current enforcement guidelines under the law allow for little latitude. For enforcement, it is either black or white, but for the scientific community, it is not such a clear issue. Some species have been listed on the Endangered Species List on the basis of little information in regard to their biology or seasonal variation in population number. The success of agricultural crops is directly dependent on adequate growing season, and fluctuation in insect populations is directly dependent on the available food supply, climate and predators. In certain foreign countries, the entire butterfly fauna has been listed as endangered species, when a number of species are quite common. However, the human impact on the available habitat is the problem, and the aforementioned variables must be given some due consideration. Thus, some changes have to be made on both sides of this current enforcement issue.

In the past, the lines of communication between wildlife enforcement agencies and active field entomologists have not been open. While there has been an active interchange between state and federal agencies with various vertebrate and botanical experts, the exchange with researchers involved with invertebrates and particularly entomologists has been limited. Wildlife management (including enforcement), both federal and state,

have not done a very good job of contacting scientists through professional societies about changes in the laws and current enforcement measures. Although publication in obscure state regulatory journals or in the *Federal Register* previously constituted providing information to the scientific community or the public, it really is not the perfect solution in this day and age of mass communication, data bases, and e-mail. Professional societies must also accept some of the responsibility for the current situation inasmuch as we have not maintained a list of scientists willing to provide information and input on conservation and taxonomic issues. We have also relied on a few members involved in wildlife management to keep us informed rather than obtaining information from the regulatory agencies. Frankly, we have done a rather poor job until recently of informing our members of the requirements involved in the permit and regulatory process. I would encourage each of you to become actively involved in discussions concerning the current regulations within each of the professional societies and maintain an open dialogue concerning changes at each meeting.

Sometimes scientists find themselves in conflict with enforcement agencies when they have received inaccurate information. One notable case concerns an ornithologist, Nathaniel T. Wheelwright, who salvaged seven birds found dead in Canada and brought them to the U. S. All were common species. Although Wheelwright had applied for a permit to import the specimens, the FWS had mistakenly issued the permit to allow for the importation of blood samples only. Wheelwright obtained oral consent from USFWS to import the birds, and he declared them to the agency upon his return to the U. S. Later he was charged with multiple violations of the Migratory Bird Treaty Act, Endangered Species Act, and the Lacey Act. Over the course of the nine month investigation, Wheelwright was threatened with fines and jail terms in both criminal and civil cases. Only congressional pressure on the agency forced the U. S. attorney to drop the charges. In a letter to Susan Allen Rohr, President of the Organization of Biological Field Stations dated in January, 1992, with copies to a number of major professional societies, Wheelwright discussed a number of points. The first of these was that under the current guidelines, he could not imagine any biologist actively engaged in field research who had not committed a violation, whether trivial or innocent, according to the many statutes dealing with enforcement under these multiple treaties and acts. As these laws are presently constituted, they often do not contain exemptions for legitimate scientific research. Wheelwright also discusses further a letter that he forwarded to USFWS at the outset of this episode in which he mentions the three choices open for legitimate scientists under the current regulations. "First, we could try to avoid notice of our work by no longer applying for permits and no longer making open declarations. Second, we could continue attempting to do our research openly but face the risk of penalties when we make an innocent mistake. Or third, we could stop conducting

experimental research on migratory birds." Wheelwright chose the second option, lost a large amount of time, and as he stated, 'barely dodged the bullet.' He further stated that he has changed his mind concerning these research options. "In the future, if these statutes are not modified, I have decided not to continue experimental research on migratory birds."

Thus we find ourselves at an important juncture in the history of systematic research and the use of natural history collections. The ramifications of these legal aspects on the future of field research are endless. A number of respected scientists have already retired stating that they no longer want to deal with the bureaucratic red tape or harassment. That is indeed a great loss to the profession. Other recognized entomologists who have maintained active field research programs for more than two decades encountered legal problems last summer and are now rethinking their research programs. Other issues involve the transport of specimens on loan. Institutions, such as the National History Museum in London are threatening to curtail shipment of type and other specimens on loan to institutions in the U. S. Within the last year, two shipments have been opened and some specimens damaged in transport. This sort of action will make completing any thorough research studies difficult at best. Thus, there must be some concentrated efforts directed to the education of both entomologists and the regulatory agencies, and real changes or modifications made in the interpretation of the current law for scientific endeavors for both professionals and amateurs. Otherwise there will be some incomplete revisionary and other scientific studies published in the future. This is totally unacceptable for a branch of science which has thrived on integrity and excellence in research.

What do the current regulations predict for the future of collections in the 1990's? Obviously some changes must be made in a number of areas if collections as research resources are going to continue to flourish and thorough entomological studies published. Over the past two years, there has been intense discussion concerning the current Endangered Species Act by working committees associated with a number of professional and governmental organizations. I hope that these groups will also invite further scientific input from active entomologists and field biologists regarding the taxa currently on the list and the practical applications of these regulations. I also hope that state agencies will reevaluate some current policies of listing taxa at the further extent of their geographic range and which are common elsewhere, such as *Heraclides crespontes* (Cramer) (Giant Swallowtail). During this period of discussion, however, I encourage all professionals and amateurs to continue to be responsible and comply with the current regulations and keep abreast of new changes. Again, as collection managers and curators we remain in this tenuous position of complying with the law and conserving research materials for future generations of entomologists.

The Association of Systematic Collections has been in the forefront of trying to provide information and open dialogue with the regulatory agencies, including USFWS. I currently serve on a standing ASC Committee on systematic biology and the law. We are trying to provide input and initiate changes in the current laws that will continue to foster growth, research, and education concerning collections. We would appreciate any suggestions or input from you concerning these vital matters at your earliest opportunity.

Entomological collections are a vital research resource in a variety of disciplines. Without the multifaceted studies on population genetics, ecology, and systematics, conservation efforts offer little hope of success in protecting species. National and international biodiversity studies in progress and planned for future investigation cannot be completed without the use of collections, and these resources are our only insurance against what Quentin Wheeler (1993) terms "bioignorance." Unless we continue to document species and phylogenetic diversity, we shall condemn future generations of scientists and the public to be ill-informed about biodiversity. The consequences of this present crisis will reverberate throughout the scientific community forever if we do not become more active publicly and promote the unique role that collections, and in particular systematics, have in science and the untold contributions that have been made to society. These collections are in effect a historical and scientific database. A coordinated effort toward the resolution of these legal questions is essential to the future of these collections.

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