

NATIONAL MUSEUM OF NATURAL HISTORY
DEPARTMENT OF ENTOMOLOGY
COLLECTIONS MANAGEMENT POLICY

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I. Introduction

The Director of the National Museum of Natural History (NMNH) is responsible for the management of the collections of the Museum. However, since the natural history collections are so diverse, each department has its own policies and procedures that are specific to its collections. The responsibility for collections in the Department of Entomology thus lies with the Chair who appoints a standing Collections Committee to review, advise, and recommend in all collections related matters. Departmental staff also acquire and conserve research collections of arachnids and myriapods. This document includes these groups under the convenient descriptor "entomological" even though this is technically incorrect. This Entomology Collections Management Policy provides the necessary general and specific guidelines for the Chair, Collections Committee, and the Department as a whole to achieve prudent management within the framework of the more general NMNH and Institution policies. If there is a conflict between the Museum policy and the departmental policy, the Museum policy takes precedence.

Resident affiliate organizations, that is, the Systematic Entomology Laboratory (SEL) of the United States Department of Agriculture, and the Walter Reed Biosystematics Unit (WRBU) of the Department of Defense are represented on the Department Collections Committee and shall conform to the Collections Policy of the Department of Entomology with which they are closely affiliated. Their use of collections and collections space shall be under the direction and responsibility of the NMNH Entomology Chair. This Policy also applies to any parts of the NMNH collections held off-site, particularly those collections in a Memorandum of Understanding (MOU) or in the Off-Site Enhancement Program with the NMNH.

The normal NMNH registration policy is practiced for accessioning, deaccessioning, incoming, and outgoing loans except where modified in this Department Policy which establishes more specific control and efficiency as appropriate. The contents of this Department Policy shall be reviewed at least every five years by the Entomology Collections Committee and the Director's Office. Recommendations for changes to the Policy can be made by any staff member at any time through the Collections Committee. If such recommendations are accepted at the departmental level and approved by the Director, appropriate rewording of the document will be made, and the amended Policy distributed with a new cover sheet with revision date included.

This Entomology Collections Management Policy is stated here having been reviewed by departmental and resident affiliate staff, appropriate administrative staff of the NMNH and approved by the Director of the Museum.

II. Purpose of the Department of Entomology at the National Museum of Natural History and Description of Collections

A. Purpose

The most significant purposes of the Department of Entomology are 1) to obtain, preserve, and maintain collections and associated information representing the entomological natural history of our planet; 2) to study and interpret this history through the use of these collections; 3) to make these collections available for study to scientists worldwide; and, 4) to share the evidence represented by its collections and other studies with both the scientific and general public through publications, lectures, exhibitions, and other educational activities. These collections are the standards through which current and future generations of scientists view the past, gauge their own accomplishments, and measure natural changes. It is imperative that these vouchers of the natural world be well preserved, accessible, and scientifically utilized for study and exhibition now and by future generations.

The number of kinds of insects and their allies likely constitute over 90 percent of the entire number of species of animals and plants occurring in the world. Specimens and their associated data in the departmental collections representing this vast diversity of life are used as the basis for important systematic research that detects the interrelationships between and among species and establishes a classification used for retrieval of information about the species. Because they reference and voucher scientific data, permanently maintained specimens are a critical part of the research programs of most fields of entomology. Many species are known to be noxious pests and others potentially so, thus the departmental resource for basic applied research data is of inestimable value. The large holdings of representatives of medically and agriculturally important species make parts of the collection especially significant as sources of systematic research and identification of insect pests. Nearly 270,000 specimens are identified annually for environmental studies, biological control projects, and many research, extension services, and control activities of federal and state agencies and other domestic and foreign organizations.

The international reputation of the National Entomological Collections and the combined staffs of the Smithsonian Institution, U. S. Department of Agriculture, and Walter Reed Biosystematics Unit employed here motivate many scientists, universities, federal and state agencies, and other organizations to offer many thousands of specimens to the NMNH annually as gifts. Congress mandates that all specimens collected on Federal property must be offered to the NMNH for deposit in its collections. With approximately 1.5 million kinds of insects described and an estimated 30 million more to be described, the Department of Entomology is faced with the problem of selectively adding to the collections so that only scientifically valuable specimens are accepted and permanently housed in the space available. In the process, as in-coming collections are processed, poor specimens or those poorly documented are culled before accession documents are generated.

To ensure that only useful and/or historically valuable collections are accepted, maintained, and kept accessible, the Entomology Collections Management Policy is in effect. All departmental and

affiliate staff associated with the National Entomological Collections are required to operate their respective areas according to this Policy.

B. Description of Collections and Their Uses

The collections of the National Museum of Natural History number approximately 135 million specimens; almost one-fourth of these are in the collections of the Department of Entomology. These were assembled over more than one hundred and fifty years and rank among the most important, if not **the** most important, systematic research resources in entomology in the world; in many groups they are unequalled. As a result, the Department is one of the four major world centers of basic systematic research in entomology.

The collections serve many purposes. (1) They are foremost the basis for original scientific research by scientists around the world on the nature, interrelationships, origin, and evolution of insects and their allies; and through biogeographic studies, using the associated locality data, they provide the basis for analysis of the formation and history of the moving and changing plates of earth's crust. At any given moment, tens of thousands of specimens from the collections are in use by researchers, from both the NMNH and elsewhere, for these purposes. (2) They are used to train present-day graduate students and will be used to train and supply information to coming generations of scientists; they are part of the foundation of the Maryland Center for Systematic Entomology (MCSE), a cooperative program in systematic entomology between the University of Maryland, the U. S. Department of Agriculture/SEL, and the Smithsonian Institution and the George Washington University and the NMNH. (3) They provide a scientific record of biotic assemblages presently and as they occurred prior to their alteration, disruption, and even destruction through human activities, natural catastrophes, and geological events in recent time; and they document such assemblages in areas currently threatened by expanding human environmental impact. (4) They provide, through the biological vouchering process, a "bureau of standards" whereby the precise identity of such organisms described in the scientific literature is objectively defined, documented, and permanently maintained in the interests of nomenclatural stability in science. (5) They provide scientific documentation for the organisms used in many kinds of experimental research concerning the natural environment, frequently resulting in solutions to problems related to human endeavors. (6) Most parts of the collections are potentially useful in exhibits, lectures, and other educational programs to disseminate knowledge about nature to non-scientists.

In summary, the Department's collections are a "library" of information, the information available from the specimens and their associated data, rather than books.

C. Kinds of Collections

Several kinds of collections are maintained by the Department.

1. Accessioned Collection - Specimens and associated information significant for research and exhibition and which are appropriate for indefinite retention by the NMNH.

These collections of specimens are grouped hierarchically by Class, Order, and Family. The Family-level taxon is the key to locating specimens and their associated information.

2. Exchange Collection - accessioned or unaccessioned specimens and/or associated objects not desired for accessioned collection status, but appropriate for exchange with other institutions and for teaching purposes, and set aside awaiting an appropriate opportunity.
3. Field Collection - unaccessioned general specimens collected by the departmental and affiliate staff but not yet processed. Appropriate specimens will become part of the accessioned collection.
4. Naturalist Center Collection - a unique study collection that is available for use by the general public. It is an entomological collection of specimens and related objects on long-term loan to the Center by the Department.
5. Non-accessioned Research Collection - specimens of target taxa collected by departmental and affiliate staff for research purposes. Appropriate specimens will become part of the Department's accessioned collection upon completion of the research or at another appropriate time.
6. Restricted Collection - specimens collected, being prepared, or donated under national, international, or other special agreements and thereby restricted in terms of subsequent disbursement and deposit.
7. Borrowed Collection - specimens borrowed by departmental, affiliate, and associate researchers for study in the NMNH, often for extended periods of time.
8. Type Collection - primary type specimens are kept in cabinets separately from the regular collections.
9. Associated Objects - materials relating to the collections, such as books, reprints, manuscripts, databases, card catalogs, photographs, illustrations, natural history observation notes, rearing notes, recorded ecological measurements, tapes, etc. Books and other publications not incorporated into the Smithsonian Library collections, nor belonging personally to individual staff are considered associated objects. Departmental (Smithsonian Directive 103, Smithsonian Standards of Conduct) and affiliate policy (i.e., USDA, SEL Memo of 9 November, 1977) on "reprints" or separata and associated literature shall define personal and official ownership of publications associated with the collections.

In addition to the above kinds of collections, the Department maintains auxiliary materials composed of objects of modest value (e.g., cabinets, non-standard drawers, etc.) which are uniquely related to the maintenance of collection specimens or depict history closely associated with the collections and were donated along with specimens. Objects on this inventory, when no longer needed for

Smithsonian Institution purposes, are either donated to other educational organizations or sold. Profits of such sales are placed in the "Improvement of the Insect Collection Fund" or other such funds more specific to the donation at the discretion of the Chair. This Department Policy describes the types of non-specimen materials suitable for the inventory, the method used to account for the materials, and the transfer procedures in **Appendix A**.

D. General Goals of the Department as They Relate to the Collections

Although the Department presently holds one of the most important research/reference collections in the world, the quality must be improved constantly by responsible addition of new specimens and sometimes the replacement of less valuable specimens and related objects with better ones. The net result is that the collections continue to grow, in quality and quantity, as they must if they are to support the science of entomology to maximum advantage (see also **Appendix M**).

Collection growth occurs in part as a result of field studies in unexplored, under explored, and threatened areas of the world. It is estimated that approximately ninety percent of the world's animals and plants remain to be discovered, nearly all are insects and arachnomorphs. With the increasing ingress of man into the remotest regions of the continents and oceans, the rate of discovery can be expected to remain high for decades. As new forms of life are discovered, representative specimens must be preserved as vouchers, or representatives, of life on this planet and made available for study and reference.

Numbers of institutions which house systematic entomological collections have faced and are facing dissolution for economic reasons. Frequently, the Department is offered a collection from such an institution that can no longer care for its arthropod specimens and associated objects. When the collection meets appropriate departmental criteria for acquisition, it is considered for acceptance. However, if there are other institutions where the collections would be more appropriately housed, or where there are researchers who would actively study them, the Department is better served by placing them permanently at those locations.

Each time a specimen is studied and published upon, it increases in scientific value by serving as a voucher for those studies. Therefore, preservation of such specimens specifically recorded in the literature is mandatory. If not, the basis of science, that is, reproducible results, would be impossible. Characteristics of specimens can be restudied at any given time in the future and newly developed scientific techniques enable scientists periodically to supplement previous descriptions or to make corrections and/or additions to these descriptions and interpretations derived therefrom.

While it is obvious that collection growth on top of retention of scientific vouchers is both desirable and inevitable, it is also clear that the Department cannot engage in indiscriminate acquisition. Physical space limitations alone prohibit comprehensive collecting of all elements of nature in all geographic localities; this goal must be shared with other institutions. Preservation, conservation, maintenance, and access to the collections require the expenditure of considerable funds and human resources. Consequently, priorities for the acceptance of new acquisitions have been established and

will be constantly monitored (see **Section III, F**). The two best methods of indiscriminate growth control are: 1) refusal of collections which do not meet, at a minimum, departmental Collections Standards Level 3 criteria (see **Appendix B**) and, 2) full discussion and review by the Department Collections Committee on the acceptance of bulk collection gifts, field collecting, inter-agency transfer, etc. Some such acquisitions are regulated by this Policy which requires Collection Impact Statements for adding collections that would require \$1000 or more in departmental resources (see **Appendix C and D**).

The Department regards excellent preparation of specimens a prime objective of its activities. Procedures for achieving this are provided in **Appendix H**.

III. Acquisition of Specimens and Related Objects

Specimens and associated objects are added to the collections in a variety of ways. They may be transferred by government agencies, purchased, collected in the field by staff members, or received as exchanges, gifts, or bequests.

A. General Criteria

Only specimens and associated objects that meet the departmental criteria and are consistent with this Policy will be acquired. As a general rule, no specimen or associated object shall be acquired unless there is a good faith intention to retain it for the collections for the foreseeable future. (See exception in subsection B regarding collections of mixed quality) Departmental acquisition criteria require answers to the following questions for each collection under consideration.

1. Are the specimens consistent with the collection goals of both the Department and Museum as stipulated in the Departmental and Museum Collections policies?
2. Are the specimens so unusual that they should receive preferential consideration?
3. If the specimens are offered for sale, could comparable specimens be obtained by gift or bequest, or collected by present staff for less than the asking price?
4. Is the provenance of the specimens adequately documented?
5. Does the conveyer declare full and clear legal title or the right to transfer full and clear legal title of the collections and all associated materials offered?
6. Is there adequate scientific documentation accompanying the specimen? If not, is there some extraordinary reason, e.g. excellent exhibit item, rarity, etc., to justify adding it to the collections?
7. Are sufficient physical, personnel, and monetary resources available to care for

the collection once it is accepted?

8. Will the acceptance of this specimen, collection, or object have a potentially heavy impact on future expenses and resources of the Department, e.g. personnel, processing and maintenance costs, space requirements, collection storage equipment, and conservation needs?

9. Are the specimens encumbered with unusual conditions set by the donor? If so, is there some justifiable reason to seek a deviation from the Institution's practice to accept only unrestricted donated specimens? The Collections Committee will document the reason; and the Committee Chair and Department Chair will consult with the Director, and if necessary legal counsel, to establish an exemption.

10. Will acceptance appear to give rise to commercial exploitation?

11. Are the specimens vouchers for endangered or threatened species; were they acquired legally?

12. Did the acquisition of the specimens adversely impact the environment in which they lived; was local biodiversity threatened in any way?

The Collections Committee of the Department is required to consider all significant additions to the collections. Guidelines under which the Committee will operate are in **Appendix D**.

B. Collections of Mixed Quality

If an offered collection contains both specimens desired for the collections and a substantial number of specimens not intended for retention, the advice of the Director may be sought before the specimens are accepted. The Department Collections Committee, Chair, and the departmental Contact Person involved with the donation will inform the donor immediately that acceptance of the collection does not imply that all will be accessioned into the National Collection. When appropriate, the Department Chair and/or the Director will consult legal counsel. The Department, when accepting such a collection, will record its plans for satisfactory disposition of unwanted specimens.

C. Acceptable Provenance

Before approving the acquisition of a specimen or a collection of specimens and associated objects, the Department has the responsibility, in good faith, to ascertain from the circumstances surrounding the transaction, or knowledge of the specimen's or collection's provenance, that it was not stolen or wrongfully converted, and that it is not illegally present in the United States. The Department also has the responsibility to ascertain that any proposed new acquisition was not unethically acquired from its source, unscientifically documented, or illegally removed from its country of origin.

Procedures set forth in the "Policy on Museum Acquisitions" shall be followed in cases of doubt. A signed Deed of Gift form or letter with similar information (see subsection I) is usually required for all gifts.

D. Permits

The collection, importation, exportation, and interstate shipment of many kinds of specimens (including entomological) may be regulated by state, Federal, and foreign statutes. The Federal laws involved include, but are not limited to, the Lacey Act, the Endangered Species Act of 1973, as amended, the Convention on International Trade in Endangered Species of Wild Flora and Fauna, and the Antiquities Act.

The Director's Office possesses knowledge of the pertinent Federal laws and will provide informal guidance where possible. In addition, certain blanket permits will be maintained by that Office for use by qualified individuals acting on behalf of the Director. However, it is Smithsonian policy that it is the responsibility of researchers, collections managers, and technicians to be informed of, and comply with, pertinent laws, both foreign and domestic, that apply to their specialties. The Office of General Counsel is available for assistance in meeting this responsibility.

The Department of Entomology requires that each specimen collected by staff under permits or agreements that require return of specimens to originating countries, National Park collections, etc., shall be labeled "Restrictions Apply" (see **Appendix E**). See also **Section XIII**.

The Chair is responsible to insure that all known agreements contracted by the Department of Entomology, SEL and WRBU that could be legally binding for the Smithsonian Institution are entered into the Collections and Research Information System (CRIS) Agreement System.

The need for retroactive labeling of specimens collected under agreement shall be determined and implemented on a case by case basis.

E. Purchases

All purchases of specimens for the collections, regardless of source, are subject to the following:

The Chair of the Department is responsible for insuring that the procedures in Smithsonian Directive 704 (April 7, 1988) are followed when purchasing a collection with Collections Acquisition Program funds.

Purchases made from trust funds under the Department's or researcher's control are to be initiated by the appropriate researcher and approved under the procedures detailed in the Departmental Policy.

F. Acquisition Procedures

The Department Collections Committee makes recommendations on proposed acquisitions. The Committee reviews each proposed acquisition if it 1) requires \$1000 or more in Department resources for processing, that is, in general it is more than 5 drawers, 5 standard jars, or 5 slide boxes in volume, 2) represents a new kind of collection, or 3) is a collection of mixed quality.

In addition, each proposed departmental acquisition of an existing collection with a total commercial value of more than \$7,500 must be approved by the Director. It is the responsibility of the Director, who has been informed in detail by the Department Collections Committee of the proposed purchase, to refer to the Assistant Secretary for Science any proposed acquisition that in his/her judgment needs additional review because of unusual circumstances.

Normally, the researcher or contact person whose area of responsibility includes the taxa under consideration initiates the acquisition procedures. If the acquisition does not require review by the Collections Committee or approval by the Director, the acquisition decision rests solely with the initiator. If a Collections Committee review is required, it is the responsibility of the initiator to pursue departmental procedures. If the Director's approval is required, the Collections Committee, with assistance from the Department Chair, will seek such approval.

The Collections Committee will recommend acceptance or rejection of a specimen, associated objects, or collection to the Department Chair who then makes, if necessary in concert with the Director, the final decision.

Acquisitions proposed by resident affiliate organizations will follow the acquisition procedures for the Department.

G. Accessioning and Records

Departmental Policy requires accessioning of acquired specimens by entering the appropriate information into the Collections Research and Information System (CRIS) and the transfer to the NMNH Registrar of all documents relevant to an accession. Original records shall be maintained by the NMNH Registrar. The master copy of microfilmed accessions are stored in the Smithsonian Archives. CRIS transactions records are centrally maintained by the Department Registrar, but are created by and the responsibility of the users in the departmental collections Units. Some records, documentation, correspondence, etc. regarding some special collection acquisitions are kept in files in the Department Chair's Office. See **Section V. A** for provisions or circumstances under which certain specimens may be listed as exempt specimens. Exempt specimens may be accessioned in suitable lots.

H. Appraisals

Departmental and affiliated staff must not provide appraisals (Smithsonian Directive 600, May 11, 1992) . If requested to suggest an outside appraiser, staff may offer a list of names, preferably orally, without any recommendation for or against a particular appraiser. Affiliated and associated

researchers also should avoid any appearance of conflict of interest in their connection with the Department collections.

I. Deed of Gift

The Department will obtain a signed Deed of Gift from a donor whenever any specimens, related objects, or equipment are received for accessioning. This ensures that the donor is giving the objects to the NMNH irrevocably and unconditionally and that the donor owns and has acquired the objects legally. This pertains to materials with commercial value, as well as those of no commercial value. Specimens and related objects will be entered into the automated transactions management system (CRIS) and an official Deed of Gift form generated along with a mailing label. When the donor-signed Deed of Gift form is returned, the official accession forms and an acknowledgment/thank you letter from the Collections Manager will be generated and copies sent to the donor. The Department will generally follow the Institution's practice of accepting only unrestricted donations; however, the Collections Committee may consider exceptions and then follow the procedure outlined in **Section III. A. (9)**.

IV. Collection and Space Management

A. Management of the Collections

Ultimate responsibility within the Department for the management of the collections rests with the Chair. The Department has the responsibility for implementing within its jurisdiction the NMNH Collections Policy and for having on file in the Director's office its current, written Departmental Collections Management Policy. Departmental Policy amendments thereto, must have the approval of the Director before they are so filed. This Department Policy includes a statement of the current collection long-range goals of the Department in **Appendix M**.

The Department of Entomology Collections Committee consists of departmental research scientists, the Department Collections Manager, and other staff including, representatives of the affiliate groups (SEL, WRBU). The Chair of the Committee will be appointed by the Department Chair and will serve a length of time determined by the Chair in concert with the appointed members. Additional staff from the Department will be appointed by, and for a term determined by, the Chair. The Chair of the Committee will appoint one of the members to act as Secretary and to see that the minutes of the meetings are reviewed and then transmitted to the Department via the newsletter, e-mail or other public forum in a timely manner. Affiliate agency members are appointed by affiliate heads in concert with the Department and Collections Committee Chairs. Meetings will be held as necessary, the schedule determined by the Committee Chair, or in his/her absence, an alternate Committee Chair appointed by the Department Chair. The Chair of this Committee will communicate the Committee's recommendations to the Department Chair for final approval. The Committee, in addition to its other deliberations, will review and update the Department's Collection Management Policy at least every five years and submit new copies, if revised, to the offices of the Chair, Director, and Registrar for approval. Interim policies adopted by the Department represent

departmental operating policies that will eventually be reviewed and approved by the Office of the Director.

B. Space and Collections Acquisition Management

At the end of each fiscal year, the Department Chair and/or Collections Manager will prepare for the Department an overview of the status of the collections under their control. Normally, they will obtain the necessary specifics from the responsible researchers and technical staff. This overview will consist of (1) a summary of the status of the physical condition of the collection as it exists at the end of the reporting fiscal year (see **Appendix J**); (2) a general summary of the collections acquired in the previous year, whether they are stored at the Museum Support Center, BARC-West, or the Natural History Building, and an estimate of how much the collection has grown in the year; (3) a status report of the collections acquired in the previous year, the percentage catalogued, accessioned, prepared, and incorporated into the permanent collection; (4) a statement of known or likely opportunities for acquisition in future years such as donations by others; (5) a summary of collections rejected during the past year. The Chair will submit these data to the Director along with a detailed request for collection storage space for the next year, if appropriate, particularly for the Museum Support Center, including a statement on acquisition activities expected to occur during the year. The Chair will include appropriate data for organizations affiliated with the Department. Decisions on space assignments will be made on space available, priority of need, funding available for collection storage equipment and conservation needs, the packing and transportation costs required, and effective utilization of space currently occupied by the Department. The Chair can appeal to the Director for additional collection storage space and/or funds for transfer if conditions warrant it. Most of the above information can be found on the departmental databases maintained by the Information Management Unit with input from the Chair, Collections Committee, Collections Manager, and other research and technical staff. These databases are available to all through appropriate electronic sources.

C. Collection Assignments and the Matrix of Responsibilities

Each family of terrestrial arthropods in the National Insect Collection shall be assigned to a Contact Person. The Contact Person is the person (researcher or other staff) generally responsible for a particular group (usually a family, sometimes a subfamily) as per the Department Profiles System. This is the person who should be contacted for any loan requests, visitors, acquisitions, collection data, or general information about that group. Contact Person as well as an Alternate Contact Person appears in the Matrix of Responsibilities departmental database. This is a replacement term for the former Curator-in charge, because several staff who are not Research Scientists ("curators") are Contact Persons. Details of collection responsibilities, i.e., who processes loans, who hosts visitors, etc., shall be recorded in The Matrix of Responsibilities, as a departmental database associated with the Collection Profiles database. Family assignments are to be negotiated by staff associated with ordinal groups, i.e., hymenopterists, lepidopterists, etc. The Department Chair, in consultation with staff and heads of affiliated agencies, shall designate a point-person (usually a Research Entomologist/Curator) for each major order or unit (e.g. Hymenoptera, Coleoptera, Diptera,

Lepidoptera, Hemiptera, STAR) and one or more individuals for miscellaneous orders. The point-person is to ensure negotiation of collection assignments. Assignments can be reviewed at any time at the request of any staff member, the Collections Committee or the Chair or heads of affiliated agencies. Renegotiation of collection assignments shall be mandatory upon staff retirements and/or new hires. A protocol for assigning collection responsibilities can be found in **Appendix K**.

V. Deaccessioning

Deaccessioning is the formal process used to dispose of or to remove permanently an accessioned specimen from the collections. Except as provided in subsection A (Exempt Specimens), whenever a specimen is removed permanently from the collection, whether by exchange, donation, sale, destruction, etc., the deaccessioning process shall take place. (If a specimen other than an exempt specimen described in subsection A, is unintentionally destroyed or is determined to be lost, a deaccession record shall be made and appropriate documentation forwarded to the NMNH Registrar.)

This departmental Policy sets forth the deaccessioning procedures as follows:

A. Exempt Specimens

It is recognized that in the Department of Entomology, because of the way specimens are collected, the value (whether monetary, scientific, and/or historical) of most specimens does not warrant formal deaccession procedures at the specimen level. Accordingly, "exempt specimens" are defined below. Exempt specimens in small numbers (less than 100) may be removed permanently from the collections without written approvals or individual documentation, but when the following have been established: (1) criteria for removal, (2) authority to remove, and (3) what, if any, general statistics should be kept on removal for inventory purposes. Because only a specialist knowledgeable about the species and specimens in question can make sound decisions, sometimes after recourse to the literature, permission to discard small numbers of specimens requires only the verbal approval of the researcher or Contact Person assigned the taxon, or the Collections Manager. When larger numbers of specimens (more than 99) are involved, the Collections Committee must be consulted by the Unit researcher(s) or Contact Person in charge before the specimens are purged from the collections.

The exempt specimen classification shall be used for most of the general entomological collections. The following are not eligible for exempt specimen status:

1. All specimens and related objects individually accounted for in the collections whether by accession, catalog, inventory number, or barcode.
2. A specimen exceeding a fair market value of \$10.00.

3. Primary type specimens.
4. Specimens from restricted collections, e.g. by wills, convenios, etc.
5. Specimens of known endangered or extinct species.
6. Historically significant specimens/collections, e.g. non-type specimens in the Casey Collection.
7. A specimen/collection which the Department considers unique or particularly significant.
8. Specimens with unique collection data upon which publications have been based and which are labeled as such.

B. Criteria

Department deaccessioning requires answers to the following questions for specimens under consideration:

1. Is the specimen no longer germane or useful to the purposes and activities of the Department, or will it be in the future?
2. Is there a possibility that the specimen cannot be preserved properly?
3. Has the specimen deteriorated beyond usefulness?
4. Does the specimen lack sufficient documentation to make it scientifically useful?
5. Is the specimen redundant?
6. Can the specimen be put to better use in another educational/research organization?
7. Is the specimen occupying space and using valuable resources that could better be used to improve or strengthen another area of the collections in order to further the departmental goals?
8. Because of extenuating circumstances sometimes surrounding the collecting of a specimen (this may include primary types), is it necessary to repatriate it to its country of origin?

C. Methods of Disposal

Acceptable methods of disposal vary with the specimen in question. For example, the giving of a specimen is an appropriate method of disposal for scientific specimens of little commercial value when the recipient is an educational organization involved in similar research. Such a method of disposal is inappropriate if the specimen in question has significant commercial value or the potential recipient is a commercial entity.

Exchanges of specimens and related objects belonging to the Department's collections preferably will be made with scholarly and cultural not-for-profit organizations. Approval of all specimens to be exchanged is given by both the Contact Person and the Collections Manager, the acting designee of the Chair in such matters. Primary type specimens (i. e., holotypes, lectotypes, neotypes, and syntypes) cannot be exchanged, but may be repatriated if collected contrary to the laws of its country of origin and recommended by the Collections Committee and approved by the Chair and NMNH Director.

As a general rule, the sale or exchange of specimens with non-researchers and non-cultural/non-scholarly entities is greatly discouraged. Proposals for such disposal either through sale or exchange must be reviewed by the Director. When appropriate, the Director will seek advice from the Assistant Secretary for Science and/or the office of the General Counsel. The appropriate method of sale or exchange will be determined for each request as a part of the review process. Proceeds of a sale will be used by the Department to purchase new collections/specimens (Smithsonian Directive 600), or with rare exception, and approved by the Director and Assistant Secretaries for Museums and Research, for other purposes.

Departmental policy prescribes the following methods of disposal when deemed appropriate. Methods to be considered are:

1. One-time exchange.
2. Gift to research organizations involved in similar research.
3. Donation to not-for-profit educational organization.
4. Transfer to another Smithsonian Institution collection, for example, the Naturalist Center.
5. Sale (public auction or private sale).
6. Destruction, if the object has deteriorated beyond usefulness.
7. Destruction, if documentation is inadequate for scientific purposes.

8. Repatriation, if there is clear evidence that the specimen was collected in violation of national or international laws, or when future studies in the country of origin might be jeopardized for NMNH researchers. This must be with the recommendation of the Collections Committee and the approval of the Chair and NMNH Director. (see second paragraph of this section).

Deaccessioning procedures do not allow specimens to be transferred to personnel of the Smithsonian Institution or affiliated organizations.

If the proposed method of disposal is destruction for non-exempt specimens, the Department Policy requires review by other Smithsonian Institution departments/units, as appropriate, plus a written recommendation by the Department to the Director is required to assure prudent decisions are made. The Director's signed approval is necessary before such a specimen is destroyed. The researcher recommending destruction shall be responsible for compliance with the Director's action and for notifying the Registrar's Office.

D. Policies and Procedures

Departmental Policy assures an orderly and thorough consideration of each proposed deaccession requiring the following:

1. Examination of records to assure that the specimen is not encumbered with restrictions which prevent disposal.
2. Documentation of justification for deaccessioning.
3. Attain written approval of the Chair since no non-exempt specimen or collections can be deaccessioned without Department review, and in addition, a proposed deaccession commercially valued at more than \$7,500 must be approved by the Director, and if commercially valued at over \$10,000 by the Director, the Smithsonian's Office of the General Counsel, the Smithsonian's Assistant Secretary for Science, and the Secretary of the Smithsonian. A deaccession commercially valued at over \$50,000 must also be approved by the Smithsonian's Board of Regents or, in exceptional circumstances, by the Executive Committee of the Board of Regents.
4. Obtain outside independent appraisals prior to the sale or exchange of specimens whenever requested by an official charged with approving the proposed action, and in all cases when the specimens in question exceeds a commercial value of \$10,000.
5. Obtain formal documentation of exchange agreements prior to the actual exchange of specimens exceeding a value of \$1,000.

6. Produce written records of the deaccession procedure with prompt and effective notification to the NMNH Registrar of deaccession action taken.

E. Record of Deaccessions

Prompt adjustments to accession, catalog, and inventory records are required when specimens are permanently removed from the collection. References to numbered documents that support exchange transactions must be included.

VI. Loans

The Department lends specimens to independent researchers and educational organizations for scientific study, identification, and exhibition and, on occasion, to organizations or individuals pending exchange. The Department, through its researchers and staff, borrows specimens for scientific study, identification, and, on occasion, in contemplation of an exchange. When researchers, staff, associates, and other long-term visitors leave the department (e.g. retirement, resignation, new position, etc.) they must follow the Exit Protocols and Exit Clearance Procedures (see **Appendix N**). The Department, in its Collections Management Policy, sets forth procedures that assure prudent decisions concerning all aspects of incoming and outgoing loans and/or borrowed specimens and that assure timely recording of such transactions within the Department and notification to the NMNH Registrar. The Department coordinates with the NMNH Registrar matters of record keeping through CRIS. In loan procedures, the following apply:

A. Outgoing Loans

The Department researchers, staff, and resident/non-resident affiliate researchers are assigned taxa, and as such are the Contact Person for these, through agreement with the Collections Committee and Chair in consultation with affiliate heads. These Contact Persons (and usually an Alternate Contact Person) then may initiate an outgoing loan in their assigned taxa either in response to a loan request or at their own discretion, for example for identifications of general collection specimens by specialists. The Collections Manager and Unit Collections Managers may also initiate loans, especially when Contact Persons are not assigned, unavailable, or give prior permission to the Managers or others. The Collections Manager, as designee of the Chair, provides final approval by signing the loan invoice and other appropriate CRIS forms. Each Contact Person responsible for a particular group establishes and initiates loan (and exchange) quantity, quality, and value limits regarding loans (or exchanges), if necessary in consultation with the Collections Committee. Loans of substantial quantities of specimens, or substantial value, or specimens that may need special care or handling, or those involving special conditions are subject to Collections Committee recommendation of approval.

A condition report is made by the Contact Person of an outgoing loan of commercially or intrinsically valuable specimens before it is shipped from the NMNH and after it is returned. This report shall be maintained with the loan forms.

Before an outgoing loan for exhibit purposes may be approved, a satisfactory facilities report based on American Association of Museums standards must be received from the prospective borrower, unless the initiating Contact Person is personally cognizant of the conditions at the proposed loan location. It is the initiating Contact Person's or collections management staff's responsibility to obtain the facility report. Such reports are then filed in IMU with the other information concerning that transaction.

Outgoing loans shall be for a specific period of time, subject to renewal if desired. The Department has established a three year maximum loan period for general collections which may be extended at one year intervals (or longer at the discretion of the Contact Person) by written request, and a six month period from date of receipt for primary types, that normally are not extended. Limits for the number of primary types in each package will be determined by the appropriate Contact Person. Outgoing loans of specimens already determined by an expert should have a species inventory/list as part of the CRIS loan forms or attached to the loan forms. Special approval from the Chair is required for any exceptions. Loans are not issued to students; instead, these loans are assigned to the student's major professor at an institution and only if the latter can vouch for the professionalism of the student in a letter to the Department. Enough Specimen Identifier Labels (with "USNM" and the transaction number) will be provided to the borrower with the loan forms and the borrower will be asked to place one on each pinned specimen, slide, or in each vial.

Special long-term loans are considered under the Off-Site Collection Enhancement Program (see also section C. Loan Definitions and **Appendix F**). Memoranda of Understanding (MOU) created under the Off-Site Collection Enhancement Program require both the NMNH Director's signature and that of the Director of the borrowing institution. MOU documents are special contractual loan agreements and as such, originals must be filed in the Chair's Office, as well as entered into CRIS and the Department Profiles database with a copy to the Office of the Registrar.

The initiating Contact Person and the Department Registrar staff are responsible for ensuring that all necessary loan information and documents are entered, completed and forwarded to the NMNH Registrar as appropriate. For very special collections or for unusual shipments the Contact Person may request transit insurance for outgoing material. The original loan form has to be approved by the Registrar prior to shipment of loans commercially valued at more than \$300 and for insured loans. The Department maintains a file of documentation on all active transactions in the Information Management Unit (IMU). Complete documentation on all closed transactions must be sent to the Office of the Registrar by the initiator.

When the time for a loan is about to expire as indicated in CRIS, the initiating Contact Person shall seek its status by friendly written communication. Renewals, if then requested, shall require the same level of approval as the initial loan. The matter of an uncollectible loan shall be referred to the General Counsel's Office. A loan is deemed uncollectible when the loan recipient fails to respond to a series of letters beginning with the normal reminder, followed by a special letter from the Collections Manager, and finally by the Chair's warning letter that allows 30 days for compliance.

When known, loans to individuals with specimens pending exchange shall be indicated as such in the appropriate transactions records.

Loans requested by the NMNH Director or staff, for the Director's use, shall be subject to review by the Department Collections Committee and Department Chair.

B. Incoming Loan Returns, Borrows, Acquisitions

Upon receipt of the specimens (see also **Section VIII**), the initiator (including permanent research and technical staff, resident affiliate researchers and technical staff, and retired scientists working in the National Collections of the Department and its annexes) is responsible for promptly entering into CRIS the relevant information pertaining to partial or complete loan returns, borrowed specimens (borrows), acquisitions, transshipments, etc. There are no exceptions to this policy if the incoming material is received at and/or housed at the Natural History Building, Beltsville Agricultural Research Center or Museum Support Center. The initiator of a borrow should also place copies of both their requesting letter and the lending institution's invoice forms in the transaction file which goes to the NMNH Registrar's Office. The initiator is responsible for ensuring that 1) all loan forms and other related documentation are completed in a prompt manner, 2) the information pertaining to each borrow is promptly entered into CRIS, and 3) the appropriate documentation is maintained on file with the NMNH Registrar. At the expiration of a borrow, specimens will be returned without delay, or an extension will be sought by the borrower. The initiator is responsible for 1) keeping the borrowed specimens separated from other specimens (other borrows or NMNH specimens) through the use of individual identifier labels, designated unit trays, or well-labeled and pest-free containers, or keeping borrowed specimens together in one or more well-marked cabinets so that, in case of emergency, a non-specialist technician can return the borrow with little effort, and 3) under normal circumstances ensuring that the borrow is returned and that the CRIS records are updated.

Matters of provenance, as described in the Smithsonian Institution Policy on Museum Acquisitions (dated May 9, 1973) shall be considered by the researcher before a borrow is requested.

C. Loan Definitions

SHORT-TERM ("NORMAL") LOANS.--Typical loan of specimens and type material. Collection used by borrower for research purposes (no collection responsibilities other than Conservation, Taxon Sorting and Identification) or for exhibits, education, etc.

Recommendation: Loan initiated by Contact Person for family or Collection Profile Unit; CCOM not usually involved with such transactions. However, as stated in the departmental Collections Management Policy document (Outgoing Loans): "Loans of substantial quantities of specimens, or substantial value, or specimens that may need special care or handling, or those involving special conditions are subject to Collections Committee recommendation of approval."

Approval: Approval and signature required from Collections Manager.

Loan period: Three years, subject to review and usually one-year renewals; type material loaned for six months.

Storage equipment: SI provides no equipment, other than the containers that specimens are shipped in.

LONG-TERM LOANS.--Material loaned for periods of five or more years and usually involving large numbers of specimens of an entire taxon, i.e., family, order, etc. Collection used by borrower for research purposes (no collection responsibilities other than Conservation, Taxon Sorting and Identification) or for exhibits, education, etc.

Recommendation: Loan initiated by Contact Person for family or Collection Profile Unit; review and positive recommendation required from CCOM.

Approval: Approval and signature required from Collections Manager and Departmental Chair.

Loan period: Five or more years, subject to review and renewal.

Storage equipment: SI provides no equipment, other than the containers and any cabinets specimens are shipped in.

OFF-SITE ("SPECIAL") ENHANCEMENT PROGRAM.--This program was initiated in 1990 with the loan of the Bombyliidae (Diptera) Collection to the Bishop Museum. An overview of the program and the SI-Bishop Memorandum of Understanding was published in *Insect Collection News*, number 4 (October 1990), pages 18-20. The essence of such loans is that the borrower acts as an agent for the Smithsonian Institution and accepts full curatorial responsibility for a collection, i.e., Conservation, Transactions (including loans, accessions, gifts and associated paperwork), Taxon Sorting, and Collection Improvement (including growth). Responsibility for Service Identification is usually included but is negotiable. Primary type specimens are usually included in Enhancement Loans. These are institutional agreements (MOUs) recommended by the Collections Committee (CCOM) and signed off on by the Museum Director and Department Chairs of both organizations. (see **Appendix F**)

Requirements to qualify for the Off-Site Enhancement Program:

- a) The loaned material must be clearly beneficial to the research program of the borrower;
- b) The loan will improve the maintenance and curation standards of the collection;
- c) The loan must support the interests of the immediate research community.

Recommendation: Review and positive recommendation required from CCOM.

Approval: Approval and signatures required from Department Chair and Museum Director.

Loan period: Five or more years, subject to review and renewal.

Storage equipment: SI provides containers and any cabinets specimens are shipped in; additional supplies provided as required.

D. Policy on Retention of Duplicate Specimens

To promote wide dissemination of biosystematic information that is ultimately derived from voucher specimens, the Smithsonian Institution Department of Entomology is willing to donate specimens to other museums and specialists collaborating with the Department in the development of its collections.

For specimens already determined, specimens may be exchanged. Exchanges must be beneficial to both institutions. Uniques will not be exchanged. Special restrictions apply to primary types and valuable (non-exempt) specimens (see **Section, V. Deaccessioning**).

For undetermined material, duplicates (usually from series with the exact same data) may be retained in recognition of services performed. In determining the appropriate number of duplicates to be retained, consideration will be given to the level of identification provided, the level of preparation performed, and the source of the request for services. The following provides guidelines, and exceptions may be made with the recommendation of the Collections Committee and approval of the Department Chair. Special requests should be initiated by the Contact Person.

1) When specimens are prepared and identified with reasonable certainty to species, a specific proportion of duplicate specimens may be retained. However, the Contact Person reserves the right to make exceptions to this policy and to request the return of any or all the desired specimens or substitute other specimens.

a) If the material was prepared (pinned, spread, slide-mounted, etc.) from a bulk sample, then up to 1/2 of the series may be retained.

b) If the material was already prepared and the request for identification was made by the Department of Entomology, then up to 1/3 of the series may be retained.

c) If the material was already prepared and the loan was made at the request of the retainer, then up to 1/4 of the series may be retained.

2) When the portion of specimens to be retained is fractional, the number may be rounded up (1/4 of

2 is a fraction, so 1 specimen may be retained).

3) The retainer will prepare a list of identifications, specimen label data, sex and, if in use, bar codes, for the desired specimens. This information is then returned to the Department of Entomology along with the other identified specimens. Upon the receipt of these the Department of Entomology will register the desired specimens as being a gift to the retainer.

4) When the specimens are part of a type series (actual or to be designated), the number of specimens to be retained will be negotiated on a case-by-case basis with the Contact Person, independent of the above rules.

E. Packing and Shipping

The packing and shipping of outgoing specimens and the handling of incoming specimens require special attention. It is the policy of the Department that extra care will be exercised at all times in this process (see **Appendix I** and **Appendix L**). The NMNH Registrar must receive timely notice of each outgoing and incoming transaction.

F. Loans of Specimens to High-Level Government Officials

As a general rule, the Department discourages loans of specimens to decorate the office of a high-ranking government official as defined in Smithsonian Directive 600, (May 11, 1992). If such a loan is made, it must be in writing and signed by the NMNH Director and the borrowing authority, in addition to being entered into CRIS. When the high-ranking government official leaves the position, the loan shall terminate and the item(s) shall be returned to the NMNH.

The Director sets the conditions and terms of the loan, including:

1. The length of time for the loan and provisions for reviewing it after a suitable period of time.
2. The provisions for proper display, care, and security.
3. The arrangement for NMNH personnel to inspect the loaned item(s) on-site.
4. The right of the NMNH, at its discretion, to cancel the loan.
5. The borrower's responsibility to bear costs of processing, shipping, and any other costs associated with the loan.
6. The responsibility of the borrower to state where the item(s) will be displayed, not to move it to another site without the NMNH's approval, and to maintain it in good

condition.

7. The responsibility of the borrower to assure the return of such specimens and to notify the NMNH promptly when the high-ranking government official leaves the position.
8. The responsibility of the borrower to maintain an up-to-date inventory of all Smithsonian Institution specimens so loaned.
9. Any other reasonable terms and conditions.

All requests for loans from a high-ranking government official who is also a Smithsonian Regent will be forwarded promptly to the Executive Assistant to the Secretary for his/her review, together with a recommendation from the NMNH Director on whether the loan should be made.

As a general rule, loans of specimens from the Smithsonian Institution collections to be used as decorations for social events will not be made. Any exception to this policy must be approved by the NMNH Director and forwarded promptly to the Executive Assistant to the Secretary for his/her review. Any questionable situations concerning loans of this nature shall be referred to the Institution's Loan Committee which will review such requests and advise the NMNH Director and others as necessary as to the most appropriate actions from the Institution's standpoint. The Loan Committee consists of the Executive Assistant to the Secretary as chairperson, the Coordinator of Public Information, and a senior representative from the NMNH.

VII. Objects Placed in the Custody of the Department

"Objects placed in the custody of the Department" are specimens that are not owned by the NMNH and are not on loan at the request of a researcher, but are left temporarily in the Department for such purposes as attribution, identification, restoration, photography, examination for possible gift, purchase, exhibition, pending exchanges, temporary storage, etc. The Department shall record (affiliate organizations shall make appropriate records available, when necessary) the information about the material by entering it into CRIS, for tracking purposes within a reasonable time. Such specimens may be labeled with "Restrictions Apply" labels (see **Section XIII** and **Appendix E**). When possible a receipt or copies of the CRIS forms shall be given to the owner of the item. Waivers of liability or insurance agreements must be incorporated into this receipt. A maximum time limit shall be placed on the retention of each collection or item in "custody" status. Custody status files may be reviewed periodically to assure expeditious handling. The disposition of the collection or item(s) will be recorded in this file at the termination of the case.

The Chair, in consultation with the Collections Committee has the authority to accept collections, specimens, and related objects placed in custody status.

If the owner of a specimen(s) or related object(s) left with the Department cannot be located after

reasonable efforts and the specimen(s) or object(s) in question is of substantial value, the General Counsel's Office must be consulted.

VIII. Care and Control of Collections

Within the Department, the Chair ultimately is responsible for insuring the safety and well being of the collections. These objectives, however, require the conscientious assistance of all staff members.

Staff members, associates, visitors, and resident affiliate staff are expected to be aware of their general duty to preserve, protect, and control collections and related objects at all times.

The Chair, or his designee, shall periodically evaluate with appropriate Smithsonian Institution support offices, security, fire, safety, and hazard controls within the Department. Special attention shall be given to these matters during periods of renovation or construction, and it is the responsibility of the Chair, or his designee, to coordinate with Smithsonian Institution support offices in a clear and timely manner.

The Department uses its Collections Standards documentation (**Appendix B**) as part of its collections management procedures. These criteria set forth standards for meeting management and conservation needs of departmental collections and related objects. Unusual needs that cannot be satisfied by available resources will be brought to the attention of the Director by the Department's Chair in consultation with the Collections Committee.

Every effort shall be made to reorganize and/or obtain additional storage space that is adequate, secure, and of such quality as to meet specimen preservation and retrieval needs as the collections grow. Effective management of storage depends in good part on the annual overview of collections, as described in **Section IV. (B)**.

It is the responsibility of the Department to know the current location of family-level and type collections entrusted to its care. Any movement of such a unit from its assigned location shall be made a matter of record by the Information Management Unit, the Chair or Collections Manager. Within the family-level unit, the arrangement of taxa may be either according to a classification (at the subfamily, tribe, or genus level with species within them alphabetized) or alphabetical. If the arrangement is according to a classification then an alphabetical list must be provided and located in an obvious and easily accessible place of the collection.

All specimens (i.e. borrows, loans, acquisitions, etc.) entering or leaving the Department at the NMNH, Museum Support Center (MSC) and Beltsville Agricultural Research Center (BARC), including those hand-carried, must pass through a control point where their destination or presence in the Department is recorded. The ordinal Units, together with the Collections Management Unit and/or the IMU or the MSC, are the control points for all incoming and out-going shipments. Incoming specimen packages will be opened by designated personnel, frozen as appropriate, and pertinent information entered into an appropriate ledger or database (e.g., record of receipt or arrival, contents, name of sender or owner). All incoming packages containing specimens that are

borrowed, returned or acquired must be entered into the Collections and Research Information System (CRIS). Exceptions may be made when specimens are already entered into an existing tracking system, like the SEL identification program, USDA APHIS-PPQ urgent identification program, or the MSC tracking system. (see also **Section VI, B**).

As an integral part of the care of the collections in the Department of Entomology, pest control includes the use of low temperature treatment (i.e. freezing) as appropriate, for any observed infestations, as well as all appropriate incoming specimens. Specimens will be exposed to this low temperature treatment for an adequate time period and temperature as determined by the collections management staff of the Department and based on current information available from the museum conservation community. Personnel designated to open specimen packages will be responsible for freezing incoming material.

Historically Department pest control includes using fumigant (e.g. naphthalene crystals) in collection storage units for pinned material. Applicators of naphthalene must be Registered Applicators with the District of Columbia and the Department must have at least one Certified Applicator. These applicators must follow the District of Columbia pesticide authority regulations and complete an application record sheet each time naphthalene is applied.

The responsible initiator shall maintain up-to-date CRIS transaction and catalog records of all appropriate data on the Department's permanent and temporary collections, e.g. movement of collections, specimens on loan, catalog information, etc. These records are centrally available through the Department Registrar. Timely adjustments will be made to inventory, catalog, and accession records when specimens are permanently removed from the collection, to include references to numbered documents that support exchange transactions.

IX. Access to Collections

The Department strives to provide full, open and equal access and to accommodate requests for access to collection specimens and related objects, including associated data, and yet balance restraints imposed by security considerations, specimen and object fragility, and staff limitations, including research in progress by SI staff or resident affiliates (see **Appendix G: Research in Progress**). As a general rule, members of the public are allowed access to conduct specific research or to participate in prearranged educational tours. Access to the collections will be denied individuals who have little or no documented previous experience with entomological research collections or who have failed to handle specimens in accordance with departmental procedures and standard professional practices, as verified by the appropriate Contact Person, the Collections Manager, or Chair (see also **Appendix G: Guidelines for Access to the Collections and Visitor Information**).

X. Insurance

The Department follows the insurance risk management Smithsonian Institution Policy outlined in

Smithsonian Directive 108. As a general rule, specimens and related objects in the Department collections are not insured while in the custody of the Department. When general collection specimens and related objects are the subject of an outgoing loan, the borrower may be required to insure the specimens and objects or to reimburse the Smithsonian Institution for insurance. Incoming borrowed specimens or related objects are insured by the Smithsonian Institution while in transit and on Smithsonian Institution premises or under Smithsonian Institution control, but specimens and objects left in the custody of the Institution for other purposes (i.e. identification) are not routinely insured. The receipt given by the Department when accepting custody shall include a release of liability.

It is recognized, however, that most loans of scientific specimens involve items of little or no commercial value, and that insurance coverage is not appropriate. The Office of Risk Management shall be consulted when or if necessary regarding any doubts about a unique loan and appropriate guidance included in the Department Policy. Procedure in this regard, approved by the Office of Risk Management, shall be considered approved by the Director.

The Department regards any loss of research specimens as regrettable, but recognizes their replacement an impossibility since each is unique both to time and place. If a significant loss occurs, the Collections Committee will review the circumstances and recommend changes in its collections management procedures and policy if the review suggests such is necessary. Such new procedures will be coordinated with the NMNH Registrar and with the Smithsonian Institution Office of Risk Management. Loss or damage shall be reported immediately by the person discovering it to the Collections Manager who will notify the Collections Committee. The Department must complete a Loss/Damage Report and forward it to the NMNH Registrar.

XI. Inventories

A. Purpose

The inventory of the Department's collections is prepared and maintained according to the Institution's policy stated in Smithsonian Directive 600 and as modified by subsequent administrative decisions. The primary purpose of the inventory is to provide accurate, up-to-date lists of the collection contents for use in detecting and preventing losses. The inventory is also an important tool for planning accessions and deaccessions, for organizing and controlling collections processes such as cataloging and loans, for planning space allocation and increases, and for making the collections more useful through automated information retrieval systems.

B. Responsible Units

The Department is responsible for conducting and maintaining accurate inventories according to inventory policies and procedures. The Office of the Assistant Director for Collections is responsible for administering and coordinating the inventory, and for obtaining the necessary computer resources, e.g. CRIS. The Department has a variety of databases relating to the

collections, e.g. Collections Profiles, Matrix of Responsibilities, etc. available to department staff through an internal network (server) and these are maintained by the Information Management Unit with advice from the Chair, Collections Committee, and the Collections Manager.

C. Inventory Schedule

As of June, 1983, an accurate baseline inventory was compiled for all collections in the Department to levels of detail appropriate to the nature of the specimens. Valuable specimens and types were inventoried by specimen. MSC and NMNH specimens that are not types or highly valuable were inventoried by specimen or batch (e.g. all specimens from one locality, one container, one taxon, or one accession) or collection. In addition, these specimens and all others in the Department are included in a collection-level inventory consisting of an annotated list of the physical blocks of specimens (e.g. drawers of Coleoptera, Diptera, Hymenoptera, jars of Arachnids) comprising the Department's holdings. After June, 1983, the Department has continued to conduct other specimen-level or species inventories for some taxa. As of May, 1991, all collections of Insecta were inventoried, at least, to the family level (drawers, slides, boxes, and jars) and non-Insecta to the Class level (jars). The Department collection databases, especially the database containing the collections profiling standards for all of the departmental collections (see **Appendix B**), serve the inventory purposes adequately. In addition, all significant collections improvement projects should include a species inventory (see **Appendix B**, Level 7). Species inventories, type specimen inventories, and specimen-level inventories are maintained by the Information Management Unit after approval from the Contact Person, Collections Manager, and Chair. It is the intention of the Department to inventory all collections first to the species level and eventually to the specimen level, if given enough support from the Museum's Office of Collections Programs.

D. Location Control

The Department's procedures for finding specimens in their permanent storage locations also provides for tracking them when they are moved. The Department databases, including location records, must be continually updated and documented by various staff and centrally maintained through the Information Management Unit. The filing system with locations for each collection is an integral part of the collection-level inventory (see **Section VIII** for more details).

E. Inventory Maintenance

Updating the inventory lists in a timely fashion is accomplished when significant permanent or temporary (long-term) changes are made in the contents of collections or when inventory-related data are significantly changed. Some database standards for species inventories, type inventories, etc. are available from the Information Management Unit.

F. Inventory Audits

Inventories of commercially valuable specimens and types must be audited periodically. Each audit

shall consist of a list-to-specimen check and a specimen-to-list check based on random samples from the collections and inventory lists. The Assistant Director for Collections is charged with initiating and supervising the audits, and the departments are required to provide staff support and assistance. The results of each audit are to be reported to the Director within fifteen days. Audits may be scheduled without advance notice to the Department. Inventories of other collections are to be audited at least every two years.

XII. Private Collections

Smithsonian Standards of Conduct require that personnel avoid even the appearance of conflict of interest. To effectuate that standard, it is the policy of the Department that staff members, including persons at all levels of responsibility and assignment, shall not form or expand personal collections of specimens or associated objects that fall within the realm of the Department. It is the responsibility of the departmental staff owning such collections to demonstrate to the satisfaction of their supervisors that they are not expanding, enhancing, or in any way competing with any function of the Department or using their affiliation with the Department, the NMNH, or the Institution to further such activities.

Although many specimens are held in an unaccessioned state pending completion of studies or preparation, it is understood that any such specimens obtained through gift, exchange, or individuals conducting field collecting while in the employ of the NMNH or affiliate organization is presumed to be the property of the Department, or of the affiliate organizations, and shall be treated accordingly.

Staff members with questions concerning this subject are urged to refer to Smithsonian Directive 103 (Standards of Conduct), then consult their supervisor and/or the Smithsonian's Ethics Counselor in the General Counsel's Office.

XIII. Restricted Specimens

The Department of Entomology requires that all specimens collected by staff under agreements that require return of specimens to originating countries and National Park collections, must be labeled with "Restrictions Apply" labels (see **Appendix E**). In addition, specimens received as part of cooperative programs, Off-Site collection enhancement agreements, or any other collections held, but not owned, in the Department, at the Natural History Building, MSC, or BARC, must have "Restrictions Apply" labels, if they are not otherwise identified, individually or by lot, by distinctive and easily recognized labels of ownership (see **Section VI, B**).

Restricted collections are those collected under agreements with foreign countries, National Parks, or other entities which require, in the terms of the agreement, that a portion of the collection be returned to that entity after study by the researcher. These collections may arrive at NMNH as a borrow of specimens and are recorded in the Department as such (see **Section VI, B**). Upon completion of the research, or at an appropriate time under the terms of the agreement, the collection

is split into the appropriate portions according to the agreement and the part to be deposited in NMNH is accessioned (see **Section III, G**). Normally, the remaining portion is returned to its country or place of origin according to the terms of the agreement. However, in some cases, especially in the countries with less developed natural science facilities, museums prefer to leave their portion of the collection in the NMNH until conditions in their institutions improve so as to safeguard the valuable scientific specimens. In this case, the restricted collection is maintained and tracked as an incoming borrow.

Upon completion of an agreement, the decision to remove restriction labels may be made on a case-by-case basis.

Appendix A

Dispensation and Disposal of Non-specimen Acquired Materials

[see also **Section II, C.** - Kinds of Collections]

Materials received by the Department at the Smithsonian Institution via donations and from specimen purchases consist of cabinets and drawers, Schmidt boxes (or other types of specimen storage boxes), trays, bottles, vials, racks for bottles and vials, spreading boards, microscope slide boxes and slide cabinets, microscope slides, microscopes and accessories. Sometimes the donor requests that we take items that are not related to entomology such as books on other subjects in the donors library. These items may be recorded during a departmental inventory of the incoming collections. These items are retained, sold, donated, discarded, returned to sender or surplused for re-issue to other departments. The department does not keep any records of the distribution of these items except on a shipping invoice if returned to the donor or otherwise distributed outside the museum or its annexes. If the item can be used in our system of collection storage, it is placed in stock for issue within the department or its annexes.

If sold, the funds are placed in one of several funds officially sanctioned, registered, and administered by the Smithsonian Institution. The Contact Person responsible for the donated collection, or the Collection Manager in concert with the Chair, determines to what fund the proceeds will be applied, usually to the "Improvement of the Insect Collection Fund". The availability of materials may be advertised in entomology journals, newsletters, and society publications. The recipient is responsible for transportation. The price charged is determined by consultation among collection management staff and research staff. Payment is required by check made out to the "Smithsonian Institution" and ear-marked for the appropriate fund. No receipts are given unless requested.

Obsolete collection or field equipment (e.g. specimen trays, microscope slide boxes, Schmidt boxes, etc.) may be given to other institutions. Representatives from those institutions make arrangements and ship the items usually at their expense. Paperwork is generated in the department as appropriate.

Discarded items are placed in the trash or recycled according to Institution requirements.

If the donor requests that an item be returned after specimens are emptied from it, except in the case of heavy items such as cabinets and drawers which are not accepted if the donor wants them back because return shipping costs would be prohibitive, a CRIS shipping invoice records that the items are being returned to the donor as per prior agreement.

When no departmental use can be found, the item is surplused for re-issue to other departments. Sometimes the item can be informally distributed locally within the building without going through surplus.

Appendix B
Collections Standards

[see also **Section II, D.** - General Goals of the Department as They Relate to the Collection
see also **Section VIII** - Care and Control of Collections
see also **Section XI, C.** - Inventory Schedule]

COLLECTION PROFILING STANDARDS

Department of Entomology
National Museum of Natural History, Smithsonian Institution

The following standards apply to all methods of specimen preservation: pinned specimens, specimens in alcohol, envelopes or on slides and all methods of storage: drawers, jars and jar racks, vial racks, slide boxes, envelope boxes and misc. containers for bulk storage.

SPECIMENS IN URGENT NEED OF CONSERVATION

LEVEL 1: SPECIMENS AT RISK, in need of immediate attention: museum pests, rusting pins, evaporating alcohol levels, crystallizing slide media, unringed Hoyer's media, broken cover slips, unprepared "loose" specimens, fading or loose labels, unprepared and/or unlabeled specimens,* etc.

LEVEL 1 storage units shall be conspicuously marked when first discovered. This marking shall be done after each collection inventory and will be used as an "identifier" so that LEVEL 1 units may be easily found and corrected on a priority basis.

* **NOTE:** Long series of unprepared specimens may be placed in the collection, so long as they are easily accessible. When an appropriate number of specimens in the series have been prepared and the unprepared specimens are in suitable containers for their protection, the storage unit may be scored at an appropriate higher level (for example, see NOTES for LEVELS 3 and 6).

SPECIMENS NOT IDENTIFIED TO SPECIES OR MORPHOSPECIES

LEVEL 2: SPECIMENS UNAVAILABLE - not sorted to taxonomic level sufficient to be efficiently accessible to researchers.

LEVEL 3: SPECIMENS AVAILABLE - sorted to a taxonomic level

sufficient to be accessible to research specialists for study. This level will vary among different taxa and is defined by the Contact Person for a collection/profile unit.

NOTE: Unprepared specimens sorted to an accessible taxonomic level may be scored at LEVEL 3, if the storage units in which they are housed are clearly labeled and easily accessible.

EXAMPLE: Misc. *Pieris* butterflies in glassine envelopes stored in accessible bulk storage containers.

SPECIMENS IDENTIFIED TO SPECIES OR MORPHOSPECIES

- LEVEL 4:** SPECIMENS IDENTIFIED BUT NOT INTEGRATED INTO GENERAL COLLECTION.
- LEVEL 5:** SPECIMENS IDENTIFIED, INTEGRATED BUT CURATION INCOMPLETE. Collection in need of upgrading, i.e., not meeting departmental standards for physical curation as defined for LEVEL 6.
- LEVEL 6:** SPECIMENS IDENTIFIED, INTEGRATED AND CURATED IN ACCORDANCE WITH DEPARTMENTAL COLLECTION STANDARDS. All specimens identified and properly integrated; all storage units and cabinets labeled, and where possible, space left for expansion. All collections arranged alphabetically; if not, an accessible index to the collection shall be prepared. Pinned specimens in soft-bottom unit trays; all unit trays with header labels. Alcohol-stored material in vials within jars; housing of LEVEL 6 collections in patent lip vials/vial racks must be approved by the Collections Committee.

When a collection reaches an average of LEVEL 6, the name(s) of who did the curation, date of curation, and authority on which the names are based should be entered in the departmental Collection History File database (see Optional Recommendations section at the end of this appendix).

NOTE: Duplicate specimens may be stored in bulk containers (suitable according to taxon), if an appropriate series is properly prepared and labeled. This could apply to duplicate specimens of the same species, with identical label data (date, locality, etc.) OR

to duplicate specimens of a very common species with non-identical label data.

DATA CAPTURE*: SPECIMENS IDENTIFIED TO SPECIES, CURATED TO LEVEL 6, AND INVENTORIED WITH DATA ENTERED IN CENTRAL DEPARTMENTAL FILES

LEVEL 7: SPECIES-LEVEL INVENTORY COMPLETE

At a minimum, LEVEL 7 data capture includes the valid binomen and author(s) name. Enhancements might include data fields for distribution (biotic region, country, state, etc., following the data standards defined in the Entomology Catalog and Inventory User Instructions), exact or estimated number of specimens, nomenclature (original genus, year, etc.), remarks, etc.

LEVEL 8: SPECIMEN-LEVEL INVENTORY COMPLETE
Species name and label data recorded.

NOTE: LEVELS 9 and 10 defined in previous policy documents are no longer recognized. The original concerns relating to the recognition of these profile levels, i.e., vouchering systematic and non-systematic material, are better addressed through the use of optional “green” (rather than lilac) restriction labels (see **Appendix E**).

***GENERAL DATA CAPTURE ISSUES.**--To help in goal-setting and associated fund-raising activities, the Department needs to know which portions of its holdings have been data captured, irrespective of the taxonomic category to which specimens are identified and/or its physical condition. The Profiling System as defined above represents an accumulative measure of idealized collection management progression, i.e., material that is "species inventoried" (LEVEL 7) is also associated with material that meets the departmental standards for physical curation (LEVEL 6). Obviously, species names can, and have been captured for material still housed in substandard, hard-bottomed trays (LEVEL 5), just as names can and should be captured for supra specific categories (e.g., LEVELS 2 or 3).

The collection profiling worksheets and associated departmental spreadsheet/database (e. g. Excel) files will continue to have columns for LEVELS 1-8. A new column “DC” (= Data Captured) has been added and should be checked-off for storage units that have been data captured, irrespective of the physical/data condition, level of identification, or state of physical organization of the contained material.

OPTIONAL RECOMMENDATION: Collection History File

When significant collection improvements occur, it would be helpful to future researchers and collection managers to have these activities documented, i.e., who did what, when, and based on what literature or whose personal knowledge. A new departmental file documenting such information has been initiated and is available electronically. This is a text file (not a database) so there are no strict data standards [see below] or character limitations. Family records can be located by using the "Find" command, e.g., to search for collection history on the Megachilidae, use the "Find" command and then type "Megachilidae."

All data entries are optional but strongly encouraged when significant collection improvements occur and should be associated with collection profile updates. While historical records are optional, the Collection History File provides a means whereby those interested in documenting collection history and activities can do so.

Ideally, each record should include the following fields:

1. **HISTORY:** Overview of collection, significant holdings and associated historical developments, primary biogeographic coverage (curators, acquisitions, collection improvements, etc.). This field would take some effort and therefore would not necessarily be included for all records.

Four collection improvement fields for each significant activity:

- 2a. **WHO:** Name(s) of who accomplished the collection improvement, i.e., resolution of major conservation problems, large taxon sorting projects (resident staff or visiting specialists), physical organization activities, data capture projects, etc.
- 2b. **WHEN:** Date(s) when collection improvement occurred.
- 2c. **AUTHORITY:** Authority on which taxon names were based (literature, personal knowledge, etc.).
- 2d. **REMARKS:** Comments on current status of collection; needs for visiting specialists or technical support; assessment of collection improvement priority, e.g., due to research inactivity, collection improvement for a particular family might be considered a low departmental priority.

The **HISTORY** field for each entry can be updated at any time. The four collection improvement fields will be added to the text file for each subsequent, significant collection improvement. What represents a "significant" collection improvement is the decision of the Contact Person for

each family or collection profile unit.

Contributions to the Collection History File should be forwarded to the Entomology Information Management Unit as an ASCII document. Margins should not exceed 65 characters and should not include any underlined or bold text.

Appendix C

Collections Impact Statement

[see also **Section II, D.** - General Goals of the Department as They Relate to the Collections]

Required Collections Impact Statement for the National Entomological Collections

Plans for collecting made by a departmental staff member, resident affiliate associate, or departmental associate that would result in an impact of \$1,000 or more on departmental resources, including personnel processing time, supplies, space, and equipment must be reviewed by the Collections Committee and approved, in advance of the project by the Chair of the Department. Otherwise the specimens may not be accessioned into the collection.

All extra-departmental or non-affiliate collectors who want to collect for the Department must also fill out an impact statement and have it reviewed and approved by the Collections Manager before departmental supplies can be given or loaned. If not, their collections may not be accepted by the Department (**see Impact Statement Form after Appendix D**).

Impact Statement for Department and Affiliate Staff

Required Information

- I. Information in part to be used on SI-15 (or equivalent travel papers) in blocks or in justification statement for trip.
 - A. Dates of project or expedition: Start, Finish
 - B. Sites to be visited:
 - C. Funding source(s):
 - D. Participants:
 - E. Mode(s) of travel:
 - F. Vaccines, etc. necessary?
 - G. Emergency contact points (please supply addresses, phone numbers, and names of contacts)
 - H. Will collecting of your target taxa involve threatened or endangered species or adversely affect the general biodiversity in the areas of studies.

- II. Collecting authority.
 - A. Host country permits necessary? Please attach permits or other pertinent documents.
 - B. National or State Park permits needed? Please elaborate.
 - C. Export permits (foreign countries only).

For information only; your cooperation is appreciated.

- III. Collecting strategy.
 - A. Methods of collecting.
 - B. Type of specimen or sample storage for transit.
 - C. Type of transit for specimens.
 - D. Type of data capture: computer, notebooks, paper scraps? Please elaborate.
 - E. Outline of data elements captured with specimens.
 - F. Data captured for samples? For individual specimen? Please elaborate.
 - G. Collection sample sources: Transects, plots, random sites, permanent pond, others? Please elaborate.
 - H. Biodiversity information available from collecting strategy? Please elaborate.

- IV. Preparation strategy for the department Collections Management Unit.
 - A. Estimated preparation time per sample.
 - B. Prep time in field or lab, or both?
 - C. Personnel available? Source.
 - D. Projected additions to departmental backlog.
 - E. Impact on equipment and/or supply orders?
 - F. Impact on departmental space?

Please submit your Statement to the Collections Committee at least one month in advance of your trip or provide an immediacy statement to the Committee Chair for rapid action.

Appendix D

Guidelines for Considering All Significant Additions to the Collections

[see also **Section III, A.** and **F.** - General Criteria for Acquisition of Specimens and Related Objects

see also **Section II, D.** - General Goals of the Department as They Relate to the Collections]

Reasons for Accepting Collections

A. Scientific Value

The following steps are taken to determine the scientific value of specimens being considered for the collection.

1. Offers to deposit collections in the NMNH are reviewed by the Contact Person(s) responsible. Sometimes these collections are declined immediately because they obviously are not scientifically valuable. If a collection is considered scientifically valuable by the responsible Contact Person(s), it is reviewed further as follows:
2. Collections with a total volume of 5 USNM drawers, 5 jars, or 5 slide boxes or less need only the approval of the Contact Person in charge prior to acceptance, provided that other criteria are in agreement with policies of the NMNH and Department. Collections exceeding an estimated volume of 5 drawers, 5 jars or 5 slide boxes must be referred to the Collections Committee for review. Additionally, the Collections Committee will review any proposed acquisition that (1) requires packing, storage, or transportation costs exceeding \$500, and (2) contains both specimens valuable for the collections and a notable percentage of non-valuable specimens. The Contact Person is requested to discuss the research value and need for the specimens with the Collections Committee to document opinions. After the facts are explored, the Collections Committee votes for or against accepting the collection on its own merit and this recommendation is passed to the Department Chair for consideration of other factors such as space and departmental resources (see also **Section III, F.**).

The Committee also needs the following information in order to consider the scientific value of potential acquisitions:

- (a) If the collection offered has been seen by one or more staff members.
- (b) The value of the collection to current and future research and service programs.

- (c) The presence of valuable type specimens, if any.
- (d) The presence of properly preserved immature stages associated with the adults by rearing is given strong consideration because of the scarcity of such specimens in the general collection.
- (e) The presence of natural history data accompanying the specimens; specimens with more detailed data are more valuable.
- (f) If the specimens being offered have been used as the basis for publication, they may be accepted because of their historical and reference value.
- (g) Objects associated with collections may be a decisive factor in accepting a collection, for example, rare books, reprints, manuscripts, card catalogs, photographs, illustrations, natural history observations, rearing notes, ecological measurements, nests, etc., may represent a wealth of unpublished data and a lifetime of work devoted to the collection which may save future specialists tremendous time, energy, and money.
- (h) The number of species and series of specimens also are considered. In the collection, retention of series is essentially valuable for the following reasons:
 - (1) for exchanges with other institutions or scientists which will enhance collections with different incoming specimens
 - (2) for study of intraspecific variation as well as interspecific variation (variation may be sexual, seasonal, geographic or genetic, etc.)
 - (3) because some specimens may undergo destructive analysis such as in Scanning Electron Microscopy studies or molecular research
 - (4) for use in exhibits or other educational organizations
 - (5) because specimens may be destroyed by museum pests, mail systems, or human error
- (i) The quality of preparation, preservation, and labeling of the specimens at a Level 3 is mandatory.
- (j) The number of new taxa which would be added to the collection by acquiring the specimens.

B. Geographic Considerations

Geographic-related considerations are used in accepting a collection because of zoogeographic studies. It is imperative for certain kinds of research that species be represented from across their range, thus the Department needs world-wide collections. Such considerations are as follows:

1. Does the general collection already have sufficient specimens from this geographic area?
2. Are the specimens from political or geographic areas of the world which are currently inaccessible to scientists?

C. Legal Considerations

With increasing nationalism, a heightened awareness of rare and endangered species, and the subsequent new national and international laws affecting faunas and floras, as well as personal liabilities, the following are also considered:

1. Can the donor (or executor of the estate) demonstrate clear legal title to the collections and associated materials offered? A signed Deed of Gift or comparable written document is required. U. S. Fish and Wildlife regulations must be met.
2. Does the collection contain rare or endangered species which may present legal entanglements?
3. Has the donor stipulated unrealistic conditions for preserving the offered collection which cannot be fulfilled?
4. If the collection is located in a foreign country, can it legally be cleared for export?

D. Collections Management Unit/Ordinal Unit Considerations

The work load on CMU arising from offers by donors is evaluated as follows:

1. Can the CMU preparators, in addition to their other duties, process donated (or purchased) collections in a timely fashion?
2. What other Department resources (e.g. materials, ordinal unit staff time) will be affected by accepting these collections?

3. Transfers of collections from other government agencies that are accepted must be reviewed before accessioning to make sure unwanted specimens are culled.

E. Cost Considerations

For collections offered for purchase, cost criteria are evaluated as follows:

1. Is the price reasonable?
2. Are sufficient funds available from extra-departmental sources?
3. What will the total resource cost to the Department be, including supplies, transportation, insurance, space, and staff time?
4. Do other reputable institutions want to purchase the collection?
5. Is the suggested price negotiable?
6. Has the owner indicated alternate plans for disposition of the collection if it is not sold?

F. Collection Value Requirements

1. Any acquisition that is considered to have a purchase value of \$7,500 or more must have the approval of the Director. The staff member (Contact Person) who has proposed the acquisition must draft a memo fully describing the details of purchase for review by the Collections Committee. The Committee, upon approval, will send the draft to the Chair who will work with the Director for acquisition.
2. Any acquisition that is considered to have a purchase value of \$25,000 or more must have the approval of the Director and Assistant Secretary for Science. The procedure within the Department is as in #1 above.
3. Any acquisition that is considered to have a purchase value of \$50,000 or more must have the approval of the Director, the Assistant Secretary for Science and the Secretary of the Smithsonian Institution. The procedure within the Department is as in #1, above.

G. Reasons for Rejecting Collections

Collections may be rejected for any one or more of the following:

1. The species are known to be sufficiently represented in the general collection already and the proposed collection adds no new information.
2. Adequate series of specimens from the same locality are present in the general collection already and the proposed collection adds no new information.
3. Specimens are improperly prepared, incompletely, or inaccurately labeled, have been damaged by mold, pests, or bleached by light or chemicals, or otherwise not intrinsically valuable, and they are not at Collections Standards Level 3 or higher.
4. Specimens would be better placed where a specialist on the group is employed or at a depository where the only other specimens are retained.
5. If the legality of the gift is in question, or if the donor's stipulations for departmental acceptance are unrealistic.
6. If the price asked for the collection is unreasonable.
7. If funds are insufficient to purchase the collection or if the total resource cost to the Department is prohibitive.
8. Another institution with funds and interested staff wants the collection, and it would serve a better scientific or educational purpose there.

DEPARTMENT OF ENTOMOLOGY
COLLECTIONS IMPACT STATEMENT FORM

This form is for use with **ANY** incoming specimens (i.e. acquisitions such as donated or purchased collections, material collected for the Museum by staff or others, etc.) equal to or greater than the equivalent of 5 drawers of pinned material, 5 jars of alcoholic material, or 5 slide boxes of slide-mounted material. This form must be attached to Travel Authorization Forms. For the important details and reasoning behind this form, refer to Appendix C and Appendix D. Please answer the following (use extra sheets, if necessary):

This is: Purchased from _____ Donated by: _____
Collected for the Museum by: _____ Other _____

- 1) Estimate of the number of **specimens** to be acquired? _____ **species?** _____
(if applicable)
- 2) Kind of **storage units** currently housing specimens? _____
- 3) Equivalent **USNM collection storage units** (i.e. cabinets, drawers/trays, jars, slide boxes, etc.) that this material currently occupies?

- 4) Estimate of how many **USNM storage units** will it occupy when curated to a Level 3 USNM profile standard? _____
- 5) What percentage of the material is **prepared** _____ and **labeled?** _____
- 6) Percentage of material having **associated label data** (i.e. are there data label information problems?) _____
- 7) **Data capture:** Was data captured in the field? _____
If so, what kind? locality ____ ; date ____; biological ____;
latitude/longitude ____ (using GPS ____; maps ____).
- 8) Are the necessary **permits** or other documents provided? _____
- 9) Estimated **staff time** to complete **preparation** _____ and **labeling?** _____
- 10) Estimated **staff time to incorporate** the material into the USNM collection? _____
Who will do this incorporation? _____
- 11) **Where** (country/state, etc.) is the material from? _____
- 12) **Year(s)** the material was collected? _____
- 13) **Collector(s)**
? _____

- 14) Number of primary **types**? _____
- 15) Percentage **determined** by a specialist? _____ Is there a species inventory? _____
- 16) Are there any **associated items** (e.g. literature, equipment, supplies, etc.)? _____

Appendix E

Design and Use of "Restricted Specimen" Label

[see also **Section III, D.** - Acquisition of Specimens and Related Objects; Permits
see also **Section VII** - Objects Placed in the Custody of the Department
see also **Section XIII** - Restricted Specimens
see also **Appendix B;** - Note
see also **Appendix H, A.** - Specimen Preparation, Labels]

Format for "Restrictions Apply" Label (a.k.a. "restriction labels") which must be placed on all encumbered specimens or in special situations on the entire storage container:

LABEL COLOR: LILAC

BORDERED with asterisks (*)

NOTE: Print on actual label will be proportionately much larger than on the standard NMNH locality label.

```
*****  
*                RESTRICTIONS APPLY                *  
*                                                    *  
*                NMNH - AEI Agreement #45            *  
*                                                    *  
*                                                    *  
*****
```

Explanation:

Label color, border pattern and words "RESTRICTIONS APPLY" permanently flag all encumbered specimens.

The Department registrar provides agreement record numbers which are generated by CRIS upon entering the agreement data. This agreement number must be placed on the Restriction Label along with acronyms of the organizations involved with the agreement (see line two of the label example).

Restriction labels **MUST** be placed on specimens involved in legal agreements between SI or affiliated agencies and external organizations. Restriction Labels **MAY** be placed on specimens involved in agreements of a non-binding nature between SI or affiliated agencies and external individuals or organizations.

Optional green voucher labels **MAY** be used to flag specimens that the researcher has determined to be of importance, but which are not covered by a legal agreement. Examples of

this include specimens used in published studies or specimens that are considered unique or unusual by the researcher. Green voucher labels will be bordered with asterisks as are the lilac Restriction Labels.

In addition to a Restriction Label, an optional barcode **may** be added to each specimen. Barcodes will provide a unique number tying the specimen to the applicable agreement in the CRIS database and other information deemed appropriate in other inventory or research databases.

The Restriction Label should be placed face up and the barcode should be the bottom label, facing down. Other labels should be above the Restriction Label. For alcohol specimens, the barcode should face outward from within the vial.

Appendix F

Off-site Collection Enhancement Program: An Example

[see also **Section VI, A. and C.** - Outgoing Loans]

MEMORANDUM OF UNDERSTANDING

The National Museum of Natural History, Smithsonian Institution ("NMNH"), whose address is Washington, D.C. 20560, and the Bernice P. Bishop Museum ("Bishop Museum" or "BPBM"), whose address is P.O. Box 19000, Honolulu, Hawaii 96817-0916, hereby agree to undertake an Offsite Collection Enhancement Program for the NMNH collection of Bombyliidae, in accordance with the following terms and conditions.

1. NMNH will loan to the Bishop Museum all of its specimens of Diptera of the family Bombyliidae (the "Collection") and sufficient drawers, unit trays, and cabinets to accommodate anticipated expansion of the collection after curation for a period of five years, subject to renewal by agreement of the parties. A species inventory of the Collection and a collection profile based on curatorial standards adopted by the NMNH and the Bishop Museum is attached hereto as Appendix A.

2. The Bishop Museum will provide proper care and maintenance of the Collection and associated data, including label data, correspondence, type catalog data, and field research notes throughout the term of this Agreement. It is understood and agreed that the Collection will be curated by Dr. Neal L. Evenhuis, who is currently on the staff of the Bishop Museum Department of Entomology (the "Researcher").

3. The Bishop Museum will provide adequate storage and security for the Collection, which shall be subject to the review and acceptance of the NMNH. The NMNH will make periodic site visits at reasonable intervals to inspect the status of the Collection. Site visits will be scheduled in advance with the Bishop Museum, and the Bishop Museum agrees to make reasonable accommodations to permit a thorough inspection.

4. Upon receipt of the Collection, the Researcher will prepare a condition report, which will be sent to the Chair of the Department of Entomology at NMNH within thirty days of receipt of the Collection by the Bishop Museum.

5. Within one year of receipt of the Collection by the Bishop Museum, the Researcher will sort, identify, and return to NMNH a synoptic collection of voucher specimens, exclusive of uniques, as represented in the Collection. If ongoing research identifies additional voucher specimens from the Collection, such specimens will be sent to NMNH to augment the initial voucher specimen shipment.

6. It is anticipated that the Researcher will acquire through field research additional Bombyliidae specimens that would appropriately be added to the Collection. Accessions into the Collection shall be subject to the approval of NMNH. The Researcher will make periodic written proposals to NMNH describing specimens recommended for accessioning into the Collection. The Chair of the Department of Entomology will notify the Researcher of the decision on accession proposals. NMNH will prepare accession papers for specimens approved

pursuant to this process. Subsequently accessioned specimens will be recorded and treated as part of the Collection and subject to the terms of this Agreement. Voucher specimens of new accessions shall be sent to NMNH.

7. All further acquisitions of Bombyliidae at NMNH subsequent to the shipment of the Collection will be sent to the Bishop Museum postpaid after processing and accessioning by NMNH. Such new accessions shall be recorded and created as part of the Collection and subject to the terms of this Agreement. NMNH will supply the Bishop Museum with sufficient drawers and unit trays to properly house any subsequent additions to the Collection.

8. All loan transactions against the Collection during the term of this Agreement will be processed by the Bishop Museum. Outgoing loans are subject to the approval of the Chair of the NMNH Department of Entomology, or his designate. The following statement will be printed on invoices for all outgoing loans processed by the Bishop Museum: "These specimens are the property of the National Museum of Natural History (NMNH), Smithsonian Institution. BPBM is acting as agent for NMNH." Copies of all documents concerning loan transactions against the Collection will be submitted to NMNH at the time of the transaction.

9. The Bishop Museum will be responsible for receiving and canceling outstanding loans made while the Collection was located at the NMNH. NMNH will supply the Bishop Museum with copies of outstanding loan documentation and a draft of an appropriate loan recovery form. The Bishop Museum agrees to use its best efforts to recover overdue outstanding loans, and will notify NMNH promptly of any problems encountered with respect to outstanding loans.

10. All requests for identification of Bombyliidae received by NMNH or the U.S. Department of Agriculture during the term of this Agreement will be referred to the Researcher, who agrees to handle them.

11. The Bishop Museum will give NMNH prompt written notice of any damage or loss to the Collection.

12. The Researcher will provide to the Chairmen of the Entomology Departments of NMNH and the Bishop Museum annual reports each January, documenting Collection acquisitions, loans, improvements, and damage or losses. Annual reports will include collection profile updates that incorporate the standards adopted by both Entomology Departments.

13. NMNH will advertise the terms of this Agreement to the entomological community through notices in appropriate publications, such as the Entomological Society of America Newsletter, The Flyer (international newsletter for Diptera research), Insect Collection News (ICN, Newsletter for Entomology Collections), the Association of Systematic Collections Newsletter, and the Fly Times (North American Dipterists Society newsletter).

14. Costs related to the initial shipment of the Collection from NMNH to the Bishop Museum and its return upon termination will be split equitably by NMNH and the Bishop Museum.

15. Either party may terminate this Agreement upon giving thirty days written notice. Unless otherwise instructed by NMNH, the Collection will be returned to NMNH no sooner than one year after the termination of this Agreement.

16. Upon termination, the Collection, and all storage equipment, will be returned to NMNH. The method of packing and shipping shall be subject to the advance approval of NMNH. A condition report will be prepared prior to packing the Collection and will be

provided to NMNH prior to shipment of the Collection.

17. Upon termination, and subject to the approval of NMNH, the Bishop Museum may retain a synoptic collection of specimens from the Collection, exclusive of unique and type specimens.

18. The Bishop Museum will give prompt written notice to NMNH if the Researcher ceases to be an active member of the staff of the Bishop Museum.

19. The terms of this Agreement may not be modified except by written agreement signed by both parties.

ACCEPTED AND AGREED.

For the Bernice P. Bishop Museum

/s/

/6 July 1990/

Donald W. Duckworth, Director

Date

For the National Museum of Natural History

/s/

/6 July 1990/

Frank H. Talbot, Director

Date

18 May 1998

Appendix G

Guidelines for Access to the Collections and Visitor Information

[see also **Section IX.** - Access to Collections]

Guidelines for Access to the Collections:

Visitors to the Department of Entomology frequently are interested in conducting taxonomic research with material housed in the National Entomological Collections. Other purposes include surveys of holdings of certain specimens, examining literature resources, and illustrating specific species, usually for publication. Whatever the purpose of the visit, contact should be made as much in advance as possible with the appropriate **Contact Person** at NMNH in order to obtain permission and access to the desired part of the collection. If the Contact Person cannot be reached or cannot be determined by a potential visitor in order to obtain permission to access a particular part of the collection, then the Collections Manager or Chair should be contacted for such permission. Advanced notice is critical for the approval of access. Approval of access may also depend on the ease of availability to a particular part of the collection, its condition, staff availability, special restrictions, etc. The department reserves the right to monitor a visitor while s/he is using the departmental collections in order to ensure the security, safe handling and use of the collections and associated materials. Advance notice also allows time for planning for housing, work space assignment, and the use of equipment and supplies.

Research in Progress:

Research in progress may include research of SI staff or non-SI staff (e. g., resident affiliate agencies). There are situations where access to part of the collections may disrupt, interfere with, or compromise ongoing research (physically or scientifically). Research generally involves specimen-based research concerned with insect and arachnid taxonomy, phylogeny, biological diversity, conservation, ecology, behavior, and other areas of evolutionary biology. Appropriate access to such research collections (which may include material from the accessioned, non-accessioned research and borrowed collections (see **IIC** - Kinds of Collections)) will be determined by the SI or affiliated agency Contact Person and/or in conjunction with the Department of Entomology Chair, SEL Research Leader, or WRBU Manager, if appropriate, to ensure that proper protocols are followed, and with ample notification of any and all collaborators involved.

Access Fees:

The department reserves the right to charge organizations or individuals from commercial or non-commercial entities access fees, including staff time, for access to and/or use of Smithsonian-owned intellectual property or materials. Such fees may be in addition to fees charged for other services (e.g., photographs).

Visitor Information:

There are limited funding resources to accommodate research visits to the National Museum of Natural History. Many researcher visits may fall within the Short Term Visitor Program (available through the SI Office of Fellowships and Grants). There are also Pre- and Post-Doctoral Fellowships for lengthy visits. For application to such funds, the Contact Person assigned to your research interest group should be contacted.

National Entomological Collection Components (Washington, D.C. area).

The three sites of the National Entomological Collections are as follows:

1. Main Collection at the National Museum of Natural History (NMNH) in Washington, D. C.
2. Beltsville Agricultural Research Center (BARC) in Beltsville, Maryland
3. Museum Support Center (MSC) in Silver Hill, Maryland

As of 1997 the location of the collection component of research interest can be found by examining the Smithsonian Institution's Gopher Server (NMNHGOPH.SI.EDU port 70) or the World Wide Web page (<http://nmnhwww.si.edu/departments/entom.html>), the "Search USNM Collections Profiles" file in this Gopher. These electronic connections also offer other information such as the Staff List, Department Publication List, Department Newsletter, World Directory of Systematic Entomologists, and some Department collections databases.

Staff at the National Entomological Collections (Washington, D.C. area) consists of employees of the following agencies:

1. Smithsonian Institution (at NMNH)
2. U. S. Department of Agriculture, Systematic Entomology Laboratory (SEL) (at Beltsville & NMNH)
3. Walter Reed Biosystematics Unit (WRBU) (at MSC)

General administrative needs of visitors are handled by the **Departmental Office**. Such needs may include: visitor's badge; general office and paper supplies; information on parking, etc.

General research needs of visitors are handled by the Contact Person and may include: microscope; computer (in short supply, visitors are encouraged to bring their own laptop computers); specimen preparation items; literature. The Entomology Library is maintained at a departmental level, while the ordinal units have separate reprint files.

Transportation:

Parking is very limited at NMNH (parking permits are necessary), fully available at Beltsville, and fully available at MSC. Visitors to NMNH are encouraged to use car pools, buses or the subway system.

Car pool space may be gained by posting needs to museum staff, either by electronic mail or on museum bulletin boards.

The **subway system** is available from many suburban areas. The Archives/Navy Memorial, Smithsonian, and Federal Triangle stations are nearest to NMNH.

Lodging:

The Department staff is aware of practical lodging possibilities, and can provide such information as needed.

Appendix H

Specimen Preparation

[see also **Section II, D.** - Purpose of the Department; General Goals as They Relate to the Collections

see also **Appendix E** - Design of "Restricted Specimen" label

see also **Appendix L** - Slide Collection Standards]

The Department of Entomology regards excellent specimen preparation techniques critical to the specimen's subsequent use in contemporary research and accessibility to future generations of researchers. In addition, the information associated with the specimen must, as completely as possible, document the date and place of collection of the specimen and be maintained along with the specimen in the collections. With this in mind, the following are the practices to be followed in preparation of all specimens for the general entomological collections. Pinning procedures are standard entomological techniques (see Borror, Triplehorn, and Johnson, 1989, 6th edition and the USDA electronic publication mentioned in part B below at the end of this appendix).

A. Labels

Label Standards:

Paper: White Linen Record paper (36 lb wt) will be used for dry and alcohol data labels. In some cases white Linen Record paper specially treated with Resistall, will be used for permanent alcohol labels.

Ink: Black oil-based printer's ink; hand entries with black waterproof ink, or alcohol insoluble computer printer ink ribbon.

General: 10 pitch type reduced to 1/3 original size = 30 characters/inch, 18 lines/inch. Line length for labels then restricted to 22 characters, 5 lines of data for pinned specimens. Size may be larger for alcohol and envelope storage.

Format:

1st line -- COUNTRY: STATE, PROVINCE, or other subdivision

2nd line -- Specific locality, e.g. City, River, Lake

3rd line -- Latitude/Longitude. Elevation (optional)

4th line -- Collecting data or collection numbers

5th line -- Date (use format 01 Dec 1940), collector

Second label, if any, may carry further data regarding habitat or any other information.

Third label (or second) on encumbered specimens uses format in **Appendix E**.

Note: All specimens collected for, or by, the staff or affiliates are required to have

latitude/longitude to the nearest minute on their labels (elevation is recommended also when it is significant). Departmental maps and online databases exist for determining this and they should be used. Global Positioning Devices exist (available through the Collections Management Unit) that use satellites to determine where you are within 30 m and give the elevation as well; they are hand-held and easy to carry in a day pack.

B. Sorting and Preparation

Family sorting and specimen preparation guidelines for alcohol bulk samples are available through the Collections Management Unit and/or the Collections Manager. There is also quite a lot of information on collections technique in "Insects and Mites: Techniques for Collection and Preservation:", edited by G. Steyskal, W. Murphy, E. Hoover. 1986. USDA, ARS Miscellaneous Publications No. 1443; this document has been revised and published electronically through the USDA entitled "Collecting and Preserving Insects and Mites: Techniques and Tools".

Appendix I

Packing and Shipping / Loan Processing

[see also **Section VI; E.** - Loans; Packing and Shipping
see also **Appendix L; 8.** - Standards for Alcohol Collections; Shipping]

The packing and shipping of outgoing loans and the handling of returns of incoming loans require special attention. It is the policy of the Department that extra care will be exercised at all times in this process. Some additional related information can be found in **Appendix L.**

A. Pinned, Dry Specimens:

Mounted insects should be pinned firmly into a box with a suitable pinning bottom. A cork pinning bottom of 1/4" to 1/2" is excellent, but other materials that have good holding power for pins may be used. Composition board and cardboard are not recommended. Polyethylene foam is good, and has the advantages of less weight and good holding power. Polyethylene pinning bottoms should be 3/8 inch thick for greatest security. Specimens are pinned in rows from left to right, top to bottom of the box. Additionally, heavy specimens, those loose on their pins, or specimens with small genitalia vials attached should be braced with pins set firmly against each side to prevent specimens from swinging against adjacent specimens. A small wad of cotton may be placed into one of the corners of the box (with 2 or more pins) so that broken insect appendages may adhere to the cotton and not bounce around in the interior of the box. Excess space should be filled in at intervals with pins so a piece of thin cardboard can be laid evenly on top of all of the pin heads. Scotch tape, formed as a tab on top of the cardboard, is frequently used to facilitate lifting the cardboard from the specimens; two such tabs are recommended. Pieces or strips of cotton, cellu-cotton, soft tissue paper or similar material is then placed on top of the cardboard so the lid of the insect box will fit down easily and maintain firm pressure on the pins. This prevents any loosely pinned specimens from working up and falling over.

Specimens in vials of preserving liquid (see below) should never be included inside pinning boxes with dry, pinned specimens. They may be included in shipping cartons with such pinning boxes, if they are in their own plastic wrapped/sealed containers.

The pinning box should be wrapped or sealed with tape before inserting it into the packing carton. Such protection will keep out dust and dirt. Pinning boxes that are being sent to foreign destinations may be wrapped with a transparent material such as cellophane across the top of the box before closing the lid. This enables customs inspectors to open the lid and observe the contents without adding dirt, or fingers, into the interior of the box. Two or more pinning boxes that are shipped in the same package should be tied or taped together; this action avoids jarring of the boxes against one another during shipment and prevents oversight of any boxes in the unpacking process.

B. Specimens on Microscope Slides

Any slide must be thoroughly dried and cured before shipping. Slides may be shipped in holders made expressly for that purpose and available commercially from biological supply houses. Even in such holders, it is advisable to wrap a little soft tissue around each end of each slide so that the cover glass does not come into contact with anything. The slides may also be shipped in standard storage boxes with enough soft tissue around each end of each slide and between the slides and the box lid to prevent movement. The box should then be wrapped to hold the lid down firmly. If no slide holders are available, a few slides, each wrapped with tissue, may be tied together at each end with tape, rubber bands, or string, wrapped in strong paper, and placed in a small carton with appropriate packing material.

C. Specimens in Vials of Alcohol

Fluid should be topped-up so that no air bubbles exist. Each vial needs to be labeled and each vial isolated from others by wrapping paper or plastic sleeve. Jars containing vials should have jar labels. They may be shipped as is if the vials inside are immobilized with packing material. The jar should be protected with bubble wrap and in a sealed plastic bag or sleeve. Jars or groups of vials can be shipped as per the methods for other categories.

Loan Processing

See **Section VI**, Loans. Refer to the NMNH CRIS manual and specifically the Departmental CRIS User Guide for details of how to process all transactions; these are both available from the Department Registrar. The CRIS transactions system is also available at the MSC and BARC.

Appendix J

Collections Profiling Protocols

[see also **Section IV; B.** - Collection and Space Management; Space and Collections Acquisition]

In May, 1991, more than 95% of the general collections had been profiled (see **Appendix B**). These profiles provide the base for judging collection health and growth through time. Subsequent or re-profiling can take place at any time; however, because it takes time and sometimes personnel from other units, it is recommended that it be done at the family-level or above only after a significant improvement or contribution has been made to the collection as determined by the Contact Person.

The process begins when the Contact Person assigned to the family initiates the task and scoring of each unit (drawer, jar, or slide box) using the departmental standards referred to above (see **Appendix B**). Comparison with previous profiles while scoring units is useful. When the task is completed, a collections comparability check will be made by the Collections Manager (and Unit Manager, and/or staff, if appropriate). This check, random in nature, is to insure that an overall collections standard is achieved for the Department, that is, to make sure all scorers are interpreting the Collections Standards in the same way. When this is assured and the task completed, the data is to be transmitted to the Collections Manager who will in turn work with the Information Management Unit in a timely fashion to update the Profile database. For scorers with little or no experience in profiling, it is strongly recommended that the Collections Manager (or Unit Manager) participate initially in a training or re-training mode to assure conformity. This will save time in the long run.

The Information Management Unit will update the profile and provide a printout, if requested, to the scorer, Collections Committee, or Chair. It is the responsibility of the Contact Person to provide copies of the profile to requesters from outside the Institution or affiliated groups; it is also available through the Department's electronic files.

Appendix K

Collection Assignment Protocol

[see also **Section IV; C.** - Collection and Space Management; Collection Assignments and the Matrix of Responsibilities]

1. The Chair, in consultation with staff and heads of affiliated agencies, designates a **Point-person** (usually a Research Scientist/Curator) for each ordinal unit (Hymenoptera, Coleoptera, Diptera, Lepidoptera, Hemiptera, STAR Unit) and one or more individuals for miscellaneous orders. It shall be the responsibility of the point-person to ensure negotiation of collection assignments, which can be reviewed at any time at the request of any staff member, the Collections Committee or the Chair or heads of affiliated agencies.
2. Upon request, but especially in anticipation of a staff retirement or new hire in the combined Entomology staff, the Chair notifies the ordinal point-person and provides him/her with collection data for that unit (current collection family assignments, size of collections, loan transactions, outstanding loan data, etc.). The Point-person should also collect additional data from unit members concerning current identification load, visitor data, research responsibilities and other pertinent information.
3. The Point-person convenes meetings/discussions with associated ordinal/unit staff to negotiate future collection assignments. At this time staff should discuss potential changes in collection responsibilities with their immediate supervisors and support staff.
4. Proposed reassignments and/or problems are forwarded to the Collections Committee for review. In most cases the Collections Committee will endorse the wishes of the involved order/unit. Where problems are identified the Collections Committee will forward recommendations to the Chair and the unit staff. There may be situations where staff is so insufficient that certain collections/families may remain problematic and in need of additional departmental and/or Museum support.
5. If the Point-person fails to convene meetings, the collection responsibilities in question will fall to him/her. Given the lead time for reviews associated with a staff retirement, the collections in question will immediately become the responsibility of the Point-person if appropriate action has not been taken. If a unit member does not wish to negotiate a potential adjustment of responsibilities, the Collections Committee may make assignment recommendations to the Chair and appropriate supervisor.

6. The recommendations (after renegotiation if so required and with the approval of the appropriate supervisor) are approved by the Chair.

Appendix L

Standards for Slide and Alcohol Collections

[see also **Section VI; D.** - Loans; Packing and Shipping

see also **Appendix H** - Specimen Preparation

see also **Appendix I** - Packing and Shipping / Loan Processing

SLIDE COLLECTION STANDARDS

COLLECTION ORGANIZATION:

The overall arrangement of the slide collections is by taxon. Lower categories (genus, species) are usually arranged alphabetically, while specimens of each species ideally are arranged alphabetically by country. In addition, some groups (mosquitoes, ticks) have unique individual collection and rearing numbers (corresponding to associated pinned adults) and are arranged numerically for each country. Specimens with no collection numbers ideally are arranged chronologically by date of collection for each species. Both pinned adults and corresponding slide collections should be arranged in the same manner.

STORAGE:

Smaller slide collections are stored on slide trays in cabinets; however, for convenience, most large collections are stored in slide boxes. Slide boxes should be uniform in size, generally 7' X 9" and have a 100 slide capacity. Polypropylene slide boxes with a clasp lock and metal hinges last longer and are preferred over paperboard and plastic hinged boxes. Slide boxes may be stored on open shelving or in cabinets.

INDIVIDUAL SLIDES:

The choice of mounting media is probably the most important consideration when preparing slides. Factors to consider when choosing a mounting media include: amount of light allowed through the media (refractive index), longevity, ease of use, and the ease of specimen retrieval once mounted (if necessary). Historically several different mounting media have been used in the collection, including Canada Balsam (general all-purpose), and Euparal (the British preparation only; used for some Diptera). All media should be approved by the Collections Committee. Whichever mounting media is used, the goal is to achieve a permanent mount using a minimum of media while allowing the maximum amount of light through the slide to view the specimen.

Specimens should be mounted on thin slides (.97-1.07 mm thickness, 3" X 1" overall), using a #1 or #2 thickness cover slip. The use of thicker slides will reduce the amount of light available, are too thick to allow viewing of both sides of specimen, and may not fit into existing slide boxes. While the placement of the specimen varies, most are mounted on the center of the slide.

Uniform placement of specimens on slides throughout the collection will facilitate the examination of long series. Slides should be uniformly labeled (see **Appendix H**), usually with collection and ecological data (if any) to the left of the specimen and a determination label to the right, but in some parts of the collection (e.g. lice and fleas) this is reversed, [label format for slides should follow the guidelines established for pinned specimens]. If slides are associated with pinned adults, then the same label data should be used for both. Slide labels are made from gummed paper affixed directly to the slide. An alternative method is to use a plastic covered pres-a-ply type label affixed to the slide first, then a gummed label glued onto the pres-a-ply label. Labels can be either photo offset, computer generated or hand written, and should minimally include country, state or province, specific locality, latitude and longitude, date of collection and collector.

STANDARDS FOR ALCOHOL COLLECTIONS OF ARTHROPODS

[written by J. A. Coddington, 1991, with some editing]

Summary.--The following standards apply to large institutional collections of arthropods in fluid. For such collections, archival storage over centuries and low maintenance costs are the chief considerations. In smaller collections more time-consuming formats such as screw-cap vials or individual homeopathic/patent-lip vials (= with necks) may be used, but the risk of seal failure and personnel costs for maintenance grow unacceptable in large collections. All storage systems and formats have initial costs, maintenance costs, and, most important, failure rates. All systems have problems, and data on their benefits and drawbacks should be maintained.

Museum specimens destined for alcohol collections require two operations: fixation at the time of collection and preservation of the specimen thereafter. While a large amount of literature exists on the merits and effects of various fixatives, little literature exists on preserving media. Preserving fluids should prevent fungal and bacterial growth, while changing the specimen as little as possible. Preservatives work in basically two ways. Some (e.g. propylene phenoxytol, formalin) rely entirely on their toxicity to fungi and bacteria, some (ethanol) work chiefly by dehydrating the specimen to a point where molds and bacteria cannot grow, and some (isopropanol) work in both ways. Using a preservative that relies entirely on toxicity seems a dubious strategy, because bacteria can evolve tolerance to almost any toxin, and the long-term effects of the toxin on people is unknown. On the other hand, increasing dehydration generally leads to increased stiffness or inflexibility of the specimen, which may lead to increased rates of breakage. Ethanol-water is the most conservative approach, simply because it has set the standard for collection quality for over 200 years (British Museum of Natural History, London; Musée National d'Histoire Naturelle, Paris).

1. PRESERVING FLUIDS: Ethanol-water (75:25) or isopropyl-water (75:25) are the best choices (assuming that animals are already isotonic with the preservative). Myriapods are stiffer in ethanol, so myriapodologists prefer isopropyl. Spiders are flaccid in isopropyl, so ethanol is

better for them. Also, much is known about the health hazards of ethanol and little about isopropyl, but judging from standard sources, ethanol is much less toxic to humans. The Occupational Health and Safety Act (OHSA), for example, sets permissible exposure levels for a 40 hour work week for isopropyl at 400 parts per million, and for ethanol at 1000 ppm. In either case, the water should be distilled and/or deionized to ensure a neutral pH (although old solutions may become alkaline from the glass). Cleanliness of both alcohol and water is very important, although much neglected. Fluids should be shaken and mixed well, then checked with an hygrometer. If not mixed, the concentration of preservative can (and does!) vary from top to bottom in large carboys; alcohols and water do not mix easily by themselves. Additives to the preservative should be avoided, especially acids or glycerin. The former stiffens specimens and probably demineralizes the cuticle, and the latter clears the specimen over time, as the alcohol evaporates and the glycerin concentration increases. Glycerinated or acidified alcohol is the worst possible choice.

2. LABELS: Label paper should be acid-free, archival quality stock, such as 100% rag or linen. Acid in a poor quality paper can lower the pH of the fluid in a vial, especially if the solution evaporates and therefore concentrates. Papers with fancy coatings should be avoided, as the ability of the ink to penetrate into the paper fibers is apparently a major factor in permanence. Paper weight is also important, because light papers (e.g. 20 lb.) tear too easily, and cardboards (e.g. 32 lb.) are too stiff to conform to the inside curve of the vial. Papers of about 28 lb. work well. Labels should be no larger than necessary (ca. 20x40mm), and can be undesirably small. Insect labels can sometimes become tangled in legs or lodged so they cannot be read without opening the vial, this situation should be avoided.

Inks and how they interact with particular brands of paper constitute probably the most important, yet unknown, variable in alcohol collection curation. Some studies on India inks have been published, but very little is known about computer ribbon technologies or inks. The best system is to have the labels professionally printed, but this procedure is expensive and time-consuming, and it tremendously complicates the process of curation. Among inks used by "in-house" operations, those with vegetable gum as the vehicle for the pigment (as in India inks) provide the best margin of safety; they can be special ordered on computer printer ribbons for use with an impact printer that drives the ink deep into the paper. Labels produced by photocopy or laser printers (the same process) are unacceptable. They all degrade eventually, usually by the letters abrading or even falling off the paper. They are the worst possible choice.

Each vial should contain the original locality label (and host label if specimen is a parasite), a typed facsimile if appropriate, and an identification label. As a general rule, no label should ever be discarded. Every vial should contain the museum acronym, either as a separate line on the locality label, or, if necessary, as a separate tiny label. Labels containing only an alpha-numeric code should be supplemented or replaced as soon as possible with one containing the actual data. Locality labels should be typed or neatly printed, not handwritten in script. Museum acronym labels make loan returns and research easier and mitigate curatorial disasters. All labels should read the same way (usually left edge down for right-handed people, although some prefer the

other way), locality label facing out, ID label superimposed and facing in, additional labels sandwiched in between. Whichever orientation is used the important aspect is that the locality and ID labels can be easily seen. Label width should substantially exceed the vial diameter, so that when in place the label occludes about 1/2 - 2/3 of the vial circumference. If so, the label remains tightly appressed to the inner vial wall, provides a more or less white background to see the specimen(s), organizes the labels in the vial, and minimizes the chance that the animal will become wedged between the vial wall and label. If the label width is about the vial width or less, it "bisects" the vial space and brutalizes the specimen.

3. **FORMAT:** The goal is archival quality storage with minimum curatorial labor. Animals are housed in straight-sided clear glass shell vials plugged by clean cotton or, more recently, by polyethylene stoppers. Shell vials are better than necked vials, because animals and labels slide in and out with less chance of damage. Also, because the "footprint" of the vial equals the aperture, space usage is most efficient. One dram shell vials are adequate for the vast majority of arthropod specimens. One dram shell vials have an opening of 10.0 mm and a basal area of 144 mm². Three dram homeopathic vials have an opening of 11.5 mm but a basal area of 324 mm², a 2.25 fold difference. For a single storage unit, one rack of 4 jars works out to 4.0 cm² per vial, and one rack of 46 homeopathic vials works out to 6.6 cm² per vial, a 1.65 fold difference. Shell vials within jars are more compact.

Shell vials are also cheaper. As of January 17, 1991, one dram shell vials cost \$0.046 each, polyethylene stoppers cost \$0.016 each, and jars cost \$1.35 each (hence \$3.33 per storage unit, containing 32 vials). Three dram homeopathic vials cost \$0.133 each, neoprene stoppers cost \$0.331 each, and vial racks cost \$12.00 each (hence \$33.34 per storage unit containing 46 vials). Shell vials within jars are cheaper. If these figures are extrapolated to a collection of moderate size, e.g. 10,000 vials, the shell vial format houses that collection in 4.0 cm² at a cost of \$1040.00, whereas the homeopathic vial format houses it in 6.6 cm² at a cost of \$7250.00. Homeopathic vial formats cost seven times more and use 65% more space.

All vials should be wide enough to accommodate the specimen without compression, and short enough to permit easy access to the bottom of the vial with normal forceps. Plastic vials, if inert, might be acceptable, although most are usually only translucent and thus time-consuming to work with. Unused dry vials should be stored upside-down in covered boxes. Even if the vial box lid is tight, the box should still be stored so that vial apertures face down so that dirt and dust accumulated during manufacturing and shipping can fall out before use. Much dust encountered on specimens was already in the vial by the time the specimen arrived. Each vial contains one or more adult animals and associated juveniles. Tiny animals or dissected parts are housed in micro vials stopped by cotton inside the larger shell vial.

Vial Closures: Cork, rubber, or neoprene stoppers are a bad choice because all eventually degrade or leach substances (e.g. industrial proprietary "plasticizer" or anti-oxidants) into the preservative. These leachates have been known to come out of solution when fresh preservative is added. They turn the liquid cloudy, and later precipitate on the specimen. Polyethylene

stoppers are more convenient than cotton because specimens cannot become entangled, the fit to the vial is more uniform than with hand-made cotton wads, personnel handling costs are reduced, they can be reused, and vials can be removed from jars and left on desktops for several months without switching stoppers. Polyethylene is inert in ethanol-water mixtures. As always, care should be taken to equalize pressure inside and outside the vial during cap insertion, otherwise they may pop (a length of hefty monofilament is convenient and breaks fewer vials than a piece of wire).

Jars: Shell vials are placed in glass, gasketed bail-top jars holding 10-40 vials and with sides as straight as possible; the jar is then filled with preservative to a level just below that of the gasket. Metal screw caps rust and leak, often from the inside out so that one cannot see it until it is too late; bakelite lids warp and crack; greased ground-glass joints seize; ungreased ground-glass joints leak quickly as well. There has been some success with screw caps with polyethylene inserts, but some observations indicate they may leak faster than bail-tops. In almost all screw-cap formats some caps unscrew themselves due to vibration and the upward force exerted by the compressed gasket. Post-hoc solutions to reduce leakage or rust (grease, paint, or paraffin on the underside of the lid, special tapes around the outside joint, etc.) may help (H. W. Levi data, unpublished), but they also emphasize that the original choice of format was ill-advised. Although screw-cap jars are cheaper, initial costs become unimportant when staff time and archival security over centuries are considered. Wider jars are best because the total number of seals exposed to air and thus subject to failure is reduced by the ratio of vials per jar. Also larger jars have a smaller surface to volume ratio than do smaller jars. This ratio can become extremely important in large collections that may contain thousands of jars (hence tens of thousands of vials), and should be seriously considered in any collection projected to grow to a large size. To rely on individual vial seals in so large a collection invites trouble. The bottom of the jar is lined with one folded, white paper towel (or a thin layer of cotton) to prevent glass-to-glass contact (which can cause scratches leading to catastrophic breakage), and, if the jar is less than full, vials are kept upright by additional crumpled paper towels or cotton.

Jar Labels: One large (10x10cm.) jar label is included and oriented consistently with respect to the jar bail. One method has the museum and its address at the top, included taxa in the middle, and locality or region at the bottom. All jar labels are produced by computer and the data saved on disk or the Smithsonian Institution main frame, so that labels maybe updated with a minimum of typing. The jar label information can be transferred into a database on holdings and size of the collection with no extra trouble. The date of the last label update printed on a lower corner of the label can be a helpful addition. See above for alcohol-ink considerations.

Vial Orientation: Vials should be upright in jars. The idea that inverting the vials always protects specimens longer is widespread, but probably is not true. In any vial/jar system, assuming that vial closures are less efficient than the jar seal, the rate of loss is a function of the jar seal efficiency, not how preservative is partitioned in the jar, nor vial orientation. While it is true that alcohol seems to disappear from the jar slightly sooner than from the inverted vials within the same jar, the total time the jar-vial complex contains preservative should be the same,

regardless of vial orientation. In contrast, in jars containing erect vials with similarly inefficient closures, the preservative level inside the vial and jar drops at roughly the same rate. However, specimens resting on the bottom of erect vials are closer to the bottom of the jar, and thus may remain wet longer. Specimens resting on cotton stoppers some centimeters above the jar bottom may dry out slightly sooner. If vial closures (such as polyethylene stoppers) are reasonably good, then the advantages of erect vial storage are magnified. Obviously the only important consideration is when the specimen actually dries out. In any case, preservative levels should never be checked so infrequently that considerations of this sort become important.

Inverted vial systems may cause additional specimen abrasion and breakage. Each time a vial is removed and returned to an erect position for use, the animal and small labels tumble to the opposite end of the vial. Dust and dirt are agitated and recoat the specimen. Separated parts or small specimens may entangle in the cotton and be crushed or missed as the cotton is withdrawn. Stoppers can fall out as the inverted vial is withdrawn from a jar. Shaking of vials and agitation of their contents obviously should be avoided. On the whole, inverting vials within jars doesn't seem worth the costs.

Light, Temperature, and Vibration: The chief enemy of an alcohol collection is light, particularly sunlight. Problems associated with the use of neoprene vial stoppers can be substantially reduced if light is eliminated. On the other hand, no known curatorial system that permits even ordinary daylight to fall on specimens will maintain them in usable condition for more than a few years. Effects of temperature extremes are less understood, except that they can be catastrophic in collections of unprotected stoppered vials. Increased pressure due to higher temperatures may cause stoppers to pop and screwcaps to loosen. Vibration from passing traffic or subways can also cause screwcaps to loosen.

Cabinets: The storage system for jars should exclude light, maximize storage density, permit hierarchical organization among groups of jars, and make retrieval and transport of single or multiple jars fast and easy. Jars may be grouped into pull-out drawers with movable partitions, or into elongate carriers that contain 4 to 5 jars (cardboard trays are cheap and effective). Larger carriers become too heavy for staff to manage confidently. Carriers are then kept in cabinets. If isolated jars are stored on shelves or in cabinets, transport of jars to and fro becomes time-consuming. More important, each shelving unit must preserve some "shuffle" space so that jars can be located without removing others from the shelves. This space is wasted. In any case, dimensions of all components of the storage system (vials, jars, carriers, and cabinets) should be adjusted to eliminate wasted space. Expansion space should be distributed throughout the collection, often per drawer, or shelf, within a cabinet. Compactors with drawers or cabinets plus jar carriers are most efficient. Open shelving, although common, is least efficient, and, if no measures are taken to exclude light, is probably the worst possible choice.

4. ORGANIZATION: Arrangement is by taxon, lower categories being either alphabetic or phylogenetic. The former seems better except in very large collections, because everyone knows the alphabet, whereas few know the phylogeny. If done phylogenetically, then an alphabetical

list must be readily available with the collection. Stable groups, such as phyla, classes, or orders, provide a convenient first hierarchy but families and lower categories are probably best alphabetized in most groups. Long runs of a particular category may be subdivided geographically. Systems that depend on numbers, card-files, or catalogs are more difficult to work with, and more expensive to maintain.

5. TYPES: Types are maintained in the same format, but as a separate collection, alphabetically by species epithet or by author (because neither is subject to taxonomic change) within families, orders, or classes. Curation technique is the same, but types are checked more frequently. Type labels should be saved electronically, and channeled into the departmental type catalog database.

6. NOMENCLATURE: Labels reflect name changes and revisions, except for types.

7. INVENTORIES: Individual specimen inventories in arthropod collections are still impractical for all but the smallest or most specialized collections. Nevertheless, any existing number labels should not be removed. Type collections should be inventoried with the resulting computer records sorted in various useful ways. Type "numbers" are traditional in some institutions, but seem superfluous and are no longer required by the Department. Most such systems in use today are astronomically expensive to maintain (e.g. due to visitor activities, loans, new literature) or are rather inaccurate (e.g. systems that estimate collection size by counts of specimens at the time of accessioning, or that are not updated). Probably the best way to estimate collection size is to sample it statistically, especially since such estimates can provide confidence intervals.

8. SHIPPING: Some institutions routinely pack cotton into vials or even remove the animal and pack them directly in preservative soaked cotton. Either procedure seems unwarranted. Destructive tumbling of animals in vials is best prevented by topping off the vial to eliminate air bubbles. In this case, the preservative is heavy enough that animals fall or move only slowly if the vial is disturbed. Vials should not be shipped in jars unless special precautions are taken, but rather isolated from each other by packing material (see also **Appendix J, C.**). The best system seems to be isolating each vial in a segment of plastic sleeve, the segments being sealed with an iron or heat sealer purchased for that purpose.

9. FIRE SAFETY: Obviously any flame in an alcohol collection is an extremely serious risk. Smoking should be discouraged (not because of the cigarette, which cannot ignite ethanol-water, but because of the matches, which can). Concentrations of alcohol vapor are probably more dangerous than liquids, and could even ignite from static electricity build-ups during winter months in extra-tropical regions. Physical layout of cabinets is a consideration; all ranges should have two exits. Work space should not be arranged so that the only escape is back through the alcohol collection to the exit. However, many collections are set up in just this way, as window space is used for desks, with the collection between the work space and the door.

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Appendix M

Current Collection-related Goals [Department Long-Range Plan, 30 December 1994]

[see also **Section II, D.** - Purpose of the Department; General Goals as They Relate to Collections

see also **Section IV, A.** - Collection and Space Management]

Although this was originally written for the 5 year period from FY1995-2000, many things will not be able to take place exactly in those years and, thus, this Long-Range Plan can also be used as a reference for the Department's future collection-related goals. In addition, during 1997-1998 the Department will be preparing for its move to the East Court and Fifth Floor East Wing. Another major goal in the future is to prepare databases of as many routine departmental facilities and operations (non-specimen) as possible (e.g. cabinets, space, etc.).

LONG-RANGE COLLECTIONS MANAGEMENT PLAN

Department of Entomology

1) To improve collections management efficiency, department communication, and logistics by relocation to the East Court/Wing (NHB). (see also #3 below)

- FY 1995 (NHB) Improve collections supplies and equipment storage space in East basement.
Support: Combined Entomology staff; Special Projects
Funding: OD
- FY 1995-96 (NHB) Complete planning and assignment/design/allocation of space and facilities for the East Court/Wing; improve collections organization.
Support: Department staff (Space, Collections Committees, etc.); Special Projects; specialist contracts
Funding: Department operations; Collections Programs (NMNH-CP)
- FY 1998 (NHB) Relocate onto floors 4-7 of the planned East Court and the fifth floor of the East Wing; improve collections organization.
Support: NHB Labor Force; Department Logistics Management Unit (=CMU) staff; specialist contracts
Funding: NHB Special Projects; NMNH-CP
- FY 1998 (NHB) Install compactor units, fitted with special 2-door steel cabinets, necessary to house the Department collections in the East Court/Wing.
Support: external contractor; Department Logistics Management Unit (=CMU)

Funding: NHB Special Projects

2) To improve collections management.

- FY 1995 Implement the policy on specimen restriction labels for countries and/or institutions holding special agreements with NMNH.
Support: Department staff; SEL (USDA)
Funding: Department operations; SEL
- FY 1995-96 Implement a new system of pest control by deep freezing, including pest monitoring and clean up of collections areas/hygiene; coordinated with a centralized tracking system for all incoming specimens. (NHB) Purchase sticky traps and UV light traps for monitoring/detection program in all parts of the collections during a two year period.
Support: Department staff (Logistics Management Unit & Specimen Management Unit) (=CMU)
Funding: NMNH-CP
- FY 1995-96 (NHB) Acquire three upright, large volume, ultra-cold freezers (-30°C) for pest control.
Support: Department staff; CAL
Funding: SI Research Equipment Fund
- FY 1995-96 Resolution of long overdue loans.
Support: Department staff/CRIS
Funding: Department operations
- FY 1995-97 (NHB) Increase accessibility of specimens by reduction of the backlog, process inaccessible or identified/unintegrated material.
Support: Department staff/other agencies
Funding: Department operations; external contracts
- FY 1995-99 Improve policies and procedures in regard to the Lacey Act.
Support: Department SMU (Specimen Management Unit = CMU) & IMU (Information Management Unit) staff; OR
Funding: Department operations; NMNH-CP
- FY 1996 (MSC) Acquire one upright, large volume, ultra-cold freezer (-30°C) for pest control.
Support: Department staff; CAL
Funding: Special Projects
- FY 1996 Contract a Collection Manager/family level sorter for the Lepidoptera Unit

and/or other units, for sorting the huge backlog.
Support: OD; Department staff
Funding: new NMNH Department base funding; Collection Improvement Fund

3) To improve existing collection storage.

- FY 1995-96 (NHB) Replace 500 out-of-date steel storage units with pest-proof/dust-proof standard insect cabinets [urgent need]. These will be moved to the fifth floor East Wing (non-compactor area).
Support: Special Projects; NMNH-CP
Funding: NMNH-CP (Collections Improvement Fund); Special Projects
- FY 1995-97 Investigate sources for upgrading collection storage containers, media, and labels, e.g. conservation of the mite collection.
Support: Department staff
Funding: NMNH-CP; Department operations
- FY 1996-97 (NHB) Replace 500 out-of-date wooden storage units with pest-proof/dust-proof standard insect cabinets. These will be moved to the fifth floor East Wing (non-compactor area).
Support: Special Projects; NMNH-CP
Funding: NMNH-CP; Special Projects
- FY 1997 (NHB) Acquire 130 Stanley Vidmar cabinets for storage of alcohol and slide collections in East Court/Wing.
Support: Special Projects
Funding: Special Projects
- FY 1998-99 (NHB) Acquire ca. 2000 NMNH entomological drawers for expansion and replacement of old drawers.
Support: NMNH-CP
Funding: NMNH-CP (Collections Improvement Fund)
- FY 1998 (MSC) Acquire 5 Stanley-Vidmar cabinets for expansion storage of slide collections.
Support: Special Projects
Funding: Special Projects

4) To modernize and improve productivity of the collections transactions management.

- FY 1995-98 Create authority files (families, genera, species); enhance directory of entomological systematists; improve CRIS prototype development.

Support: Department staff; SEL; ADP; CRIS
Funding: Combined Department operations

- FY 1996-97 (MSC) Acquire/upgrade sorting center computer station(s) with network connections.
Support: ADP
Funding: ADP; Special Projects
- FY 1996-98 Improve automation of the loan system, i.e. more efficient tracking, auto-generated reminders, submission of loan request information, including training staff to use the CRIS system.
Support: CRIS; ADP; Department IMU staff
Funding: CRIS
- FY 1996-98 (NHB) Upgrade computer equipment and printers to assist with collections inventory projects.
Support: ADP; Department IMU staff
Funding: NMNH-CP

5) To increase collections accessibility and use through electronics.

- FY 1995 Improved entomology network communications, including loan information among its components and affiliates.
Support: SEL; ADP
Funding: SEL; ADP
- FY 1995-96 Transfer appropriate databases onto the Gopher/WWW (World Wide Web) server and continue to update, e.g. primary types database, collection profiles, species-level inventory, specimen-level inventory of selected geographical areas, collection management tools like backlog database.
Support: ADP; Department IMU staff; CRIS; NMNH-CP Inventory Staff
Funding: ADP; NMNH-CP; Department operations
- FY 1995 Upgrade of the Hymenoptera larval collection into archival jars, including species-level inventory. Needs one tall steel cabinet and ca. 3 months FTE (GS5/7).
Support: external contract; Combined Department staff; NMNH-CP Inventory Staff
Funding: MNH-CP; SEL
- FY 1995 Upgrade of the Coleoptera larval collection into archival jars with new labeling, including a species-level inventory. Needs two steel cabinets and 1 year FTE (GS5/7).

- Support: external contract; Combined Department staff; NMNH-CP Inventory staff
Funding: NMNH-CP; SEL
- FY 1995 Complete curation (final 50%) and species-level inventory of Torymidae (Hymenoptera) of the world in order to complete publication. 100 species, 5000 specimens, 1 month FTE (GS5/7).
Support: external contract; SEL; NMNH-CP Inventory staff
Funding: external; SEL; NMNH-CP
- FY 1995 Complete curation (final 10%) and species-level inventory of Pteromalidae (Hymenoptera) of the New World, including new types and other identified material. 75 species, 1,500 specimens, 1 month FTE (GS5/7).
Support: external contract; SEL; NMNH-CP Inventory staff
Funding: external; NMNH-CP; SEL
- FY 1995 Bar-coding of Chionodes (Lepidoptera: Gelichiidae). 195 species, 17,500 specimens. 4 months FTE (GS7).
Support: external contract; SEL; NMNH-CP Inventory staff
Funding: external; SEL; NMNH-CP
- FY 1995-97 Conduct species-level inventories.
Support: Combined Entomology staff (=SI/SEL); NMNH-CP Inventory staff
Funding: Combined Department operations; external contracts; SEL; NMNH-CP
- FY 1995-97 Initiate specimen-level inventory for "focal groups or areas" to address national and international biodiversity priorities.
Support: Combined Entomology staff; NMNH-CP Inventory staff; external federal agencies; foreign governments/agencies
Funding: Combined Department operations; NMNH-CP external federal agencies; foreign governments/agencies
- FY 1995-96 Implement pilot bar-coding project for Diptera.
Support: NMNH-CP Inventory staff; Combined Entomology staff
Funding: NMNH-CP; Combined Entomology operations
- FY 1996 Complete curation (final 33%) of Bugbee Collection of Nearctic parasitic wasps (Hymenoptera: Eurytomidae), including a species-level inventory. 50 species, 10,000 specimens. 1 month FTE (GS5/7).
Support: external contract; NMNH-CP Inventory staff
Funding: external; SEL; NMNH-CP

- FY 1996 Upgrade the Lepidoptera larval collection into archival jars with new labeling, including a species-level inventory. 6 months FTE (GS5/7).
Support: external contract; Combined Entomology staff; NMNH-CP
Inventory staff
Funding: NMNH-CP; SEL
- FY 1996 (NHB) Convert the card catalogue of world bee (Hymenoptera: Apoidea) and/or weevil (Coleoptera: Curculionidae) species names, literature references and biological data, maintained and updated by the USDA until ca. 1970, into an electronic database and make it available to the scientific community through the Gopher network. This will be a pilot project for other such unique card catalogues of taxon names or biological data in the Department.
Support: external contract; ADP; Combined Department staff; NMNH-CP
Inventory Staff
Funding: CWR; SEL; NMNH-CP
- FY 1996-97 Evaluate and implement results of bar-coding pilot for other arthropod collection units.
Support: Combined Entomology staff; external agencies
Funding: Combined Entomology staff; external agencies
- FY 1997-01 Identification, curation upgrade and specimen data capture, including bar-coding, of three families of Nearctic Microlepidoptera (Acrolophidae, Gracillariidae, Tineidae) of ca. 600 species and ca.20,000 specimens. ca. 5 years partial FTE (GS9)
Support: external contract; NMNH-CP Inventory Staff
Funding: NMNH-CP

6) To develop a strategic collection growth plan.

- FY 1995-97 Establish voucher policy, including guidelines for future growth.
Support: Combined Entomology staff; ODC
Funding: Combined Entomology operations
- FY 1995-99 Selectively acquire/seek new quality collections, based on species level inventory and authority files.
Support: Combined Entomology staff; NMNH-CP
Funding: Collections Acquisition Program/donor support

7) Improve the high priority parts of the collections requiring specialist knowledge through staff career development and visiting specialists.

- FY 1995-99 Support staff career development of taxonomic expertise through specialist

workshops or training.
Support: OD; Department staff
Funding: ROF; NMNH-CP; Department operations

- FY 1996-99 Support visits of selected visiting experts to identify and curate high priority parts of the NMNH collections.
Support: Combined Entomology staff
Funding: external grants and contracts; NMNH-CP (Collections Improvement Fund)
- FY 1996-98 Establish a 3 year (term) position (traineeship) in entomological collections management to rotate through special units of the Department and to assist with and learn the specialized techniques, procedures, and materials used in entomological collections.
Support: external grants; Department staff
Funding: NMNH-CP; new NMNH Department base funding

8) Special Projects:

- FY 1995 (MSC) Construct 3 work station tables (layout space) in Pod 2 (one on each level) to allow more efficient curation and access to collections.
Support: Special Projects
Funding: Special Projects
- FY 1995 (NHB) Complete the transfer of the Brodzinsky Lopez-Penha Collection of Dominican amber to the Paleobiology Department through recall of specimens and reconciliation of discrepancies in specimen tallies.
Support: Department Staff; Paleobiology staff; NMNH-CP
Funding: Department operations
- FY 1995-97 (NHB & MSC) Consolidate literature storage, especially for infrequently used reference libraries, Department staff reprints, etc. Purchase proper storage containers (e.g. metal cabinets/shelves). Obtain additional NHB basement space for literature.
Support: Combined Entomology staff; volunteers
Funding: Combined Entomology operations
- FY 1996-97 Conservation and curation of the Blanchard Lepidoptera Collection of genitalia slides (ca. 3000) by remounting. 1.5 years FTE (GS9) required.
Support: external contract; Combined Entomology staff
Funding: external; SEL
- FY 1997-98 Restriction label the "Ceylon" collection, a specially funded project which has

been physically segregated, in order to be able to integrate and track it. 6 months FTE (GS5/7).

Support: external contract; Department Specimen Management Unit (=CMU) staff

Funding: NMNH-CP; external agencies; foreign agencies

FY 1997 Upgrade (identification and curation) and species-level inventory of Dynastinae collection (Coleoptera: Scarabaeidae). 1 year FTE (GS9/11).
Support: external contract (specialist); Combined Entomology staff
Funding: external; SEL

FY 1998-99 Establish and organize Department archives Transfer valuable items to SI archives or to Departmental secured areas or containers (e.g. file or other cabinets).
Support: SI Archives; Combined Entomology staff
Funding: Collections Improvement Fund; Combined Entomology operations

Appendix N

Exit Clearance Procedures

[see also **Section VI** - Loans]

All staff (Federal, Trust, USDA, WRBU, post-docs, pre-docs, resident research associates, etc.) with badges for 30 days or more must go through an exit clearance. Procedures are as follows:

Federal and Trust Fund SI staff:

- 1) Obtain Exit Clearance form (form no. SI-604) from Chair's office.
- 2) Call OHR (287-2493) one week in advance of separation date to schedule Exit Clearance.
- 3) ID badge will be turned in to Security during exit clearance.
- 4) See Collections Manager, for signature on Exit Clearance form (see attached form for collections-based staff exiting protocols).
- 5) See Management Specialist for final signature on Exit Clearance form; turn in keys to Department Administrative Office.
- 6) Management Specialist will give form to timekeeper for submittal to Payroll with last time card (last paycheck will be withheld by Payroll until form is submitted).
- 7) One copy of form will be filed in Chair's office with final time card.
- 8) Registered Pesticide Applicators must return identification card to the Department's Certified Applicator.

USDA, WRBU, research associates, visitors, etc.:

- 1) Obtain Exit Clearance form (SI-604) from Chair's office.
- 2) See Collections Manager, for signature on Exit Clearance form.
- 3) See Management Specialist for final signature on Exit Clearance form.
- 4) Turn in ID badge and keys to Department Administrative Office, along with form.
- 5) Original form will be filed in Chair's office.
- 6) Registered Pesticide Applicators must return identification card to the Department's Certified Applicator.

Recommendation: If appropriate (i.e., scientists) contact SI Archives to review correspondence , etc. of interest to them.

EXIT PROTOCOLS FOR COLLECTION-BASED STAFF

This checklist is in addition to the usual administrative exit clearance procedures, and pertains to collections management. These procedures are to be followed primarily in cases of departure from employment (usually retirement), but should also be used in cases of long-term visitors. It is expected that properly accomplishing these procedures may take several months, and it is suggested that the exiting researcher should begin actions at the onset of plans to leave the museum.

1. **Profiles** of assigned taxon groups will be made to reflect current status.

This item can be accomplished by contacting the Collections Manager for assistance from appropriate staff.

COMPLETED _____ DATE _____
(Initials)

2. **Borrows** of material must be returned to lending institution.

If research will be continued after departure, a list of all active borrows from other institutions (initiated during employment) must be provided.

COMPLETED _____ DATE _____
(Initials)

3. A list of **Outstanding Loans** must be made.

This item may be accomplished by consulting the Department Registrar for such documentation. Colleagues with outstanding loans must be contacted in writing (via regular or electronic mail) to advise them of future contact for returning loans. Paper copies of these contacts are to be placed on file for the succeeding Contact Person. When feasible, the scientific community should be notified of the transition by newsletter(s). Any associated collection data files, correspondence, outstanding collection files, and similar documents must remain at the Museum. Copies may be made for personal use.

COMPLETED _____ DATE _____
(Initials)

4. **Non-accessioned** material must be accessioned.

COMPLETED _____ DATE _____
(Initials)

5. Organization of **Specimens**.

All specimens in various storage units must be returned to proper storage.

COMPLETED _____ DATE _____
(Initials)

Final review by employee and supervisor:

Signature of employee _____ Date

Signature of supervisor _____ Date

Collections Manager _____ Date

Appendix O

Museum Support Center Procedures

There are general regulations for on-site use of the MSC facilities (e.g., entry and exit, hours of operation, facility management, visitors access, security, food consumption, pest management) which are available from the office of the Director of the Museum Support Center (MSC). Applications for credentials for use of the MSC by Department staff (i.e., identification badge for access to MSC zones/areas), as well as lists of those authorized to sign property passes or receive/ship specimens at the MSC are available through the SI Management Specialist (associated with the Chair's Office). MSC shuttle schedules are listed in the SI phone book and through the Smithsonian Institution's public, electronic, online information.

Arrangements for visitor access and use at the MSC facilities must be taken care of by the appropriate Contact Person or Unit Manager.

The Department of Entomology has a Sorting Center (room C-1100) for temporary sorting projects. Nothing is to be left on top of the half-high cabinets in the center of this room overnight. All the cabinets in the Sorting Center are for temporary use only for parts of the regular collection that are undergoing temporary sorting. Any sorting projects should be communicated through the appropriate Unit Manager and approved by the Collections Manager and/or the Collections Committee.

Use and occupancy of the various Entomology rooms adjacent to the Sorting Center are assigned for specific purposes and any significant changes or movement of furniture or materials in or out of these rooms must be recommended by the Space Committee and approved by the Chair.

All dry specimens (pinned and slides) are stored in Pod 2 (Levels 1, 2, 3) in previously assigned cabinets. The same is true for any alcohol collections in Pod 3. Any expansion space needed in other cabinets should be approved by the Collections Manager and/or recommended by the Collections Committee. Temporary moves of more than 10 drawer equivalents of the regular collection is discouraged. Any permanent move of parts of the regular collection either to the MSC or from the MSC must be recommended by the Collections Committee and approved by the Chair. Recommendation and approval of such moves will depend on space and the condition of the part of the collection to be moved (based on Department collection standards, i.e., profiles) (see **Appendix J**). General guidelines for collections to be moved require that for collections to be most efficiently accessed by staff and visitors, they should be at as high a profile level as possible (Levels 5/6 and preferably Level 7, i.e., inventoried) and should be in foam lined unit trays. Groups moved to the MSC should be of a whole family level taxon and should include alcohol, slide, and literature associate with the taxon. Use of equipment or supplies permanently stored at MSC should be communicated to the Collections Manager or appropriate Unit Manager.

Appendix P

Destructive Sampling Policy

The destructive sampling policy will govern a variety of situations, including Scanning Electron Microscope (SEM) studies which involve metallic coating of specimens, morphological disarticulation studies, serological or protein studies, chromosome and DNA research.

The Department welcomes the opportunity to use its collections in as many ways as possible to help further scientific study. Any specimens to be altered should be taken from a series of specimens of the same population of the taxon with the exact same data (e.g., place, date, collector, nest series, etc.). To ensure that the needs of both contemporary and future users are properly addressed the following guidelines are provided for DNA extractions

Procedure:

1. All proposals for research involving the extraction of DNA from Museum specimens should be addressed to the Collections Manager or Contact Person for the relevant taxon.
2. A proposal should include:
 - a) a brief outline of the project
 - b) a brief justification of the material required to do the research
 - c) evidence that the proposed techniques produce reliable results
 - d) evidence that the requestor has the necessary experience

This proposal will be evaluated by the Contact Person or the Department Collections Committee in consultation with outside expert sources with regard to scientific importance and technical feasibility. Further information might be requested.

3. The choice of specimens and their use will be under the guidance of the appropriate Contact Person. The smallest possible sample will be taken, from the least intrusive site and causing the least damage to the specimen.

Terms of agreement

4. The applicant agrees to:
 - a) return aliquots of extracted DNA and PCR, or the altered whole/parts of the specimens, whenever possible, to the Department
 - b) provide GenBank/EMBL accession numbers or computer readable copies of sequence data derived from Department specimens as soon as possible but no later than the acceptance of the paper for publication or as soon as the numbers are issued. The Department undertakes not to disseminate these data until they are accepted for publication
 - c) provide copies of experimental protocols that differ from published methods. The

- Department undertakes not to publicize such innovations until they have been published
- d) publish jointly with Department staff if they have contributed significantly to the work
 - e) acknowledge use of the Collection in publications involving use of Department specimens (reprints of such publications should be sent to the Department)
 - f) provide notation and/or cross-referencing on specimens or remaining parts thereof to the other parts of that specimen as well as other repositories of those parts
5. The Department retains the right to insist that tissue extractions are done in an appropriate laboratory within the Department, where this is feasible and desirable.
6. Fees might be charged to reimburse the Department for any of the necessary resources beyond the reasonable and customary loan procedures.
7. Material can only be passed to third parties or PCR products subsequently used with the approval of the Department Contact Person or the Collections Committee.
8. The Department retains all rights to DNA sequences or altered whole or parts of specimens derived from specimens in its collections. The research and the results of the research may not be commercially exploited in any way without the prior written agreement of the Department. Such agreements may be refused in the Department's absolute discretion or granted subject to such conditions as the Department may decide (and may well require prior agreement as to the sharing of the financial benefits arising from exploitation).
9. The Department retains the right to refuse permission for DNA to be extracted or other partial or whole destruction of specimens.
10. The material should not be used for commercial or profit making purposes without appropriate permission from the Department, NMNH, or Smithsonian Institution.
11. The recipient shall comply with all laws, regulations, and/or guidelines applying to the use of the material and assume sole responsibility for any claims or liabilities which may arise as a result of the recipient's use of the material.

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