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CATALOG OF ENTOMOLOGICAL TYPES IN THE BERNICE

P. BISHOP MUSEUM

Introduction¹

By F. J. Radovsky, G. A. Samuelson and W. A. Steffan²

Abstract: A catalog of more than 10,000 primary types in the Department of Entomology collections in the Bishop Museum is to be published in parts, not in systematic sequence, over a period of several years. Installments will appear in *Pacific Insects*. Plans of eventually reissuing the catalog in a single volume are discussed. This introduction briefly describes some background and content of the type collections and explains format and methods of treating species-group entries in the catalog.

A catalog of the extensive holdings of primary types in the Department of Entomology collections in Bishop Museum is initiated with this introductory section and the following 4 articles treating particular groups.

Type representation in these collections presently encompasses most arthropod classes, excepting strictly marine groups but including terrestrial Amphipoda and Isopoda among the Crustacea³. Insects and arachnid groups (Acari, Araneida, Pseudoscorpionida) make up the bulk of these holdings. Among the insects, Hemiptera, Coleoptera, Diptera, and Hymenoptera rank as the orders most strongly represented in the type collections. Among other groups, type holdings of the Acari are most notable and they are reported upon first in the catalog.

In 1974 the number of primary types contained in the entomological collections exceeded 10,000, and the number continues to grow rapidly. This reflects the remarkable expansion of the Department of Entomology and its collections over the past 2 decades. During this period the department has developed into an important center for research in systematic entomology of the Asian-Pacific area. The growth stems from extensive field work throughout the Pacific,

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²Bishop Museum, P. O. Box 6037, Honolulu, Hawaii 96818, U.S.A.

³For a partial listing of invertebrate types deposited elsewhere in Bishop Museum, see L. C. Eldredge [1965] *Catalog of Invertebrate Type Specimens*, Bernice P. Bishop Museum, Department of Zoology, Division of Invertebrates. Issued by the Pacific Scientific Information Center, Bishop Museum. Coverage includes types of Pycnogonida and aquatic Crustacea.

including the establishment of a field station in New Guinea⁴, as well as investigations in Asia and polar regions. These projects, together with the acquisition of other collections from institutions⁵ and individuals; have dramatically augmented the earlier departmental holdings which largely resulted from the *Fauna Hawaiiensis* survey⁶ and a number of later expeditions to Pacific islands preceding World War II.⁷

Today these collections, comprising over 10,000,000 specimens, continue to be studied by more than 250 systematists located in many countries and institutions throughout the world. Materials studied by collaborating specialists as well as staff members form the basis of the type and permanent reference collections.

Most of the results of studies on these collections have appeared in publications generated by Bishop Museum. During the initial years, departmental holdings were reported in the *Occasional Papers* series and *Bulletins* of Bishop Museum. In 1954 the first of the series *Insects of Micronesia* appeared, followed in 1959 by the quarterly *Pacific Insects*. As an adjunct to the latter, the *Pacific Insects Monograph* series was started in 1960 for publication of longer works. In 1964 the *Journal of Medical Entomology* was established to publish papers on all phases of medical entomology and acarology from the world standpoint, including systematics of arthropods of potential medical or veterinary significance.

The task of cataloging the types presently accessioned in the department will require several years to complete. Therefore, it is expeditious to report upon these collections by group, such as family or order, as each is completed, making the information available soon after it is compiled. Installments are to be published intermittently in *Pacific Insects* and their appearance will not conform to systematic order. Each installment has an introduction with pertinent facts about holdings of the taxon being treated and appropriate discussion of any inherent problems, special terminologies, special symbols, etc.

As groups are studied, a card file identical in format to catalog entries is made. When a card file is completed for a group, it is checked, typed with an introduction and generic inventory, edited, and published as an installment. A summary of the general holdings for the treated group is included in the installment. The format has been constructed with the facilitation of entry into an electronic data processing (EDP) system as a major consideration. We anticipate that EDP will be applied to the card data at an appropriate time.

⁴Wau Ecology Institute (incorporated in 1971), J. L. Gressitt, Director. This affiliated institution was formerly known as Bishop Museum New Guinea Field Station (established in 1961).

⁵A most noteworthy contribution was a gift from the Hawaii Sugar Planters' Association in 1964 of more than 153,000 specimens, including about 2110 primary types. Other important contributions regularly include types described from holdings of the Department of Entomology collection of the University of Hawaii. Descriptions of these species frequently appear in the *Insects of Hawaii* series published by the University of Hawaii and the *Proceedings of the Hawaiian Entomological Society*, as well as in Bishop Museum publications.

⁶*Fauna Hawaiiensis* (1899–1913), edited by David Sharp, was published in 3 volumes in 18 parts, treating the "... Zoology of the Sandwich (Hawaiian) Isles." Bishop Museum and British Museum (Natural History) contain the bulk of the collections reported upon in this series, with the latter possessing most of the primary types of species described therein.

⁷Early Bishop Museum expeditions which resulted in important entomological collections from Pacific islands included the following: 1923, Tanager Expedition to the NW Hawaiian Islands, Johnston and Wake Islands; 1924, Whippoorwill Expedition to the Equatorial Islands; 1924, Whitney South Seas Expedition to Samoa, Fiji, and central Pacific atolls; 1929–1932, Pacific Entomological Survey to the Marquesas and Society Islands; 1934, Mangarevan Expedition to the Society, Tuamotu, Mangareva Islands; 1936, Insect Survey of Guam; 1936, Micronesian Expedition in cooperation with Japanese scientists; 1937–1938, 1940, Expeditions to Fiji and Samoa.

At some future time a complete catalog may be issued in a single volume. This would include all of the untreated groups as well as all previously published installments, updated as necessary, in systematic order. Supplements may then be issued at intervals to report new accessions.

Types. The catalog is essentially limited to primary types (holotypes, lectotypes, and neotypes). Syntypes or cotypes, sometimes regarded as secondary types, are listed in the catalog to the extent that they are represented in Bishop Museum holdings⁸, but under no circumstance is any entry to be construed as a lectotype designation. Other types are included only in the case of some allotypes. Allotypes have commonly received Bishop type numbers and have been listed in the type register⁹; when the corresponding holotypes have been deposited elsewhere, these allotypes are included in the catalog as separate entries. Also, allotypes that have been deposited with holotypes are generally listed as part of the holotype entries.

Format and use of catalog. The fundamental name-unit in this catalog is the *basonym*, that is the genus-group name(s) and the species-group name(s) of the original combination. A subgeneric name is included in a catalog entry only if it was originally used in the basonym.

Basonyms may be retrieved in 2 ways. The 1st is an alphabetical arrangement of species-group epithets for all type holdings in the group treated, regardless of generic assignment. This part makes up the bulk of the catalog, as it contains annotations on type specimens.

The 2nd is a generic inventory of type holdings. This contains an alphabetical listing of species-group names whose types are deposited in the Bishop Museum.

This system enables the user to directly retrieve the species-group epithet; the generic coupling along with the rest of the information in an entry should suffice in most cases to identify the species being sought. The generic inventory will enable the user to quickly appraise the collection holdings, even though a name may no longer be considered valid per se or in the given combination.

Information concerning type specimens is to be presented in each installment of the catalog as shown below. Numbers enclosed in parentheses are keyed to explanations which follow.

species-group epithet⁽¹⁾ Author⁽²⁾ genus-group epithet⁽³⁾ TYPE⁽⁴⁾ sex or stage⁽⁵⁾ type number⁽⁶⁾
 year of publication⁽⁷⁾ literature citation⁽⁸⁾ Method of preservation⁽⁹⁾
 collection data⁽¹⁰⁾
 biotope data⁽¹¹⁾
 remarks⁽¹²⁾

(1), (2) In binomens the specific epithet + author(s) are listed; in trinomens the subspecific epithet + author(s) are listed, with the specific epithet following the genus-group name(s). Infrasubspecific epithets are correspondingly treated.¹⁰

(3) Subgeneric epithet is given in parentheses following generic epithet, only if it was included in the original description.

⁸The act of listing syntypes in the catalog does not signify that there has not been previous lectotype designation from syntypes deposited in other collections. Where the author(s) of an installment has knowledge of such prior designation, representatives of the syntype series are nonetheless listed with a notation to that effect.

⁹Primary types and sometimes allotypes receive numerical designations from the Bishop Museum Register of Entomological Types as they are accessioned therein.

¹⁰Types of infrasubspecific taxa, regardless of availability, that are in the type collection and have been assigned type numbers are included in the catalog.

(4) Kind of type, e.g., HOLOTYPE, is printed in capitals. Allotype deposited with holotype is reported under remarks.

(5) Sex, when known, is represented by appropriate symbol; corrected sex is enclosed in square brackets [. . .]. Stages and castes, which vary according to group, are identified by symbols as specified in introduction of the installment.

(6) Type numbers are listed without prefix. Published prefixes Bishop, BBM-, BPBM are synonymous as applied to departmental holdings and have no bearing on numerical designation. These numbers apply only to types listed in the Bishop Museum Register of Entomological Types and are independent of numerical designations of types contained in other departments of Bishop Museum. When 2 or more numbers are listed with an entry, all but the first are relegated as invalid synonyms.

(7) Year of literature citation is published in corrected form according to available information. If it does not agree with the apparent year as given in the original publication, then the corrected year is enclosed in square brackets [. . .] and the apparent year is given in parentheses following the literature citation.

(8) Serial or book title, using standard abbreviations, is printed in *italics*; volume number is printed in **boldface** type; pages and figures are printed in roman type. Issue numbers are generally given following the volume, in roman type; in some sections, they are omitted except when essential for recovery.

(9) The basic method of preservation is given, normally as 1 of 3 methods: pin, slide, fluid.

(10) Locality starting with the largest geographic division and going to the smallest; distances (in kilometers, km); elevation (in meters, m); date (month, year, separated by periods, with months in upper case roman numerals); collector(s). These data, given in the order shown, are corrected according to available information; questionable terms are identified by a question mark (?); significant information published for the first time, such as locality corrections, is enclosed in square brackets [. . .]. (The geographical terminology, particularly with respect to regions and countries, complies with certain standard references but has been modified for the purpose of this catalog in the interests of practicality. A section of the catalog to be published later will treat the standards of geographic usage in detail.)

(11) Biotope data include pertinent ecological information and mode of collection; in some cases this information may be quite detailed¹¹. When no biotope data are known, this line is omitted and remarks (if any) are given on line below collection data.

(12) Remarks include any detailed comments on mode of preservation, condition of type, and anything else thought to be of importance which has bearing on the type specimen or type series. This line is omitted where not pertinent.

Contributors. All of the senior departmental staff based in Honolulu have made important contributions to the design of this catalog and may author forthcoming installments. In some cases, installments may also be authored by collaborators from other institutions who have extensively treated Bishop Museum materials in their researches. Museum staff participating in this project are listed below along with their areas of broad taxonomic coverage in which they may be expected to contribute, followed in parentheses by their more immediate areas of speciality.

¹¹See, for example, treatment of type hosts of parasitic Acari in the following installment of this catalog by J. M. Tenorio.

- W. C. Gagné – Hemiptera (Miridae)
J. L. Gressitt – Coleoptera (Cerambycidae, Chrysomelidae, Curculionidae)
F. G. Howarth – Diptera (Ceratopogonidae)
F. J. Radovsky – Arachnoids (Acari); insects ectoparasitic on vertebrates
G. A. Samuelson – Coleoptera (Cerambycidae, Chrysomelidae)
W. A. Steffan – Diptera (Culicidae, Sciaridae)
J. A. Tenorio – Diptera (Culicidae, Ephydriidae)
J. M. Tenorio – Arachnoids (Acari); insects ectoparasitic on vertebrates; Diptera (Celyphidae)

As a final introductory note, we wish to acknowledge the outstanding efforts of the late Amy Suehiro, former curator of the Hawaiian Section of our entomological collections. She compiled an extensive file on the type holdings for the whole department and, prior to her death in 1968, she prepared an annotated list of types which has facilitated the organization of this catalog.