

A CATALOG OF THE COLEOPTERA OF AMERICA NORTH OF MEXICO

FAMILY: HETEROCERIDAE



UNITED STATES
DEPARTMENT OF
AGRICULTURE

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PREPARED BY
SCIENCE AND
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FAMILIES OF COLEOPTERA IN AMERICA NORTH OF MEXICO

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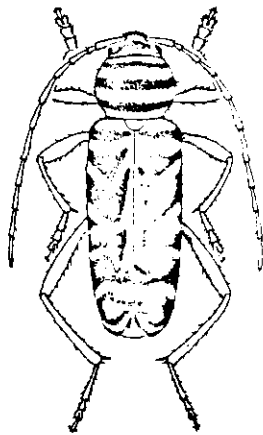
On January 24, 1978, four USDA agencies—Agricultural Research Service (ARS), Cooperative State Research Service (CSRS), Extension Service (ES), and the National Agricultural Library (NAL)—merged to become a new organization, the Science and Education Administration (SEA), U.S. Department of Agriculture.

This publication was prepared by the Science and Education Administration's Federal Research staff, which was formerly the Agricultural Research Service.

A CATALOG OF THE COLEOPTERA OF AMERICA NORTH OF MEXICO

FAMILY: HETEROCERIDAE

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FOREWORD

For the user of scientific names, an up-to-date taxonomic catalog providing currently accepted names and pertinent bibliographic and distributional data is an indispensable tool. Although taxonomic literature is constantly changing to reflect current work, the traditional published taxonomic catalog remains static with updating left to the individual user until it is revised. Production of catalogs in the past has been laborious with long printing delays resulting in data that are obsolete before being published. However, the computer now provides the capability of storing, updating, and retrieving taxonomic data; rapid publication through computer-driven type-setting machinery; and a greater degree of currentness and flexibility.

All 119 fascicles in this catalog of the beetles of America north of Mexico are produced by an original suite of computer programs, designed and written during a pilot project involving personnel of the Systematic Entomology Laboratory and the Communications and Data Services Division, Science and Education Administration.

The published data are stored on computer tape, are updated periodically to reflect taxonomic progress in this family, and are available in a data base for computer searching.



T. W. Edminster
Deputy Director for Federal Research
Science and Education Administration

PREFACE

The Coleoptera, or beetles, are represented in the world by about 220,000 described species, of which about 24,000 occur in the United States and Canada. A comprehensive taxonomic catalog of beetles for this area has not been available except the series of world-based "Coleopterorum Catalogus" volumes (1909-present, Junk, Berlin). The Leng "Catalogue of the Coleoptera of America North of Mexico" (J. D. Sherman, Jr., Mt. Vernon, NY), which was published in 1920 with supplements to the end of 1947, is a checklist. However, it has served professional and amateur alike for nearly 60 years as the principal source of scientific names of beetles. Since 1947, many new taxa have been described and many changes in status and nomenclature have appeared in numerous scattered publications, but little effort has been made to summarize these changes.

This catalog will supplant the Leng catalog and supply additional essential information. It is produced by an original suite of storage, retrieval, and printing programs written especially for automated taxonomic catalogs.

The catalog for each family is published as a separate fascicle with its introductory text, bibliography, and index. Each family is numbered as listed, but the order of issuance of fascicles is not necessarily in numerical sequence. The publishing of separate fascicles makes data available shortly after they are assembled. Computer tapes for each fascicle are maintained for updating and necessary reprinting.

The information on each family is the responsibility of the respective author or authors. The editors modify it only to correct obvious errors and to make it conform to the requirements of the computer programs.

No original proposal for a new name, taxon, status, or classification is given, such data having been previously published, but new host and distributional data are often listed. The rules of "The International Code of Zoological Nomenclature" are followed.

The geographic scope of this catalog includes the continental United States, Canada, Alaska, Greenland, and the associated continental islands. Names of taxa found only in other regions are excluded. If the range of a species extends outside these geographic limits, this fact is indicated. Inside the back cover is a map of the 12 faunal regions based on historical and faunal criteria to simplify distribution recordings. Two-letter Postal Service style abbreviations are used for States and Provinces, and faunal regions are indicated in each distribution record by a diagonal line between groups of abbreviations.

It is not the purpose of this catalog to present a complete scheme of higher classification within the order. The familial makeup is somewhat intermediate between that of R. H. Arnett in "The Beetles of the United States" (1960-62, Catholic University Press, Washington, DC) and that of R. A. Crowson in "The Natural Classification of the Families of Coleoptera" (1967, Biddles Ltd., Guildford, England). Modifications of these two systems are largely those advocated by J. F. Lawrence based in part on suggestions by taxonomic specialists for certain families.

Generic groups and higher categories within the family are arranged phylogenetically as indicated by the author of the particular fascicle, and species group names with their respective synonyms are arranged alphabetically.

Names referable to *incertae sedis* and *nomen dubium* are listed separately at the end of the nearest applicable taxon with notations as to their status.

Each available name is followed by its author, date proposed, and page number referring to the complete bibliographic citation containing the original description. Following each generic name are

the type-species and method of its designation, necessary explanatory notes, and pertinent references on immature stages, taxonomy, redescription, ecology, and keys. After the specific name entry are the original genus (if different from the present placement), type-locality, geographical distribution by State, Province, and broad extralimital units, explanatory notes, pertinent references to immature stages, taxonomy, redescription, and ecology, depository of type-specimen and its sex, and hosts.

In addition to the list under the map of faunal regions (inside back cover), the following abbreviations are used in this catalog:

ABBREVIATIONS, GENERAL

| | |
|-------------------------------------|------------------------------------|
| Amer. Bor.—America Borealis | Mus.—Museum |
| Amer. Sept.—America Septentrionalis | N. Amer.—North America |
| Autom.—Automatic | Orig. des.—Original designation |
| C. Amer.—Central America | Preocc.—Preoccupied |
| Co.—County | S. Amer.—South America |
| Cosmop.—Cosmopolitan | Sp.—Species |
| Design.—Designated | Subseq. monot.—Subsequent monotypy |
| F.—Female | Subsp.—Subspecies |
| Holarc.—Holarctic | Taut.—Tautonymy |
| Isl.—Island | Univ.—University |
| M.—Male | USA—United States of America |
| Mex.—Mexico | Var.—Variety |
| Monot.—Monotypy | W. Ind.—West Indies |

MUSEUMS IN THE CONTINENTAL UNITED STATES AND CANADA¹

| | |
|---|---|
| AMNH—American Museum of Natural History, New York | FSCA—Florida State Collection, Gainesville |
| ANSP—Academy of Natural Sciences, Philadelphia, PA | HAHC—H. & A. Howden Collection, Ottawa, Canada |
| BYUC—Brigham Young University, Provo, UT | ICCM—Carnegie Museum, Pittsburgh, PA |
| CASC—California Academy of Sciences, San Francisco | INHS—Illinois Natural History Survey, Urbana |
| CISC—University of California, Berkeley | JGEC—J. G. Edwards Collection, San Jose, CA |
| CNCI—Canadian National Collections, Ottawa | KMFC—K. M. Fender Collection, McMinnville, OR |
| CSLB—Long Beach State College, CA | KSUC—Kansas State University, Manhattan |
| CUIC—Cornell University, Ithaca, NY | LACM—Los Angeles County Museum, CA |
| CWOB—C. W. O'Brien Collection, Tallahassee, FL | LSUC—Louisiana State University, Baton Rouge |
| DHKC—D. H. Kistner Collection, Chico State College, CA | MCZC—Museum of Comparative Zoology, Harvard University, Cambridge, MA |
| ELSC—E. L. Sleeper Collection, Long Beach State College, CA | MSUC—Michigan State University, East Lansing |
| FMNH—Field Museum of Natural History, Chicago, IL | NCSM—North Carolina State University, Raleigh |
| | NYSM—New York State Museum, Albany |
| | OSEC—Oklahoma State University, Stillwater |
| | OSUC—Ohio State University, Columbus |
| | OSUO—Oregon State University, Corvallis |

¹ Abbreviations for U.S. and Canadian museums abridged from Arnett, R. H., Jr., and Samuelson, G. A., 1969, "Directory of Coleoptera Collections of North America (Canada Through Panama)," Cushing-Malloy, Ann Arbor, MI, 123 pp.

PMNH—Peabody Museum, Yale University, New Haven, CT
PSUC—Pennsylvania State Museum, University Park
PURC—Purdue University, West Lafayette, IN
RUIC—Rutgers University, New Brunswick, NJ
SEMC—Snow Museum, University of Kansas, Lawrence
SJSC—San Jose State College, CA
SLWC—S. L. Wood Collection, Provo, UT

SMSH—Stovall Collection, University of Oklahoma, Norman
TAMU—Texas A. & M. University, College Station
UCDC—University of California, Davis
UMMZ—University of Michigan, Ann Arbor
UMRM—University of Missouri, Columbia
USNM—U.S. National Museum of Natural History, Washington, DC
WSUC—Washington State University, Pullman

MUSEUMS IN FOREIGN COUNTRIES

BMNH—British Museum (Natural History), London
BPBM—Bernice P. Bishop Museum, Honolulu
GUHC—Glasgow University, Hunterian College, Scotland
HMOX—Hope Museum, Oxford, England
HNHM—Hungarian Natural History Museum, Budapest
IPZE—Institut Pflanzenschutzforschung Zweigstelle, Eberswalde, East Germany
IRSB—Institut Royal Sciences Belgique, Brussels
MFNB—Museum für Naturkunde (Humboldt), Berlin
MGFT—Museum G. Frey, Tutzing, Munich, West Germany
MHNL—Museum d'Histoire Naturelle, Lyon, France
MNHP—Museum National d'Histoire Naturelle, Paris
MNSL—Museum of Natural Sciences, Leipzig, East Germany

MZBS—Museum Zoologia, Barcelona, Spain
NHRS—Naturhistoriske Riksmuseet, Stockholm
NMPC—Narodni Museum, Prague, Czechoslovakia
SCUT—Spinola College, University of Turin, Italy
SMTD—Staatliches Museum für Tierkunde, Dresden, East Germany
UNAM—Universidad Nacional Autonoma, Mexico City
UZMH—Universitets Zoologiska Museum, Helsinki, Finland
ZMAS—Zoological Museum, Academy of Sciences, Leningrad
ZMPA—Zoological Museum, Polish Academy of Sciences, Warsaw
ZMUL—Zoological Museum, University of Lund, Sweden
ZMUM—Zoological Museum, University of Moscow
ZSBS—Zoologische Sammlung Bayerischen Staates, Munich, West Germany

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Family HETERO CERIDAE

By Francisco Pacheco

Heteroceridae, the variegated mud-loving beetles, are small brown, flattened beetles which live on the shores of fresh and brackish lakes, rivers, and ponds. The larvae construct subsurface tunnels in damp sand where they feed on zooplankton. Adults occupy their own tunnels, the entrances of which are usually marked by sand chimneys. Most adults feed on zooplankton, but some are omnivorous. Both adults and larvae can be collected by pouring water on the surface of the sand, and adults are strongly attracted to light. None of the species are of economic importance.

Taxonomy: The first heterocerid, *Dermestes fenestratus* Thunberg, was described from the Old World in 1784. In 1792, Fabricius described the genus *Heterocerus* based on *Apate marginatus* F., and many additional species were described from the Old World in the early 19th century. Say described *H. pallidus* and *H. pusillus* from Missouri in 1823, and in 1825, MacLeay proposed the family Heteroceridae. In 1843, Kiesenwetter recognized 25 species in the first world monograph of *Heterocerus*, and later (1851) added 10 new species from North America and the West Indies. Sharp (1882, 1887) described 8 new species in the *Biologia Centrali-Americana*. A number of new genera based on Old World species were described in the late 19th century: *Augyles* and *Phyrites* Schiodte, 1866; *Micilus* Mulsant and Rey, 1872; *Elythomerus* Waterhouse, 1874; and *Taenheterocerus* Kuwert, 1890. Horn monographed the boreal American *Heterocerus* in 1890, and included 11 valid species and 13 synonyms and varieties. By 1950, about 200 species names had been proposed, 59 of which applied to New World species. Pacheco (1964) in monographing the family for the New World, considered 35 of these names valid, and 9 as synonyms, but did not treat 15 because their type-specimens were not available. He described 20 new species and 15 new genera, and restricted the genus *Heterocerus* to the Old World.

Morphology: Eggs are laid in small masses in breeding chambers, and are small, oblong, and whitish. The larvae are campodeiform and strongly setose, and the pronotal segments are wider than the cylindrical abdomen; the legs are short, and the apex of the abdomen has a soft, fleshy, unpaired lobe on the ventral side.

Adults are small, oblong, and flattened, and vary in length from 1 to 8 mm. The color is usually fuscous with the elytra often variegated, and the body is covered with fine vestiture. The mandibles are strongly developed, especially in males. The antennae are relatively short, 9- to 11-segmented, with the terminal 6 or 7 segments compact and serrate. The tibiae are flattened and spined, an adaptation for digging. The tarsi are 4-segmented, the first and fourth unusually elongated. The abdomen has 5 visible sterna with the first sternum fitted with a stridulatory file on each side. Each file arches from the antero-lateral corner toward the median, and is scraped by a ridge on the hind femur. The stridulatory file is the most consistent familial character. The male genital structures, illustrated by Pacheco (1964b) for the New World species, bear the most significant characters for the separation of species.

Tribe AUGYLIINI

Genus EXPLORATOR Pacheco

Explorator Pacheco, 1964b: 21. Type-species: *Heterocerus canadensis* Fall (orig. des.).
canadensis (Fall), 1920: 213 (*Heterocerus*). MB: Thornhill; AK NT/ AB SK MB.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
REDESCRIPTION: Pacheco, 1964b: 22.

Genus CENTURIATUS Pacheco

Centuriatus Pacheco, 1964b: 23. Type-species: *Heterocerus auromicans* Kiesenwetter (orig. des.).
auromicans (Kiesenwetter), 1851: 287 (*Heterocerus*). NY: NY; BC/ AB SK MB/ WI MI ON/ CO/
NE KS IA IL/ NY NJ MD/ TX/ LA.

TYPE DEPOSITORY: MCZC.
TAXONOMY: Pacheco, 1964b: 23.
REDESCRIPTION: Horn, 1890: 14; Pacheco, 1964b: 23.

compactus (Fall), 1937: 30 (*Heterocerus*). MB: Aweme; AB MB/ NE IA IL.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 25.
REDESCRIPTION: Pacheco, 1964b: 25.

Genus MICROAUGYLES Pacheco

Microaugyles Pacheco, 1964b: 28. Type-species: *Heterocerus moleculus* Fall (orig. des.).
moleculus (Fall), 1920: 212 (*Heterocerus*). MB: Aweme; MB/ NE KS IL.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 29.
REDESCRIPTION: Pacheco, 1964b: 29.

mundulus (Fall), 1920: 212 (*Heterocerus*). TX: El Paso; CA/ CO/ NM TX.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 30.
REDESCRIPTION: Pacheco, 1964b: 30.

Tribe HETERO CERINI

Genus LANTERNARIUS Pacheco

Lanternarius Pacheco, 1964b: 44. Type-species: *Heterocerus brunneus* Melsheimer (orig. des.).

TAXONOMY: Pacheco, 1964b: 44.
KEYS: Pacheco, 1964b: 45.

brunneus (Melsheimer), 1844: 99 (*Heterocerus*). PA; NT/ BC WA OR/ MB MT/ CA/ IL/ PA/ AZ.

TYPE DEPOSITORY: AMNH.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 47.
REDESCRIPTION: Kiesenwetter, 1851: 299; Horn, 1890: 10; Pacheco, 1964b: 47.

gemmatus (Horn), 1890: 9 (*Heterocerus*). CA; BC WA OR ID/ MT/ CA/ UT.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 48.
REDESCRIPTION: Pacheco, 1964b: 48.

mollinus (Kiesenwetter), 1851: 289 (*Heterocerus*). USA; MB MT SD/ MI/ NE KS IA MO IL IN
OH/ NY PA NJ MD DC/ AZ NM TX OK/ AR LA MS TN.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 52.
REDESCRIPTION: Pacheco, 1964b: 52.

parrotus Pacheco, 1964b: 50, figs. 152-156 and 489. ON: Ancaster; NT/ BC WA OR ID/ AB SK MB
MT/ MN WI MI ON PQ/ NB/ CA NV/ UT/ IA MO IL IN/ NY/ NH CT.

TYPE DEPOSITORY: CNC, Ottawa.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1964b: 50.

sinuosus Pacheco, 1964b: 46, figs. 132-139 and 487. CA: Yermo, San Bernardino Co.; BC OR/ MB MT/ CA NV/ UT.

TYPE DEPOSITORY: AMNH.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1964b: 46.

Genus NEOHETEROCERUS Pacheco

Neoheterocerus Pacheco, 1964b: 54. Type-species: *Heterocerus gnatho* LeConte (orig. des.).

TAXONOMY: Pacheco, 1964b: 54

angustatus (Chevrolat), 1864: 407 (*Heterocerus*). CUBA; IA/ NY/ MA/ LA FL/ W.Ind.

TYPE DEPOSITORY: Gundlach Coll., Cuba.

SEX OF TYPE: ?.

TAXONOMY: Pacheco, 1964b: 62.

REDESCRIPTION: Pacheco, 1964b: 62.

fatuus (Kiesenwetter), 1851: 292 (*Heterocerus*). N. AMER; NB/ NY PA NJ/ Mex.

TYPE DEPOSITORY: MCZC.

SEX OF TYPE: M.

simplex Sharp, 1882: 117 (*Heterocerus*). Mex: Veracruz.

TYPE DEPOSITORY: BMNH.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1964b: 61.

REDESCRIPTION: Pacheco, 1964b: 61.

glicki (Pacheco), 1963: 5, figs. 11-16 (*Heterocerus*). TX: Brownsville; TX.

TYPE DEPOSITORY: UNA, Mexico.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1963: 5; Pacheco, 1964b: 60.

REDESCRIPTION: Pacheco, 1964b: 60.

gnatho (LeConte), 1863: 74 (*Heterocerus*). CA: Colorado River; BC WA OR ID/ AB SK MB MT/ WI/ CA NV/ UT/ IA IL/ Mex.

TYPE DEPOSITORY: MCZC.

SEX OF TYPE: M.

labratus LeConte, 1863: 75 (*Heterocerus*). CA: San Diego.

TYPE DEPOSITORY: MCZC.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1964b: 66.

REDESCRIPTION: Horn, 1890: 5.

intermuralis (Pacheco), 1963: 3 (*Heterocerus*). TX: Brownsville; TX/ LA.

TYPE DEPOSITORY: UNA, Mexico.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1963: 3; 1964b: 70.

REDESCRIPTION: Pacheco, 1964b: 70.

longilobulus Pacheco, 1964b: 57, figs. 163-167 and 491. IL: Tinley Creek, Cook Co.; IA IL/ PA NJ.

TYPE DEPOSITORY: FMNH.

SEX OF TYPE: M.

TAXONOMY: Pacheco, 1964b: 57.

pallidus (Say), 1823: 199 (*Heterocerus*). MO; AB SK MB/ MN MI/ NB/ CO/ NE KS IA MO IL IN OH/ NY PA NJ MD WV VA/ NM TX OK/ AR. Neotype designated (Pacheco, 1964b).

TYPE DEPOSITORY: Neotype, INHS.

SEX OF TYPE: M.

ventralis Melsheimer, 1844: 98 (*Heterocerus*). PA: Philadelphia.

TYPE DEPOSITORY: MCZC.

SEX OF TYPE: F.

TAXONOMY: Pacheco, 1964b: 64.

REDESCRIPTION: Kiesenwetter, 1843: 222; Horn, 1890: 6; Pacheco, 1964b: 64.

sandersoni Pacheco, 1964b: 58, figs. 168-173 and 491. IL: Urbana; MB MT ND SD/ WI/ NE KS IA
MO IL IN/ NY PA NJ MD/ AR MS TN.

TYPE DEPOSITORY: INHS.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 58.

Genus **EFFLAGITATUS** Pacheco

Efflagitatus Pacheco, 1964b: 74. Type-species: *Heterocerus assimilis* Grouvelle (design. by Pacheco, 1976:360).

TAXONOMY: Pacheco, 1964b: 74.
KEYS: Pacheco, 1964b: 75.

selanderi Pacheco, 1969: 37, figs. 1-5. FL: Highlands Co.; FL.

TYPE DEPOSITORY: FMNH.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1969: 37.

Genus **DAMPFIUS** Pacheco

Dampfius Pacheco, 1964b: 85. Type-species: *Heterocerus mexicanus* Sharp (orig. des.).

TAXONOMY: Pacheco, 1964b: 85.
KEYS: Pacheco, 1964b: 87.

collaris (Kiesenwetter), 1851: 292 (*Heterocerus*). N. AMER; MI/ MO IL IN/ NY PA NJ MD/ LA.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 89.
REDESCRIPTION: Horn, 1890: 11; Pacheco, 1964b: 89.

inciertus Pacheco, 1964b: 88, figs. 307-313 and 496. BC: Lumby; BC/ AB MB/ ON PQ/ IA IL/ CT.

TYPE DEPOSITORY: CNC, Ottawa.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 88.

mexicanus (Sharp), 1882: 118 (*Heterocerus*). MEX: Guanajuato; WA OR/ MT SD/ ON/ CA NV/
UT CO/ IL/ AZ NM TX/ LA/ Mex., C. Amer.

TYPE DEPOSITORY: BMNH.
SEX OF TYPE: F.

vilis Sharp, 1887: 773 (*Heterocerus*). Mex: Sonora.

TYPE DEPOSITORY: BMNH.
SEX OF TYPE: M.

difficilis Grouvelle, 1896: 7 (*Heterocerus*). Mex.

TYPE DEPOSITORY: BMNH.
SEX OF TYPE: M.
IMMATURE STAGES: Pacheco, 1964a.
TAXONOMY: Pacheco, 1964b: 90.
REDESCRIPTION: Pacheco, 1961: 12; Pacheco, 1964b: 90.

undatus (Melsheimer), 1844: 98 (*Heterocerus*). PA; MT/ ON PQ/ NB/ IA OH/ PA NJ.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 88.
REDESCRIPTION: Kiesenwetter, 1851: 293; Horn, 1890: 7; Pacheco, 1964b: 88.

Genus **PEDITATUS** Pacheco

Peditatus Pacheco, 1964b: 92. Type-species: *Heterocerus schwarzi* Horn (orig. des.).

TAXONOMY: Pacheco, 1964b: 92.
KEYS: Pacheco, 1964b: 93.

schwarzi (Horn), 1890: 11 (*Heterocerus*). TX, Lake Superior, and PA; IA/ PA NJ/ TX/ LA.

TYPE DEPOSITORY: MCZC.
TAXONOMY: Pacheco, 1964b: 95.
REDESCRIPTION: Pacheco, 1964b: 95.

texanus Pacheco, 1964b: 94, figs. 340-346 and 498. TX: Sabinal; TX.

TYPE DEPOSITORY: USNM.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 94.

Genus LAPSUS Pacheco

Lapsus Pacheco, 1964b: 96. Type-species: *Heterocerus tristis* Mannerheim (orig. des.).

tristis (Mannerheim), 1853: 218 (*Heterocerus*). AK: Sitka; AK NT/ BC WA ID/ AB SK MB MT SD/ MN WI MI ON PQ/ NB/ CA NV/ WY UT/ IA IL/NY PA NJ/ CT/ AR FL.

TYPE DEPOSITORY: Helsingfors.
SEX OF TYPE: ?.
TAXONOMY: Pacheco, 1964b: 97.
REDESCRIPTION: Horn, 1890: 13; Pacheco, 1964b: 97.

Unplaced Species of Heterocerini

labiatus Kiesenwetter, 1851: 282 (*Heterocerus*)(incertae sedis). NY.

TYPE DEPOSITORY: Munich Mus. (destroyed?).

miser Kiesenwetter, 1851: 290 (*Heterocerus*)(incertae sedis). OH.

TYPE DEPOSITORY: Munich Mus. (destroyed?).

substriatus Kiesenwetter, 1851: 290 (*Heterocerus*)(incertae sedis). N. AMER.

TYPE DEPOSITORY: Munich Mus. (destroyed?).

Tribe TROPICINI

Genus TROPICUS Pacheco

Tropicus Pacheco, 1964b: 102. Type-species: *Heterocerus pusillus* Say (orig. des.).

TAXONOMY: Pacheco, 1964b: 104.
KEYS: Pacheco, 1964b: 104.

minutus (Fall), 1920: 211 (*Heterocerus*). TX: Luling; TX.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 118.
REDESCRIPTION: Pacheco, 1964b: 118.

pusillus (Say), 1823: 200 (*Heterocerus*). MO; CA/ CO/ KS IA MO IL OH/ PA NJ MD DC VA/ MA/ AZ NM TX/ AR LA MS AL TN GA SC NC FL/ Mex., C.Amer., W.Ind. Neotype designated (Pacheco, 1961).

TYPE DEPOSITORY: Neotype, UNA, Mexico.
SEX OF TYPE: M.

limbatus Kiesenwetter, 1843: 215 (*Heterocerus*). N. Amer.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: F.

luteolus LeConte, 1863: 75 (*Heterocerus*). CA: Colorado R. near Ft. Yuma.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.

americanus Sharp, 1887: 772 (*Heterocerus*). AZ.

TYPE DEPOSITORY: MCZC.
SEX OF TYPE: M.
TAXONOMY: Pacheco, 1964b: 106.
REDESCRIPTION: Kiesenwetter, 1843: 223; Horn, 1890: 13; Pacheco, 1961: 9 and 1964b: 106.

BIBLIOGRAPHY

Chevrolat, L. A. A.

- 1864 Coleopteres de l'île de Cuba. Cinquieme memoire. Famille des Parnides, Heterocerides, Passalides et Lamellicornes (Tribus des Coprides, Aphodiides, Hybosorides, Geotrupides et Trogides). Annales de la Societe Entomologique de France, ser. 4, vol. 4, pp. 405-418.

Fabricius, J. C.

- 1792 Entomologia Systematica emendata et aucta. Hafniae, vol. 1, pp. 1-330, 331-538.

Fall, H. C.

- 1920 New Coleoptera. IX. The Canadian Entomologist, vol. 52, pp. 211-215.

Fall, H. C.

- 1937 Miscellaneous notes and descriptions (Coleoptera). The Canadian Entomologist, vol. 69, pp. 29-32.

Grouvelle, A. H.

- 1896 Quelques *Heterocerus* nouveaux des Indes Orientales et de L'Amérique. Notes from the Leyden Museum, vol. 18, pp. 3-13.

Horn, G. H.

- 1890 The species of *Heterocerus* of boreal America. Transactions of the American Entomological Society, vol. 17, pp. 1-16, illus.

von Kiesenwetter, E. A. H.

- 1843 Beitrage zur Monographie der Gattung *Heterocerus*. Zeitschrift fur die Entomologie, vol. 4, pp. 194-224.

von Kiesenwetter, E. A. H.

- 1851 Revision der Kafergattung *Heterocerus*. Linnaea Entomologica, vol. 5, pp. 281-300.

Kuwert, A. F.

- 1890 Bestimmungstabelle der Heteroceren Europas und der angrenzenden Gebiete, soweit dieselben bisher bekannt wurden. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien, vol. 40, pp. 517-548.

LeConte, J. L.

- 1863- New species of North American Coleoptera. Prepared for the Smithsonian Institution. Smithsonian Miscellaneous Collection, No. 167, pt. 1, 177 pp.

MacLeay, W. S.

- 1825 Annulosa Javanica or an attempt to illustrate the natural affinities and analogies of the insects collected in Java by T. Horsfield. London, 50 pp., illus.

von Mannerheim, C. G.

- 1853 Dritter Nachtrag zur Kaferfauna der Nord-Amerikanischen Lander des Russischen Reiches. Bulletin de la Societe Imperiale des Naturalistes de Moscou, vol. 26, pp. 95-273.

- Melsheimer, F. E.**
1844 Descriptions of new species of Coleoptera of the United States. Proceedings of the Academy of Natural Sciences of Philadelphia, vol. 2, pp. 98-118.
- Mulsant, E., and C. Rey**
1872 Histoire naturelle des Coleopteres de France. Tribu des Spinipedes. Paris, vol. 28 (sect. 4), 58 pp., illus.
- Pacheco, F.**
1961 Estudio preliminar de la taxonomia de los Heteroceridos de Mexico (Coleoptera: Heteroceridae). Folia Entomologica Mexicana, vol. 1, 17 pp., illus.
- Pacheco, F.**
1963 Notas sobre Heteroceridos (Coleoptera: Heteroceridae). Acta Zoologica Mexicana, vol. 6, no. 4, pp. 1-12, illus.
- Pacheco, F.**
1964a Descripcion de la larva de *Dampfius mexicanus* (Sharp). (Coleoptera: Heteroceridae). I Memoria del dia del Parasitologo. ENA. SAG. Chapingo, Mexico, vol. 1, pp. 24-29, illus.
- Pacheco, F.**
1964b Sistemática, filogenia y distribución de los Heteroceridos de America (Coleoptera: Heteroceridae). Monografias del Colegio de Post-Graduados: No. 1, Chapingo, Mexico, pp. 155, illus.
- Pacheco, F.**
1969 A new species of Heterocerini (Coleoptera: Heteroceridae). The Florida Entomologist, vol. 52, no. 1, pp. 37-39, illus.
- Pacheco, F.**
1976 Designation of a type-species for *Efflagitatus* Pacheco (Coleoptera: Heteroceridae). The Coleopterists Bulletin, vol. 30, no. 4, pp. 360.
- Say, T.**
1823 Descriptions of coleopterous insects collected in the late expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under the command of Major Long. Journal of the Academy of Natural Sciences of Philadelphia, vol. 3, pt. 1, pp. 139-216.
- Schiodte, J. C.**
1866 De tunnelgravende Biller, *Bledius*, *Heterocerus*, *Dyschirius*, og deres danske Arter. Naturhistorisk Tidsskrift, Ser. 3, bd. 4, pp. 141-167.
- Sharp, D.**
1882 Heteroceridae. Biologia Centrali-Americana, Insecta, Coleoptera, vol. 1, pt. 2, pp. 116-119.
- Sharp, D.**
1887 Heteroceridae. Biologia Centrali-Americana, Insecta, Coleoptera, Supplement, vol. 1, pt. 2, pp. 772-774.
- Thunberg, C. P.**
1784 Novae insectorum species descriptae. Nova Acta Regiae Societatis Scientiarum Upsalensis, vol. 4, pp. 3.
- Waterhouse, C. O.**
1874 Notes on Australian Coleoptera, with descriptions of new species. Transactions of the Entomological Society of London, 1874, pp. 535-548.

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CAPITALS: All names for taxa above the generic level;

Boldface: Valid generic and subgeneric names;
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