

ARTHROPODS OF FLORIDA

And Neighboring Land Areas

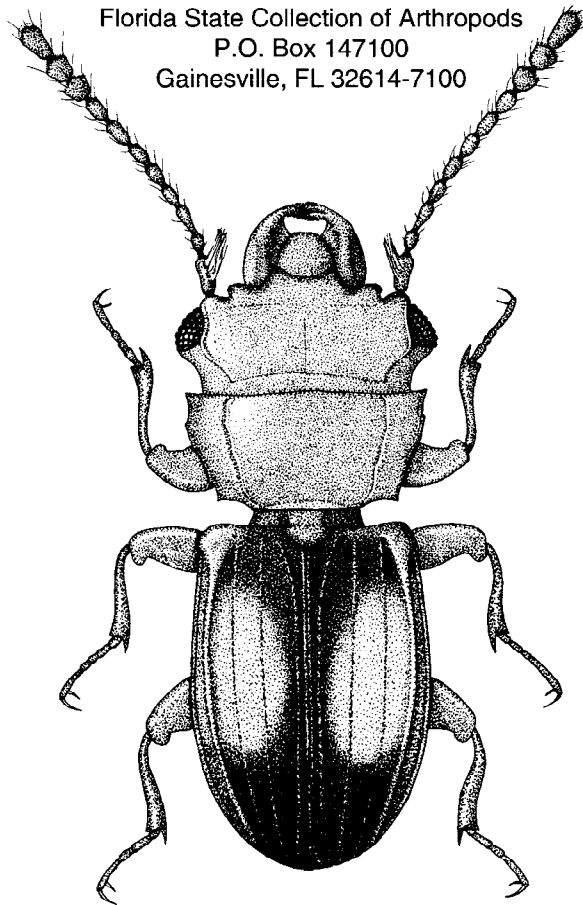
Volume 15

The Flat Bark Beetles of Florida (Coleoptera: Silvanidae, Passandridae, Laemophloeidae)

by

Michael C. Thomas

Florida State Collection of Arthropods
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FLORIDA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

Bob Crawford, Commissioner

Division of Plant Industry

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FOREWORD

It is well-known that some flat bark beetles are serious pests of stored grains. Little is published, however, about the biology or pest potential of most species of flat bark beetles. The first step in exploring the biology of these beetles for any geographic area must be a knowledge of the species occurring in the region. This volume of the Arthropods of Florida and Neighboring Land Areas thoroughly covers the species which occur or might be expected to occur in Florida. Complete descriptions, illustrations, and distributions in the state are given for all but the most common pests (which have been amply described elsewhere), and all species (including all pest species) are included in the key.

Dr. Michael C. Thomas was born in Miami, Florida, on 5 May 1948, son of Charles E. and June Thomas. One of 3 children, he has 2 sisters. In 1970, he married Sheila McCuiston of Indialantic, Florida; they have two daughters, Andrea and Erin. Mike was raised and educated in Miami, where he graduated from Southwest High School. His undergraduate work in fine arts was begun at Miami-Dade Community College (A.A. degree) and completed at the University of South Florida (B.A. degree). After working for several years in the news business, first as a reporter and news editor for the Punta Gorda Daily Herald-News, then as a reporter and bureau chief for the Orlando Sentinel-Star, Mike took a position in 1977 with the University of Florida's Division of Information and Publications Services as an information specialist and research editor.

It was during these last several years that Mike renewed a childhood interest in beetles which was to culminate in his decision to return to school in the Department of Entomology and Nematology at the University of Florida as a graduate assistant in entomology. In 1985, he received his doctoral degree and he was employed as a biological scientist in the same department, working on the biological control of the aquatic weed, hydrilla. Mike took a taxonomic entomologist position with the Plant Protection Programs of the West Virginia Department of Agriculture in 1986, where he was curator of the arthropod collection. Two years later, he replaced the retired Dr. Robert E. Woodruff as curator of Coleoptera and Orthoptera for the Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services. In 1992, Mike was appointed head curator to replace Dr. Howard V. Weems, Jr., who retired that year.

Mike has been editor of *Insecta Mundi*, journal of the Center for Systematic Entomology, since 1987. He presently serves on the Division of Plant Industry Library, Computer, and Editorial Committees. He has 33 previous entomological publications, mostly on flat bark beetles, weevils, long-horn beetles, and rove beetles. He claims not to have any hobbies, but his friends and colleagues know him as something of a computer fanatic.

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28 January 1993

ABSTRACT

The Florida species of the cucujoid families Silvanidae, Passandridae, and Laemophloeidae are reviewed. Keys and illustrations for all Florida genera and species and diagnoses and detailed distribution records for all non-economic species in the state are provided. A key to the genera of the United States is also provided, as is a checklist of species. There are 14 genera and 33 species of Silvanidae in the United States, 11 genera and 22 species of which occur in Florida. Of the two U.S. genera and four species of Cucujidae, none occurs in Florida. Two genera and two species of Passandridae occur in the U.S., including Florida. The Laemophloeidae are represented by 14 genera and 53 species in the U.S., of which 11 genera and 31 species are recorded from Florida.

One new species, *Laemophloeus woodruffi*, is described.

New combinations proposed are: *Charaphloeus bituberculatus* (Reitter) (from *Laemophloeus*); *Charaphloeus flavosignatus* (Schaeffer) (from *Laemophloeus*); *Parandrita permixtus* (Grouvelle) (from *Laemophloeus*); *Phloeolaemus chamaeropsis* (Schwarz) (from *Laemophloeus*); *Phloeolaemus quiquearticulatus* (Grouvelle) (from *Laemophloeus*); *Phloeolaemus macrocephalus* (Schaeffer) (from *Laemophloeus*).

New synonyms proposed are: *Laemophloeus megacephalus* Grouvelle = *L. floridanus* Casey; *Charaphloeus convexulus* (LeConte) = *C. filiger* Casey and *C. sphaerops* Casey; *Charaphloeus adustus* (LeConte) = *C. fraterculus* Casey; *Lathropus pictus* Schwarz = *L. costatus* Grouvelle. A lectotype is designated for *Laemophloeus megacephalus* Grouvelle. *Dysmerus caseyi* (Grouvelle) is revived from synonymy under *Dysmerus basalis* Casey.

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I would like to thank the following curators for their cooperation and patience in making possible the many loans necessary to realize this work: R.E. Woodruff (FSCA), T.J. Spilman and G.H. Hevel (USNM), R.J.W. Aldridge (BMNH), N. Berti (MNHN), D.H. Kavanaugh (CASC), A.F. Newton, Jr. (MCZC), E.C. Becker (CNCC), and S.A. Slipinski (PASC).

Individuals who supplied many valuable specimens were: Gary Shook, Boise, ID, Albert Allen, Twin Falls, ID, Karl Stephan, Red Oak, OK, R.H. Turnbow, Jr., Fort Rucker, AL, and Tim King, Birmingham, AL. D.G.H. Halstead, Slough, England, identified or confirmed my identifications for most of the specimens of Silvaninae recorded here and supplied specimens of many species. Ken Curry, University of Florida, helped identify gut contents of many specimens. Miss Lori Parker of Miami helped tend an ultraviolet light trap that produced many important records.

Drs. R.E. Woodruff, J.H. Frank, D.H. Habeck, J. Reiskind, and the late R.I. Sailer provided guidance, encouragement and valuable criticism, for which I am deeply indebted. Last, but certainly not least, I want to thank my wife, Sheila. She has, more than anyone, made this work possible.

INTRODUCTION

The flat bark beetles are a diverse group of taxa traditionally included in the family Cucujidae, but recently considered to belong to three or four separate families. They are ubiquitous under the bark of dead deciduous, and to a lesser extent, evergreen trees and logs. Most species appear to be fungivorous, feeding primarily on ascomycete fungi. However, some species are found only in the galleries of Scolytidae and may be an important, but little studied, element in the natural control of bark beetles.

Like other members of the series Cucujiformia, the flat bark beetles are well-adapted to relatively dry habitats, and thus preadapted to life in stored products. Indeed, several species are among the most destructive of stored products pests and have been distributed throughout the world by commerce.

Although the biology and taxonomy of the economically important species are reasonably well known, the same cannot be said for other U.S. flat bark beetles. Many, if not most, museum specimens are either not identified or misidentified, and the only current identification keys deal strictly with the stored products species. As Arnett (1963:776) concluded, "The group is badly in need of study at all levels." Because of this, I have included a checklist of described United States species assigned to their proper genus, and a key to the adults of genera known to occur in the United States. Of the 32 genera and 93 species of these families known to occur in the United States, 24 genera (75 percent) and 56 species (60 percent) occur in Florida, so that the keys permit the identification of the majority of the species in the United States.

The importance of knowing the taxonomy and biology of apparently non-economic species is illustrated by two recent examples: *Oryzaephilus acumin-*

atus Halstead was described in 1980 from specimens from India and Sri Lanka and from coconut shells imported into Great Britain (Halstead 1980). A year later, Jacob (1981) discussed the species' potential as a stored products pest. Three years later, Thomas and Woodruff (1984) recorded the importation of *O. acuminatus* into Florida from India. *Cryptolestes klapperichi* Lefkovitch was described from Afghanistan in 1962 (Lefkovitch 1962a); and recorded from Arabia in 1965 (Lefkovitch 1965b); 14 years later it was reported to be a stored products pest in Sri Lanka and Malaysia (Green 1979). It was reported from the New World for the first time by Thomas (1988a) and is regularly intercepted in foodstuffs imported from Asia (Zimmerman 1987a). It is apparently actively expanding its range, probably through the agency of commerce.

The only published list of flat bark beetles for the state as a whole is that of Schwarz (1878), who recorded 13 species from the families treated in the present work. Fifty-six species are included in this study, including economic species which may not be established in the state but which have been, or are likely to be, recorded from Florida. In comparison, Thomas and Peck (1991) found 26 species in Florida's four southernmost counties. Economic species (especially those of *Cryptolestes* and *Oryzaephilus*) which do not occur, or rarely occur, in the wild, are keyed and illustrated but are otherwise not considered in detail. The taxonomic and biological literature on such species is voluminous.

Although larval diagnoses are presented for each family, this work is predominantly concerned with the identification and taxonomy of adults. A generic key (Thomas 1988b) to the known larvae should be consulted for more details on larval recognition.

This study is based on more than 2,000 specimens collected in Florida, deposited primarily in the Florida State Collection of Arthropods (FSCA), Gainesville, plus more than a thousand specimens from outside the state. Collection data for all Florida specimens examined for this study are listed in the Appendix. Types and other specimens were also examined from the United States National Museum of Natural History, Washington, D.C. (USNM); Field Museum of Natural History, Chicago (FMNH); California Academy of Sciences, San Francisco (CASC); American Museum of Natural History, New York (AMNH); British Museum (Natural History), London (BMNH); Museum National d'Histoire Naturelle, Paris (MNHN); Canadian National Collection, Ottawa (CNCI); Archbold Biological Station (ABSC), Lake Placid; and the Polish Academy of Science, Warsaw (ZMPA). Individuals who supplied many valuable specimens were: Gary

Shook, Boise, ID; Albert Allen, Twin Falls, ID; Karl Stephan, Red Oak, OK; R.H. Turnbow, Jr., Fort Rucker, AL; S.B. Peck, Ottawa, Canada (SBPC); C.W. Mills, III, Gainesville, FL; R.W. Lundgren, Archer, FL; and Tim King, Birmingham, AL.

With the increasing interest in habitat protection as a method of environmental preservation, the distribution records compiled during this study pinpoint those areas in which isolated populations of West Indian species continue to exist, and which face imminent threat of extinction from the continued urbanization of southern Florida. Several of these species may very well be useful as indicator species of especially fragile habitats.

Although this is intended primarily as a faunal study, the taxonomy of these groups is such that numerous taxonomic and nomenclatural changes have been necessary.

MATERIALS AND METHODS

Flat bark beetles are more abundant in nature than their representation in museum collections suggests, but because of their usually minute size and retiring habits they do not often come to the attention of the general collector. Their small size also necessitates special preparation in order to accurately observe their external skeletal structure and genitalia.

Ultraviolet light-trapping, particularly in areas with much dead wood, is especially productive and is the method by which the majority of specimens for this study were obtained. It is the most efficient method for gathering basic data on the spatial and temporal distribution of the adults. However, it reveals little information on their habits and habitats.

In Florida, where my collecting experience has been concentrated, most flat bark beetles can be found under the bark of hardwood trees and logs, especially oaks, *Quercus* spp. The stage of decay and physical location of the log (e.g., whether it is located in the sun or shade, whether it is in contact with the ground, or is above the ground) are apparently important factors in determining the abundance of flat bark beetles and, probably, the composition of taxa present. A few species (e.g., *Phloeolaemus chamaeropsis* (Schwarz)) seem to be most abundant on freshly downed wood, but most laemophloeines and silvanines can be found most abundantly on logs that have been down long enough for the bark to crack and ascomycete fungi to separate the thin outer bark from the thick, corky layer of inner bark. It is within these pockets of loose outer bark that

many flat bark beetles can be collected (as well as colydiids, rhizophagids, nitidulids, mycetophagids, and corylophids). (The fruiting bodies of ascomycete fungi are often flat, black or grey structures that look like splotches of tar and not at all like the fleshy fungi with which most collectors are most familiar.) Flat bark beetles can also be found, although less abundantly, in the space between the inner bark and the sapwood on older, well-seasoned logs. Moist-rotten logs rarely produce many specimens of flat bark beetles.

I have also collected specimens by beating dead branches and by placing leaf debris in a modified Berlese funnel. The latter method produces some silvanines, but few other flat bark beetles. I have seen specimens of several species that were collected in vane traps baited with ethanol. This is a potentially productive collecting procedure that should be investigated in greater detail.

Most specimens can be glued to standard points, but representative specimens should be mounted on microscope slides. The following procedure has given good results: clear the specimen by boiling in a dilute (approximately 10 percent by weight) solution of potassium hydroxide (KOH). Once the soft tissues have cleared (the specimen will appear transparent but not colorless), rinse the specimen in distilled water. Using fine pins or needles under a dissecting microscope, dissect away the abdomen, and separate the tergum from the sternum. The genitalia will come away with the tergum. The mouthparts can be removed

by placing the point of the pin firmly against the mentum and pulling anteriorly; this will usually separate all of the mouthparts from the head capsule except for the mandibles, which can then be pulled away with forceps or the tip of the pin. To better observe the structure of the pro- and mesocoxal cavities, the legs on one side of the body should also be removed. If the body is heavily pigmented, it may be bleached in a 3 percent solution of hydrogen peroxide.

Body, genitalia, and mouthparts should be mounted under separate cover slips. I use Hoyer's solution as a mounting medium so that specimens can be mounted directly from water or alcohol; for greater permanence balsam may be used, but requires time-consuming dehydration of specimens. Using 12mm diameter cover slips, three mounts may be made on the same slide, thus keeping the different parts of the specimen together.

All observations of surface sculpture were made with the aid of a light diffuser constructed of frosted Mylar. Diffusion greatly facilitates observation of surface features, especially at relatively high magnifications.

Larvae are often present in the same habitat as the adults and should be collected and kept associated with the adults. I use KAAD (1 part kerosene, 7 to 10 parts 95 percent ethanol, 2 parts glacial acetic acid, 1 part dioxane (Peterson 1962:7)) larval fixative for killing larvae; specimens are then stored in vials of 70 percent isopropyl alcohol or are slide-mounted. Rearing larvae in Petri dishes or snap-cap plastic vials with bits of fungus-covered bark is relatively simple and would provide much needed information on the immature stages of these beetles. The larvae of most species, and even many Nearctic genera, are unknown.

A representative of at least one species is illustrated for each genus. It should be possible to identify many specimens to genus by reference to the illustrations. The illustrations were prepared using a binocular dissecting microscope equipped with an eyepiece scale. The measurements were transferred to graph paper, and a preliminary pencil sketch made. After transferring the pencil sketch, the drawing was inked and then shaded by one of the following techniques: stippling, scratch board, or coquille board.

CHECKLIST OF FLAT BARK BEETLES FOR AMERICA NORTH OF MEXICO

(Note: Species marked with an asterisk are present in or, in the case of economic species, are likely to be found in Florida. Valid names are in bold italic. Where species are now assigned to a genus other than the one in which they were originally placed, the original assignment is indicated in parentheses after the species name.)

SILVANIDAE

Uleiotaenae

Uleiotini

Uleiota Latreille 1796:46

Brontes Fabricius 1801:97

Hyliota Reitter 1880:80

debilis LeConte 1854:76 (*Brontes*)

dubius dubius Fabricius 1801:97 (*Brontes*)

dubius truncatus Motschulsky 1845:92

texana Dajoz 1989:198

Dendrophagus Schönherr 1809:50

cygnaei Mannerheim 1846:515

?germari Mannerheim 1843:306

glaber LeConte 1850:223

americanus Mannerheim 1853:207

Telephanini

Cryptamorpha Wollaston 1854:156

Pseudophanus LeConte 1860:84

* *desjardinsii* Guérin-Ménéville 1829-44:196
(*Psammoecus*)

musae Wollaston 1854:157

signatus LeConte 1860:85 (*Pseudophanus*)

hubbardi Casey 1884:167 (*Psammoecus*)

Telephanus Erichson 1846:329

Heterodromia Haldeman 1846:127

lecontei Casey 1884:103

* *velox* Haldeman 1846:127 (*Heterodromia*)

atricapillus Erichson 1846:330 (*?nomen nudum*)

Silvaninae

Nausibius Lentz 1857:75

* *clavicornis* Kugelann 1794:511 (*Cucujus*)

dentatus Marsham 1802:108 (*Coricaria*).

- denticulatus* Macleay 1825:46 (*Sylvanus*)
latus Fairmaire 1850:53 (*Silvanus*)
intermedius Smith 1851:16 (*Silvanus*)
parallelus Walker 1858:206 (*Rhizophagus*)
* *major* Zimmermann 1869:257
dentatus var. *major*, Crotch 1873:44
* *repandus* LeConte 1866:70
* *sahlbergi* Grouvelle 1896:206
- Eunausibius* Grouvelle 1912a:314
* *salutaris* Parsons 1974:182
- Oryzaephilus* Ganglbauer 1899:584
* *mercator* Fauvel 1889:132 (*Silvanus*)
gossypi Chittenden 1897:12 (*Silvanus*)
* *surinamensis* Linnaeus 1758:357 (*Dermestes*)
frumentarius Fabricius 1775:62 (*Anobium*)
sexdentatus Herbst 1783:31 (*Ips*)
cursor Fabricius 1792:96 (*Tenebrio*)
sexdentatus Fabricius 1792:232 (*Dermestes*)
bicornis Erichson 1846:337 (*Silvanus*)
* *acuminatus* Halstead 1980:309
- Silvanus* Latreille 1804:158
bidentatus Fabricius 1792:233 (*Dermestes*)
sulcatum Fabricius 1792:555 (*Colydium*)
affinis Reitter 1876:58
* *lewisi* Reitter 1876:57
* *muticus* Sharp 1899:560
* *nitidulus* LeConte 1854:78
* *planatus* Germar 1824:466
zimmermanni Guérin-Méneville 1829-44:198
cognatus LeConte 1854:77
* *proximus* Grouvelle 1904:183
amabilis Grouvelle 1914:140
* *recticollis* Reitter 1876:61
?Leucohimatium breve Wollaston 1873-74:170
reflexus Reitter 1880:25
vitulus Grouvelle 1882:294
pumilus Grouvelle 1912a:332
minus Grouvelle 1912a:334
unidentatus Olivier 1790:9 (*Ips*)
planum Herbst 1797:285 (*Colydium*)
gratiosus Motschulsky 1863:501
siculus Stierlin 1864:147
- Pensus* Halstead 1973:77
gilae Casey 1884:72 (*Silvanus*)
- Cathartosilvanus* Grouvelle 1912a:340
* *imbellis* LeConte 1854:77 (*Silvanus*)
?communis Grouvelle 1878a:75 (*Silvanus*)
* *opaculus* LeConte 1854:78 (*Silvanus*)
trivialis Grouvelle 1878a:75 (*Silvanus*)
- Silvanoprus* Reitter 1911:45
angusticollis Reitter 1876:59 (*Silvanus*)
* *scuticollis* Walker 1859:53 (*Silvanus*)
triangulus Reitter 1876:60 (*Silvanus*)
- Monanus* Sharp 1879:85
Emporius Ganglbauer 1899:578
* *concinulus* Walker 1858:207 (*Monotoma*)
signatus Frauenfeld 1867:438 (*Silvanus*)
fasciatus Wollaston 1874:169 (*Cryptamorpha*)
fascipennis Reitter 1876:129 (*Cathartus*)
- Cathartus* Reiche 1854:77
* *quadricollis* Guérin-Méneville 1829-44:198 (*Silvanus*)
cassiae Reiche 1854:78
gemellatus Jacquelin du Val 1857:104 (*Silvanus*)
- Ahasverus* Gozis 1881:cxxvii
* *advena* Waltl 1834:169 (*Cryptophagus*)
musaeorum Ziegler 1844:270 (*Latridius*)
guerini Allibert 1847:12 (*Silvanus*)
angustatus Lucas 1846-49:221 (*Silvanus*)
striatus Rouget 1876:ccvii (*Cryptophagus*)
* *longulus* Blatchley 1910:564 (*Cathartus*)
parviceps Casey 1916:136 (*Silvanus*)
* *rectus* LeConte 1854:78 (*Silvanus*)

CUCUJIDAE

- Cucujus* Fabricius 1775:204
clavipes clavipes Fabricius 1781:257
clavipes puniceus Mannerheim 1843:303
clavipes var. *subnitens* Schaeffer 1931:175
- Pediacus* Shuckard 1839:185
depressus Herbst 1797:286 (*Cucujus*)
subglaber LeConte 1854:73
fuscus Erichson 1846:313
dermestoides Schönherr 1809:53 (*Cucujus*) (not Fabricius 1972:96)
planus LeConte 1850:223

subcarinatus Mannerheim 1852:363

PASSANDRIDAE

Catogenus Westwood 1835:221

Scalidia Erichson 1846:305

- * *rufus* Fabricius 1798:123 (*Cucujus*)
- puncticollis* Newman 1839:399
- monilicornis* Casey 1916:115
- parvus* Casey 1916:116
- puncticeps* Casey 1916:116
- thomasi* Slipinski 1989:126

Taphrosclidia Crotch 1873:44

Syssitos Sharp 1899:541

- * *linearis* LeConte 1863:70 (*Catogenus*)
- longiceps* Sharp 1899:542 (*Syssitos*)
- addendus* Sharp 1899:543 (*Syssitos*)

LAEMOPHLOEIDAE

Lathropus Erichson 1846:327

- * *pictus* Schwarz 1878:358
- costatus* Grouvelle 1902:763, **n. syn.**
- pubescens* Casey 1884:96
- robustus* Casey 1916:120
- striatus* Casey 1916:119
- * *vernalis* Casey 1884:95

Rhabdophloeus Sharp 1899:531

- * *horni* Casey 1884:89 (*Laemophloeus*)
- disseptus* Casey 1916:133 (*Cryptolestes*)

Cryptolestes Ganglbauer 1899:612

Leptus Thomson 1863:92

Fractophloeus Kessel 1921:28

- * *capensis* Waltl 1834:169
- elongatulus* Lucas 1846-49:479 (*Laemophloeus*)
- vermiculatus* Wollaston 1854:164 (*Laemophloeus*)
- rotundicollis* Casey 1884:89 (*Laemophloeus*)
- dissimulatus* Thomas 1988a:47
- * *dybasi* Thomas 1988a:48
- * *ferrugineus* Stephens 1831:223 (*Cucujus*)
- testaceus* Paykull 1800:168 (not Fabricius 1787) (*Cucujus*)
- monilicornis* Stephens 1831:223 (*Cucujus*)
- concolor* Smith 1851:6 (*Laemophloeus*)
- obsoletus* Smith 1851:7 (*Laemophloeus*)
- carinulatus* Wollaston 1877:44 (*Laemophloeus*)

emgei Reitter 1887:286 (*Laemophloeus*)

pubescens Casey 1884:93 (*Laemophloeus*)

- * *punctatus* LeConte 1854:75 (*Laemophloeus*)
- geminatus* LeConte 1854:75 (*Laemophloeus*)
- extricatus* Casey 1884:92 (*Laemophloeus*)
- adumbratus* Casey 1916:134

- * *pusilloides* Steel and Howe 1952:86 (*Laemophloeus*)

- * *pusillus* Schönherr 1817a:55
- minutus* Olivier 1791:243 (not Fourcroy 1785) (*Cucujus*)

testaceus Stephens 1831:224 (*Cucujus*)

crassicornis Waltl 1839:225 (*Laemophloeus*)

longicornis Mannerheim 1843:303 (*Laemophloeus*)

brevis Fairmaire 1850:56 (*Laemophloeus*)

parallelus Smith 1851:7 (*Laemophloeus*)

puberulus LeConte 1854:75 (*Laemophloeus*)

pauper Sharp 1899:530 (*Laemophloeus*)

- * *turcicus* Grouvelle 1876:xxxii (*Laemophloeus*)

truncatus Casey 1884:93 (*Laemophloeus*)

- * *schwarzi* Casey 1884:83 (*Laemophloeus*)

- * *unicornis* Reitter 1874:45 (*Microbrontes*)

recticollis Reitter 1876:52 (*Laemophloeus*)

quadratus Casey 1884:90 (*Laemophloeus*)

denticornis Casey 1884:94 (*Laemophloeus*)

iteratus Sharp 1899:528 (*Laemophloeus*)

addendus Sharp 1899:529 (*Laemophloeus*)

Leptophloeus Casey 1916:135

Truncatophloeus Kessel 1921:28

- * *angustulus* LeConte 1866:379 (*Laemophloeus*)

Dysmerus Casey 1884:97

Brontophloeus Kessel 1921:28

- * *basalis* Casey 1884:97

Narthecius LeConte 1861:95

Paraphloeus Sharp 1899:509

- * *grandiceps* LeConte 1863:70
- breviceps* Casey 1890:323, **n. syn.**
- monticola* Fall 1907:222
- oregonensis* Hatch 1961:200
- simulator* Casey 1890:322
- striaticeps* Fall 1907:222

Laemophloeus Dejean 1836:340

- * *biguttatus* Say 1827:267 (*Cucujus*)

- bisignatus* Guérin-Méneville 1829-44:205
californicus Casey 1916:122
 * *fasciatus* Melsheimer 1846:113
fervidus Casey 1916:121
 * *megacephalus* Grouvelle 1876:425
floridanus Casey 1884:85, **n. syn.**
 * *lecontei* Grouvelle 1876:496
shastanus Casey 1916:123
 * *suturalis* Reitter 1876:50
terminalis Casey 1884:83
 * *woodruffi* Thomas, **n.sp.**
- Charaphloeus** Casey 1916:127
 * *adustus* LeConte 1854:74 (*Laemophloeus*)
fraterculus Casey 1916:124, **n. syn.**
 * *bituberculatus* Reitter 1876:316 (*Laemophloeus*), **n. comb.**
 * *convexus* LeConte 1879:2 (*Laemophloeus*)
fliger Casey 1916:125, **n. syn.**
sphaerops Casey 1916:126, **n. syn.**
dimidiatus Schaeffer 1910:215 (*Laemophloeus*), **n. comb.**
flavosignatus Schaeffer 1910:214 (*Laemophloeus*), **n. comb.**
- Metaxyphloeus** Thomas 1984a:67
texanus Schaeffer 1904:201 (*Rhinomalus*)
- Placonotus** Macleay 1871:168
Silvanophloeus Sharp 1899:537
arizonensis Thomas 1984c:7
 * *macrognathus* Thomas 1984c:12
 * *modestus* Say 1827:268 (*Cucujus*)
singularis Smith 1851:7 (*Laemophloeus*)
- gundlachi* Grouvelle 1874:499 (*Laemophloeus*)
liquidus Casey 1916:130 (*Silvanophloeus*)
nitens LeConte 1854:75 (*Laemophloeus*)
bullatus LeConte 1856:75 (*Laemophloeus*)
 * *politissimus* Wollaston 1867:67 (*Laemophloeus*)
mirus Grouvelle 1905:142 (*Laemophloeus*)
(*Silvanophloeus*)
commixtus Grouvelle 1912b:304 (*Laemophloeus*)
victus Kessel 1926:69 (*Laemophloeus*)
(*Silvanophloeus*)
 * *zimmermanni* LeConte 1854:75 (*Laemophloeus*)
apertus Casey 1916:128 (*Silvanophloeus*)
illustris Casey 1916:129 (*Silvanophloeus*)
sobrinus Casey 1916:129 (*Silvanophloeus*)
- Parandrita** LeConte and Horn 1880:133
cephalotes LeConte 1854:76 (*Laemophloeus*)
 * *permixtus* Grouvelle 1912b:303 (*Laemophloeus*), **n. comb.**
- Phloeolaemus** Casey 1916:127, **new status**
 * *chamaeropsis* Schwarz 1878:359 (*Laemophloeus*), **n. comb.**
macrocephalus Schaeffer 1910:214 (*Laemophloeus*), **n. comb.**
 * *quinquearticulatus* Grouvelle 1896: (*Laemophloeus*), **n. comb.**
- Deinophloeus** Sharp 1899:540
impressifrons Schaeffer 1910:213 (*Laemophloeus*)

COMPOSITION OF FAUNA

Including stored products species which may or may not be established in the wild, there are 93 species in the families Cucujidae, Passandridae, Silvanidae, and Laemophloeidae known to occur in the Nearctic region north of Mexico. Of that total, 56 species in three families (Cucujidae *sens. str.* does not occur in Florida) are here listed from Florida.

Of those species recorded from Florida, 11 are stored products pests which may or may not occur in the wild. One other is a stored products pest that does occur in the wild and which may be native to the southeastern United States. Nine other species are almost certainly introduced and may be established, but are not of economic importance. That leaves 38 species naturally

occurring in Florida, two fewer than naturally occur elsewhere in the country but which are not found in Florida.

The native Florida fauna can be divided into five groups based on distribution:

1. **Generally distributed in the eastern half of the United States, often as far west as Texas or Arizona; more or less widespread in at least the northern two-thirds of Florida:** *Laemophloeus biguttatus*, *Laemophloeus fasciatus*, *Placonotus modestus*, *Placonotus zimmermanni*, *Cathartosilvanus imbellis*, *Silvanus muticus*, *Silvanus planatus*.

2. Generally distributed in the eastern half of the United States, often as far west as Texas or Arizona; more or less restricted to the northern third of Florida: *Charaphloeus adustus*, *Charaphloeus convexulus*, *Lathropus vernalis*, *Leptophloeus angustulus*, *Narthecius grandiceps*, *Ahasverus longulus*, *Nausibius major*, *Telephanus velox*.

3. Generally occurring in the southeastern United States as well as in the Neotropics: *Cryptolestes unicornis*, *Laemophloeus megacephalus*, *Phloeolaemus chamaeropsis*, *Taphrosclidia linearis*.

4. Generally occurring in the southeastern United States but not known from the Neotropics: *Laemophloeus woodruffi*, *Cryptolestes dybasi*, *Cryptolestes punctatus*, *Cryptolestes schwarzi*, *Dysmerus basalis*, *Catogenus rufus*, *Ahasverus rectus*, *Nausibius repandus*.

5. Occurring in southern Florida and the Neotropics: *Charaphloeus bituberculatus*, *Laemophloeus lecontei*, *Laemophloeus suturalis*, *Lathropus pictus*, *Rhabdophloeus horni*, *Parandrita permixtus*, *Placonotus macrognathus*, *Phloeolaemus quinquearticulatus*.

GENERIC KEY TO THE CUCUJIDAE, SILVANIDAE, PASSANDRIDAE, AND LAEMOPHLOEIDAE KNOWN TO OCCUR IN AMERICA NORTH OF MEXICO

- | | |
|--|--|
| <p>1. Tarsomere I longer than II (fig.), tarsal formula 5-5-5 in both sexes; aedeagus with parameres on dorsal aspect of median lobe; procoxal cavities closed posteriorly, usually broadly (fig. 28); suture between mesosternum and mesepisternum incomplete or obsolete (Silvanidae: Silvaninae) 22</p> | <p>4(2'). Pronotum with longitudinal lines paralleling lateral margins (fig. 79); parameres fused to basal piece and reduced to tooth-like processes on ventral aspect of aedeagus (fig. 78) (Laemophloeidae) 10</p> |
| <p>1'. Tarsomere I usually shorter than II (fig. 6), tarsal formula 5-5-5 or 4-4-4 in both sexes, or 5-5-4 in males only; aedeagus with parameres on ventral aspect of median lobe (fig. 3); procoxal cavities usually open posteriorly (fig. 4, 7, 42, 76); suture between mesosternum and mesepisternum usually complete 2</p> | <p>4'. Pronotum without longitudinal lines paralleling lateral margins; parameres freely articulated to basal piece and not reduced (fig. 3) 5</p> |
| <p>2(1'). Genae produced anteriorly as rounded plates covering maxillae (fig. 41); elytra, but not pronotum, with longitudinal grooves; tarsal formula 5-5-5 in both sexes; mesocoxal cavities closed laterally by juncture of meso- and metasterna (fig. 42) (Passandridae) 3</p> | <p>5(4'). Antennal scape elongate (fig. 13); tarsi not heteromerous in males, tarsomeres lobed in some genera (Silvanidae: Uleiotaenae) 6</p> |
| <p>2'. Genae not produced anteriorly, maxillae free; if elytra with longitudinal grooves then pronotum also with grooves or carinae; tarsal formula often 5-5-5 in both sexes, sometimes 5-5-4 in males; mesocoxal cavities usually closed laterally by mesepisternum or mesepimeron or both (fig. 4, 7, 76) 4</p> | <p>5'. Antennal scape not elongate; tarsi heteromerous in males, tarsomeres not lobed (Cucujidae) .. 9</p> |
| <p>3(2). Body cylindrical (fig. 43); tarsomere I as long as II (fig. 44) <i>Taphrosclidia</i> Crotch</p> | <p>6(5). Procoxal cavities open posteriorly (fig. 4); tarsomeres not lobed (Uleiotini) 7</p> |
| <p>3'. Body dorsoventrally compressed (fig. 39); tarsomere I distinctly shorter than II (fig. 40) <i>Catogenus</i> Westwood</p> | <p>6'. Procoxal cavities closed posteriorly; tarsomeres distinctly lobed (Telephanini) 8</p> |
| | <p>7(6). Tarsal formula 4-4-4; pronotum irregularly toothed laterally and with anterior angles strongly produced (fig. 1); males with curved mandibular processes (fig. 2) <i>Uleiota</i> Latreille</p> |
| | <p>7'. Tarsal formula 5-5-5, basal segment short but distinct (fig. 5); pronotum simple laterally, anterior angles not produced; males without mandibular processes <i>Dendrophagus</i> Schonherr</p> |
| | <p>8(6'). Head dorsally with longitudinal impressed lines (fig. 11); apical maxillary palpomeres not securiform; tarsomere III bilobed (fig. 12) <i>Cryptanorpha</i> Wollaston</p> |
| | <p>8'. Head dorsally without impressed lines; apical maxillary palpomeres securiform (fig. 15); tarsomere III simply lobed (fig. 14) <i>Telephanus</i> Erichson</p> |

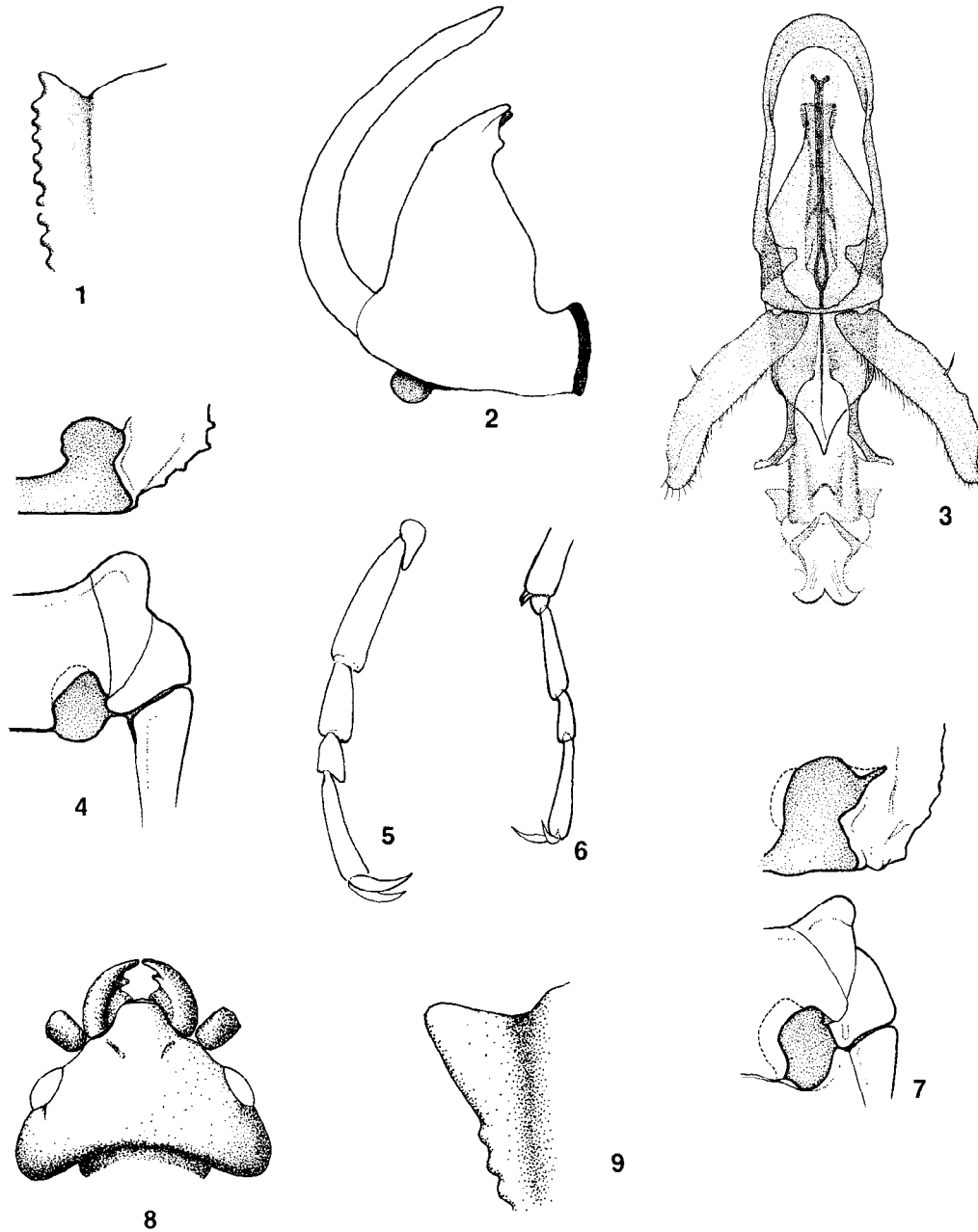


Figure 1-9. 1) *Uleiota dubius truncatus* Motschulsky, anterior pronotal angle; 2) same, mandible, male; 3) *Uleiota d. dubius* (Fabricius), aedeagus; 4) same, pro- and metasternum; 5) *Dendrophagus* sp., hind tarsus; 6) *Cucujus clavipes* Fabricius, hind tarsus, male; 7) same, pro- and metasternum; 8) same, head; 9) *Pensus gilae* (Casey), anterior pronotal angle.

- 9(5'). Head produced laterally behind eyes (fig. 8); antennae not distinctly clubbed; color bright red *Cucujus* Fabricius
- 9'. Head not produced laterally behind eyes; antennae distinctly clubbed; color not bright red *Pediacus* Shuckard
- 10(4). Sublateral line of pronotum carinulate, obviously raised above the surface of the pronotum, sometimes with associated inconspicuous medial groove; pedicel usually longer and much more massive than antennomere III; transverse epistomal groove absent, although epistome may be depressed 17
- 10'. Sublateral line of pronotum a groove, sometimes with a weakly expressed associated ridge; or, disc of pronotum depressed but without obvious groove or carinulate line; pedicel usually shorter, often much shorter, than antennomere III; transverse epistomal groove sometimes present 11
- 11(10'). Intercoxal process of sternum III acuminate apically (fig. 69) 12
- 11'. Intercoxal process of sternum III not acuminate apically 14
- 12(11). Tarsomere I shorter than penultimate tarsomere; labrum shallowly emarginate apically; elytra carinate laterally *Laemophloeus* Dejean
- 12'. Tarsomere I at least subequal to penultimate tarsomere; labrum semicircular, not emarginate anteriorly; elytra usually not carinate laterally 13
- 13(12'). Head rostrate *Metaxyphloeus* Thomas
- 13'. Head not rostrate *Charaphloeus* Casey
- 14(11'). Head with distinct transverse groove separating frons from epistome (fig. 80, 81) *Placonotus* Macleay
- 14'. Head without distinct transverse groove separating frons from epistome, although region of head corresponding to clypeus may be depressed below level of frons 15
- 15(14'). Elytral epipleura well defined, complete to apical angle; head moderate in size; basal angles of epistome not foveate 16
- 15'. Elytral epipleura poorly defined, becoming obsolete at midpoint of elytra; head large, almost as large as pronotum (fig. 83); basal angles of epistome foveate *Parandrita* LeConte
- 16(15'). Elytra usually with only third cell present; sublateral line of pronotum composed of a distinct groove; anterior coxal cavities usually wide open posteriorly; mandibles of males in some species expanded laterally (fig. 84) *Phloeolaemus* Casey
- 16'. Elytra with all cells present; sublateral line of pronotum represented by an abrupt change in elevation; anterior coxal cavities closed posteriorly; clypeal horns present in major males *Deinophloeus* Sharp
- 17(10). Lateral margins of pronotum slightly to strongly undulating (fig. 45, 46); disc sometimes with paired anterior and posterior depressions (fig. 45, 46), these often faint 18
- 17'. Lateral margins of pronotum evenly curved, or, at most, simply sinuate; disc without paired anterior and posterior depressions 19
- 18(17). Head with lateral lines; lateral margins of pronotum with irregular undulations; pronotum and elytra explanate laterally, elytra carinate laterally and with longitudinal discal costae; anterior coxal cavities open posteriorly; intercoxal process of sternum III narrowly rounded anteriorly (fig. 46) *Rhabdophloeus* Sharp
- 18'. Head without lateral lines; lateral margins of pronotum undulating at most; elytra without elytral cells, not carinate; intercoxal process of sternum III broadly rounded anteriorly (fig. 45) *Lathropus* Erichson
- 19(17'). Intercoxal process of sternum III broadly rounded anteriorly (fig. 47) ... *Cryptolestes* Ganglbauer
- 19'. Intercoxal process of sternum III narrowly rounded anteriorly (fig. 65) 20
- 20(19'). Epistome acuminate anteriorly (fig. 67) *Narthecius* LeConte
- 20'. Epistome truncate or emarginate anteriorly 21
- 21(20'). Pedicel attached laterally to scape, which is large and irregularly produced in males (fig. 66); pronotum quadrate *Dysmerus* Casey
- 21'. Pedicel attached axially to scape, which is normal in both sexes (fig. 64); pronotum quadrate to elongate *Leptophloeus* Casey
- 22(1). At least tarsomere III lobed 28
- 22'. No tarsomeres lobed 23
- 23(22'). Lateral margins of pronotum simple; hind femora in males simple 26
- 23'. Lateral margins of pronotum dentate or undulating; hind femora in males toothed 24
- 24(23'). Lateral margins of pronotum undulating (fig. 16, 17) 25
- 24'. Lateral margins of pronotum dentate (fig. 19) *Oryzaephilus* Ganglbauer
- 25(24). Head ventrally with antennal cavity (fig. 18) *Eunausibius* Grouvelle
- 25'. Head ventrally without antennal cavities *Nausibius* Redtenbacher

- 26(23). Anterior angles of pronotum not produced anterolaterally (fig. 26); femoral lines open (fig. 27) *Cathartosilvanus* Grouvelle
- 26'. Anterior angles of pronotum produced anterolaterally (c.g. fig. 23); femoral lines closed (fig. 24) 27
- 27(26'). Anterior angles of pronotum acute, usually produced more laterally than anteriorly (fig. 23) *Silvanus* Latreille
- 27'. Anterior angles of pronotum obtuse, produced more anteriorly than laterally (fig. 9) *Pensus* Halstead
- 28(22). Anterior angles of pronotum acute (fig. 29); femoral lines closed (fig. 61) *Silvanoprus* Grouvelle
- 28'. Anterior angles of pronotum lobed at most; femoral lines closed or open 29
- 29(28'). Pronotal margins simple; femoral lines open; elytra immaculate 30
- 29'. Pronotal margins denticulate (fig. 31); femoral lines closed; elytra maculate *Monanus* Sharp
- 30(29). Body elongate, parallel-sided (fig. 32); antennomere XI at its broadest narrower than X (fig. 33); intercoxal process of sternum III pointed anteriorly *Cathartus* Reiche
- 30'. Body ovate (fig. 34); antennomere XI at its broadest equal in width to X (fig. 37, 38); intercoxal process of sternum III rounded anteriorly *Ahasverus* Gozis

SILVANIDAE

Diagnosis. The combination of the following character states will distinguish adults of this family from the others treated in this work: anterior coxal cavities closed in most genera (open in *Uleiota* and *Dendrophagus*, which are not present in Florida); aedeagus with articulated parameres; tarsal formula 5-5-5 in both sexes (4-4-4 in some species of *Uleiota*); antennae either clubbed or filiform, not moniliform; mandibles with dorsal mycangium (a more or less circular cavity on the dorsal surface of the mandible near the base the function of which, in at least one silvanid, is the transport of fungal spores (Crowson and Ellis 1969)); maxillae exposed, not concealed by genal processes; head and pronotum without sublateral carinae or grooves; elytra without elytral cells but with scutellary striole.

Larval diagnosis. Elongate, parallel-sided, somewhat flattened; mandible with acute retinaculum, and well-developed mola; mala acute apically, cardines bipartite; five or six pairs of stemmata; antennae either with three well-developed antennomeres (Uleiotinae) or with antennomere III reduced and fused to antennomere II (Silvaninae); frontal suture somewhat lyri-form; frontoclypeal suture absent; dorsal surface of thoracic and abdominal segments without asperities; spiracles annular; legs well-developed, two tarsungular setae, close together in Silvaninae, widely separated in Uleiotinae; long, whip-like urogomphi present in some Uleiotinae, absent in all Silvaninae; abdominal segment X located terminally, produced as pseudopod.

Taxonomic notes. Like the other families treated in this work, this family has until recently been usually

treated as a subfamily of the Cucujidae. However, Crowson (1955:104) removed the former subfamilies Silvaninae and Psammoecinae to the Silvanidae. Crowson (1967:211) later expressed doubt, stating “. . . Passandrinae and Silvaninae could well be subfamilies of Cucujidae . . .”; however, Sen Gupta and Crowson (1966:63; 1969:586-590) and Crowson (1973:62) continued to treat the Silvanidae, including the subfamily Uleiotinae, as a full family. Thomas (1984b:47-54) reviewed the phylogeny and suprageneric classification of the Silvanidae and divided it into two subfamilies, Uleiotinae and Silvaninae, with the former composed of two tribes, Uleiotini and Telephanini. In a similar study, Pal et al. (1985:213-217), retained Cryptamorphae and Psammoecinae as subfamilies, in addition to Silvaninae and Uleiotinae, which they, like Thomas (1984b), considered to exhibit the most ancestral character states among the Silvanidae.

Hetschko (1930) listed 34 genera and 391 species worldwide that would now be assigned to Silvanidae. Genera and species described, and synonymies proposed since then (primarily by Nevermann, Halstead, Pal, and Sen Gupta), bring the world total to about 47 genera and approximately 470 species.

Biology. The biology and immature stages of the great majority of species and most genera are unknown, but the following generalizations can be made (the known biology of each genus and species occurring in Florida is reviewed below): Uleiotinae (Uleiotini) are found primarily under bark, where both adults and larvae probably feed on ascomycete and other fungi (Crowson and Ellis 1969; personal observations); Uleiotinae (Telephanini) are found primarily on plants, especially

withered, pendant leaves, and in plant debris, where they also probably feed predominantly on fungi; Silvaninae are found under bark (e.g., *Silvanus*, *Cathartosilvanus*) or in leaf litter or soil (e.g., *Silvanoprus*, *Monanus*, some *Ahasverus*), where they also seem to feed on fungi. Some silvanines have been reported to be at least facultatively predaceous.

Several species belonging to *Oryzaephilus*, *Nausibius*, *Cathartus*, and *Ahasverus* are important pests of stored grains, grain products, nuts, and spices. Their taxonomy and biology are the best known of the Silvanidae.

Distribution. The family is worldwide in distribution, but is most abundant at both the generic and species level in the tropics. There are 32 species here recorded from the United States and 22 from Florida, including several stored products species. Although the latter may not be established, they may be introduced repeatedly.

Uleiotinae

Diagnosis. Members of the Uleiotinae may be distinguished from members of the Silvaninae by the following combination of character states: aedeagus inverted with parameres located on the ventral aspect of the median lobe; tarsomeres in some genera distinctly lobed ventrally; antennae elongate and filiform, without a distinct club.

Taxonomic notes. The traditional definition of the Uleiotinae includes only *Uleiota*, *Dendrophagus*, and, by extension, *Brontopriscus*. This is the arrangement followed by Hetschko (1930) and Pal *et al.* (1985). Thomas (1984b) grouped both the Uleiotini (composed of *Uleiota*, *Dendrophagus*, *Brontopriscus*, and *Aplatamus*) and the Telephanini (composed of *Telephanus*, *Cryptamorpha*, *Platamus*, *Indophanus*, and *Psammoecus*) in the Uleiotinae. Until recently (Crawson 1973), the Uleiotinae had been included in the Cucujidae rather than the Silvanidae.

Biology. Reviewed above.

Distribution. Worldwide but more abundant in the tropics. For example, *Telephanus* is represented by two species in the United States and about 100 in the Neotropics. *Aplatamus* and *Platamus* are exclusively Neotropical; *Cryptamorpha* is confined to the Old World tropics, except for one pantropical species; *Psammoecus* is predominantly Old World tropical, but with species in Europe, Japan and northern Asia;

Telephanus is almost exclusively Neotropical, with two U.S. species, and several described from the Old World tropics; *Indophanus* is confined to India; and *Brontopriscus* is confined to New Zealand. *Uleiota* itself seems to be primarily Holarctic, extending south

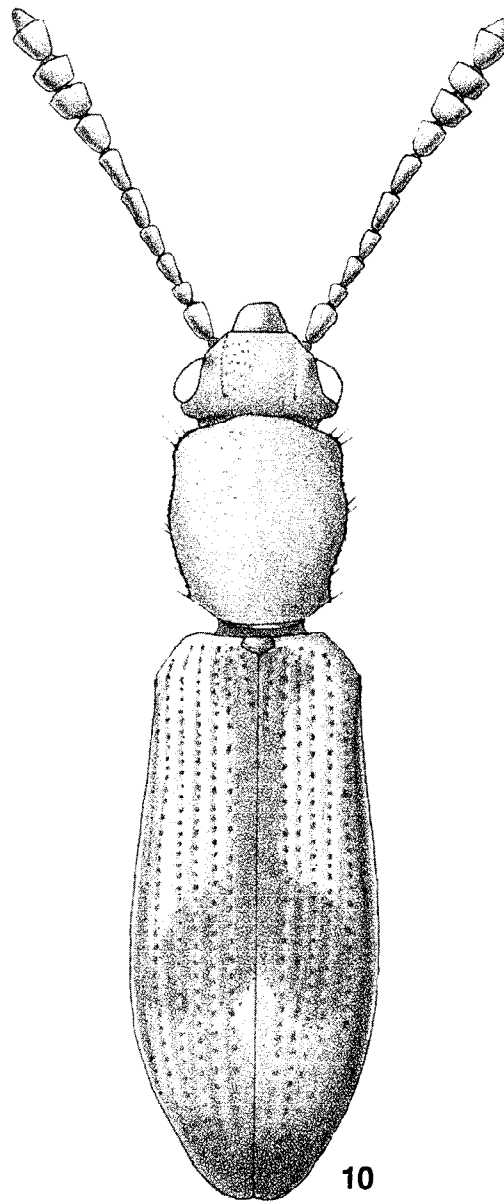


Figure 10. *Cryptamorpha desjardinsi* (Guérin-Méneville), habitus.

in Asia to Australia, but with only one Afrotropical and no Neotropical species. *Dendrophagus* also seems to be primarily Holarctic in distribution. Four genera and seven species of this subfamily are known to occur in the U.S.; two of these occur in Florida. Only the tribe Telephanini is represented in Florida.

Telephanini

Diagnosis. From members of Uleiotini (which is not known to be represented in Florida), those of Telephanini can be distinguished by the following combination of character states: anterior coxal cavities closed; tarsomere I longer than II; antennal scape either very elongate (fig. 13) and maxillary palpi securiform (fig. 15) or head with longitudinal grooves (fig. 11); pronotum laterally with spines or stout setae.

Taxonomic notes. Reviewed in this section under the subfamily.

Biology. Members of this tribe are found on plants or in leaf litter (see section on biology under subfamily).

Distribution. Worldwide but most abundant in the tropics (see this section under subfamily).

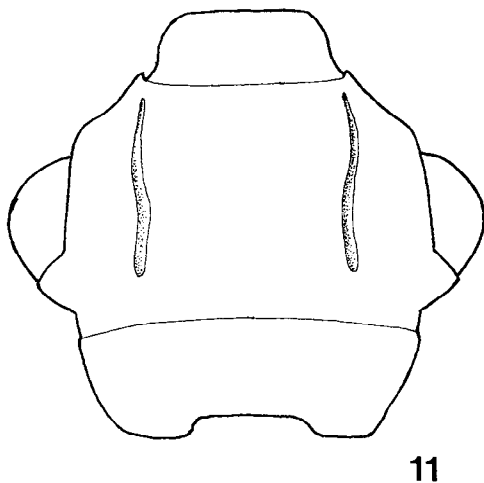


Figure 11. *Cryptamorpha desjardinsii* (Guérin-Méneville), head, dorsal view.

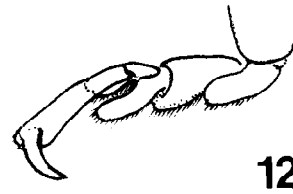


Figure 12. *Cryptamorpha desjardinsii* (Guérin-Méneville), hind tarsus.

Genus *Cryptamorpha* Wollaston

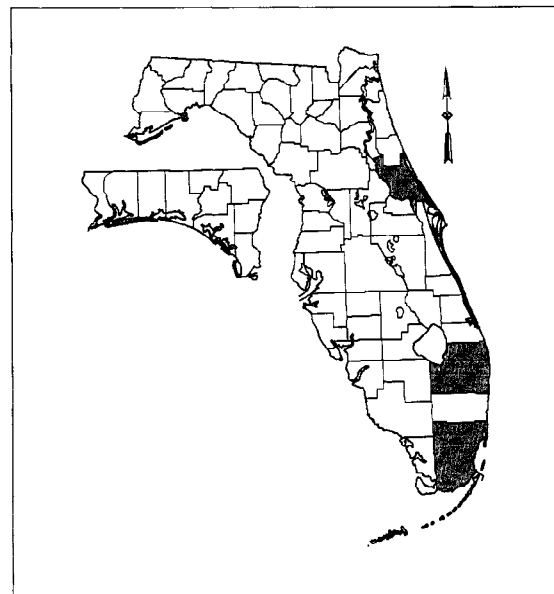
Cryptamorpha Wollaston 1854:156

Pseudophanus LeConte 1860:84; syn. by Waterhouse 1876:122

Parabrantes Redtenbacher 1867:40; syn. by Waterhouse 1876:122

Type species. Of *Cryptamorpha*, *Psammoecus desjardinsii* Guérin-Méneville [by synonymy of *Cryptamorpha musae* Wollaston]; of *Pseudophanus*, *P. signatus* LeConte [by monotypy]; of *Parabrantes*, *P. silvanoides* Redtenbacher [by monotypy].

Diagnosis. *Cryptamorpha* most resembles *Telephanus* in the New World, but can be distinguished easily by the longitudinal grooves on the frons, shorter antennal



Map 1. Florida distribution of *Cryptamorpha desjardinsii* (Guérin-Méneville).

scape, non-securiform maxillary palpi, and strongly bilobed tarsomere III.

Taxonomic notes. The generic synonymy was first proposed by Waterhouse (1876:122) and has been accepted by most subsequent authors. Hetschko (1930:88) listed 24 species in this genus; Pal and Sen Gupta (1979:78-80) described two new species from India and Bhutan. The genus has never been revised, nor are there any comprehensive keys to the species. Most of the original descriptions are brief and without illustrations, thus specific identifications require, in most cases, comparisons with types.

Biology. The little information published on the biology of this genus (almost entirely on *Cryptamorpha desjardinsii*) suggests that their biology is similar to members of *Telephanus*.

Distribution. Of the species listed by Hetschko (1930:88-90), only *desjardinsii* and *redtenbacheri* (Reitter) occur in the New World. The former is pantropical; the latter may be generically distinct (Thomas 1984b).

Cryptamorpha desjardinsii
(Guérin-Méneville)
 (fig. 10, 11, 12, map 1)

Psammoecus desjardinsii Guérin-Méneville 1829-44:196

Cryptamorpha musae Wollaston 1854:157; syn. by Waterhouse 1876:122

Pseudophanus signatus LeConte 1860:85; syn. by Waterhouse 1876:122

Psammoecus hubbardi Casey 1884:167; syn. by Casey 1890:498

Diagnosis. Length 3.3 - 4.4mm. *Cryptamorpha desjardinsii* can only be confused with *Telephanus velox* in the Florida fauna; the generic diagnoses will distinguish the two species. According to the key in Grouvelle (1917:45), it can be distinguished from other species of *Cryptamorpha* by possession of prosternal process not inflexed behind the coxae and elytra less than three times longer than wide.

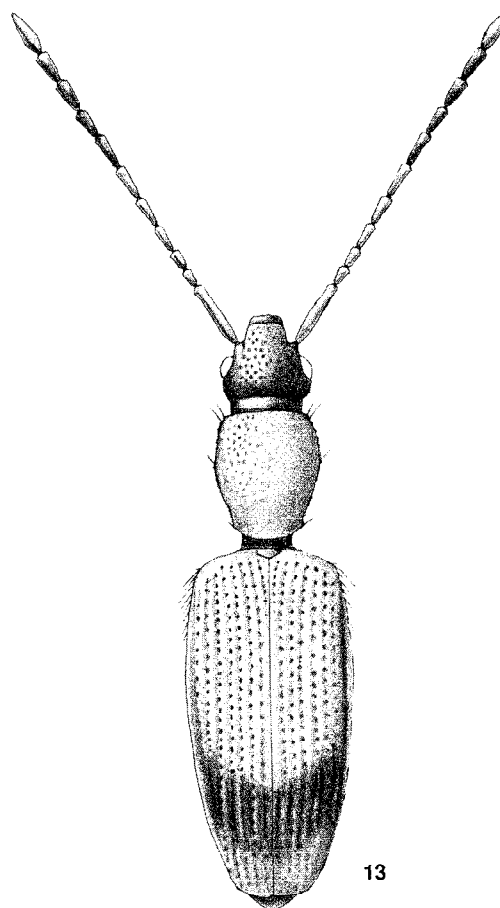


Figure 13. *Telephanus velox* (Haldeman), habitus.

Taxonomic notes. Because of its wide distribution, this species has been described several times in several genera. Waterhouse (1877:122) proposed most of the above synonymies. Casey (1890:498) synonymised his own species. Adults appear to be distinct and easily

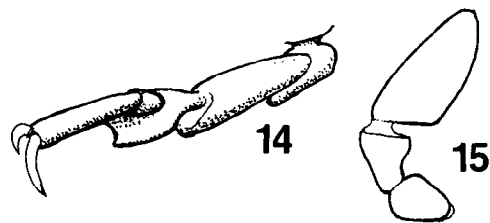
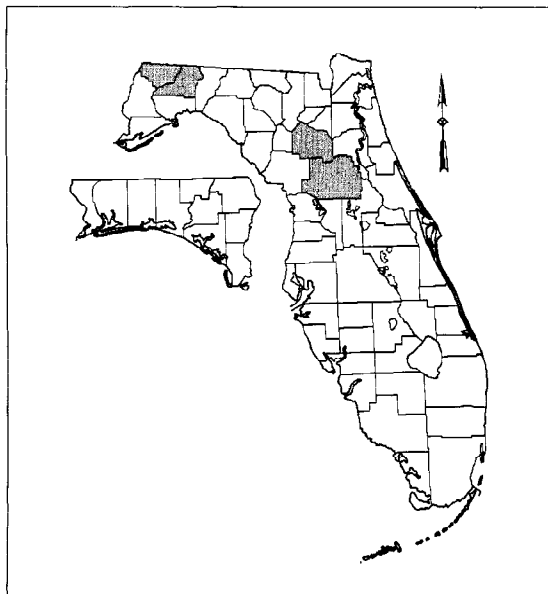


Figure 14-15. *Telephanus velox* (Haldeman), 14) hind tarsus; 15) maxillary palpus.

distinguished from adults of the other species of the genus by the characters given in the diagnosis above.

Biology. Blatchley (1928:67) reported collecting a specimen at Dunedin, Florida in December "... by beating a pile of dead leaves of cabbage palmetto ...". Löding (1945:79) reported it "At light and in mud on river bank." Lepesme (1939:62) reported that it was imported into France on bananas and pineapples ("... presque exclusivement sur les bananes et les ananas avec lesquels il est importé ..."). He also reported that adults feed on plant debris, but that the larvae are predaceous ("L'adulte paraît se nourrir de débris d'origine végétal. La larve, au contraire, est carnassière ..."). Bowler *et al.* (1977:452), however, reported that larvae were abundant in Hawaii beneath leaf sheaths of sugarcane infected with sugarcane smut (*Ustilago scitaminea* Syd.), upon which they feed.

Distribution. Hetschko (1930:88) listed it as "Kosmopolit". Blackwelder (1945:423) recorded it from St. Vincent and Grenada. LeConte's *Pseudophanus signatus* was described from Puget Sound, Wash. As Casey (1884:105) and Hatch (1961:206) pointed out, this was most likely based on an introduction; it has not been reported since from the Pacific Northwest. Leonard (1928:382) reported it from New York City; this record also is almost certainly based on an introduced specimen. Löding (1945:79) recorded it from Alabama.



Map 2. Florida distribution of *Telephanus velox* (Haldeman).

Specimens examined. More than 50, of which 28 were from Florida, representing 11 collection records (for complete data see Appendix).

Genus *Telephanus* Erichson

Telephanus Erichson 1846:329

Heterodromia Haldeman 1846:127; syn. by Melsheimer 1853:45

Diagnosis. 3.6mm - 4.3mm. The laterally spinose prothorax (fig. 13), elongate antennal scape, securiform maxillary palpi (fig. 15), inverted aedeagus, and approximate mesocoxae are diagnostic for members of this genus.

Taxonomic notes. This is one of the largest silvanid genera, with Hetschko (1930) listing 64 species. Nevermann (1931, 1932, 1937) added 47 species from Central America and the Antilles, and Thomas (1984b, 1991) added a new species each from Jamaica and Réunion Island. There are only two species known from the United States. Although the Central American and Antillean species are fairly well known because of Nevermann's revisions, the South American fauna is in need of revision; South American specimens of are virtually unidentifiable. Specimens should be handled carefully, since the easily-broken prothoracic spines are important in identification.

Biology. Nevermann (1931) presented a detailed review of the biology of the Neotropical members of this genus. Like most members of this tribe, these beetles appear to be associated with withered, pendant leaves or litter rather than loose bark. I have collected numerous specimens of *Telephanus* by beating *Lobelia assurgens* in the Massif de la Selle mountains in southeastern Haiti, withered banana leaves in Grenada, and *Heliconia* spp. in southern Mexico.

Distribution. This is a predominantly New World genus, with 105 of the 111 described species occurring in the New World, where members of the genus range from southern Canada south to Brazil and throughout the Antilles. Species also occur in Madagascar and nearby islands.

Telephanus velox (Haldeman) (fig. 13, 14, 15, map 2)

Heterodromia velox Haldeman 1846:127

Telephanus velox, Melsheimer 1853:45

Diagnosis. Length 3.6-4.3mm. The generic characters given in the diagnosis above distinguish it from all other Florida silvanids.

Taxonomic notes. This is such a distinct species that there has been no confusion over its identity. Erichson (1846:329-330) described the genus in a footnote and proposed the new species name *atricapillus*. Since Erichson did not describe the species, this name has been treated as a *nomen nudum* in most subsequent literature (although it was treated as a valid name by Smith (1851:14)).

Biology. Casey (1884:103) noted that it is “. . . very common under rubbish of various sorts . . .” Smith (1910:263) reported that in New Jersey it occurs “Throughout the State, under stones and old leaves; rarely under bark; may be sifted out from fall to late spring.” Blatchley (1910:569) wrote that in Indiana it “Occurs more often beneath stones, chunks and dead leaves than beneath bark. When exposed it usually remains quiescent with antennae folded against sides, but if touched it runs with great swiftness, whence its specific name.” Kirk (1969, 1970) recorded it in South Carolina from “woodstrash,” broomsedge, in hollow trees, at lights, and on soil. The Florida specimens I have seen were collected in ultraviolet light traps, in pitfall traps, and from soybean plants.

Distribution. LeConte (1854:77) reported it from the “. . . Middle, Southern and Western States . . .” It has also been recorded from New Jersey (Smith 1910:263), North Carolina (Brimley 1938), New York (Leonard 1928), Alabama (Löding 1945), Indiana (Blatchley 1910), South Carolina (Kirk 1969, 1970), and Florida (Thomas 1979). I have seen specimens from Arizona, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New York, North Carolina, Ohio, Oklahoma, Ontario, Tennessee, Virginia, West Virginia, and Wisconsin. In Florida it has been collected only in the northern third of the state.

Specimens examined. More than 80, of which 19 were from Florida, representing five collection records: 1, Alachua Co., Gainesville, 8-VI-1977, B.J. Smittle, u.v. light trap (FSCA); 15, Gadsden Co., Quincy, VIII-IX-1971, T.M. Neal, D-Vac soybeans (FSCA); 1, Jackson Co., Florida Caverns St. Pk., 26-IV-1986, R. Turnbow, blacklight and mercury vapor light (RHTC); 1, Leon Co., Tall Timbers Res. Sta., 14-21-XII-1970, D.L.

Harris, pitfall trap (FSCA); 1, Marion Co., Ocala, 17-VIII-1977, M.C. Thomas, blacklight trap (FSCA).

Silvaninae

Diagnosis. Members of this subfamily can be distinguished by the following combination of character states: tarsal formula 5-5-5 in both sexes; tarsomere I longer than II; mandibular mycangium present, but reduced in size compared to that found in Uleiotaenae; antennae clubbed; anterior coxal cavities closed; aedeagus not inverted, parameres located on dorsal aspect of median lobe.

Taxonomic notes. Although until recently placed as a subfamily of the Cucujidae, this group of genera is distinct and easily characterized.

Biology. The biology of the members of this subfamily was reviewed in this section under the family discussion.

Distribution. Worldwide, but most abundant and diverse in the tropics.

Genus *Nausibius* Lentz

Nausibius Lentz 1857:75

Type species. *Cucujus clavicornis* Kugelann [by synonymy of *Corticaria dentata* Marsham, type by monotypy].

Diagnosis. Most similar in Florida to *Oryzaepphilus* and *Eunausibius*. Members of *Nausibius* can be separated from those of *Oryzaepphilus* by having tarsomere III simple (incrassate in *Oryzaepphilus*) and pronotum laterally undulate instead of toothed. The antennal club in *Nausibius* also appears to be composed of four antennomeres, and pronotum usually with a crescentic depression at base.

Taxonomic notes. According to Halstead (1980:344) this genus, as presently composed, is polyphyletic, with *repandus*, *sahlbergi*, and similar species generically distinct from the group of species related to *major* and *clavicornis*.

Biology. The biology of most species is unknown. *Nausibius clavicornis* is a minor pest of stored products, especially raw or yellow crystal sugar (Breese and Wise 1959); *N. major* is found under bark of oaks (*Quercus* spp.), and *N. repandus* has been collected on

pine (*Pinus* spp.) in association with bark beetles (Scolytidae).

Distribution. Except for the cosmopolitan *N. clavicornis*, members of this genus are restricted to the New World.

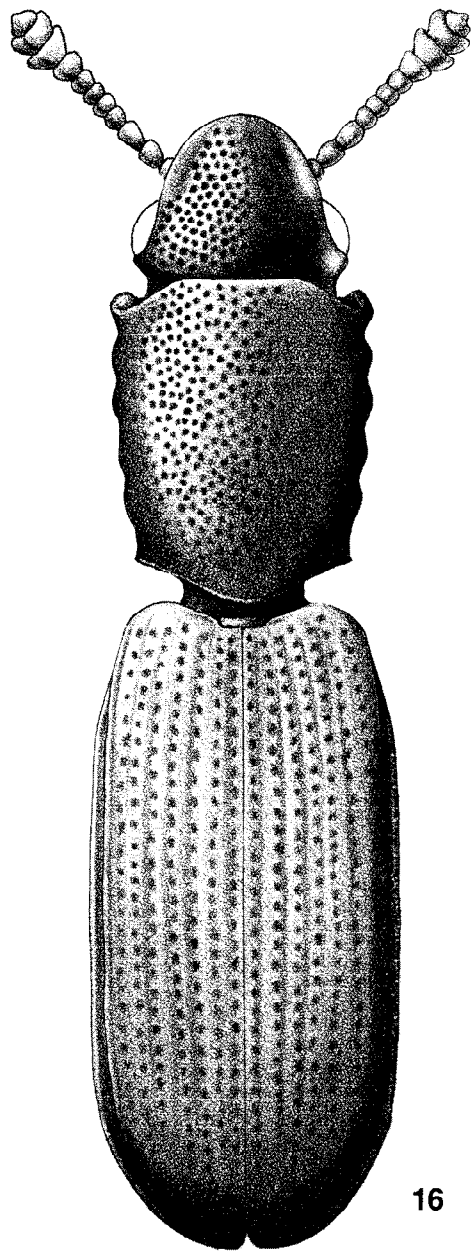


Figure 16. *Nausibius repandus* LeConte, habitus.

Key to the adults of Florida species of *Nausibius*

1. Body depressed, slender, parallel-sided; pronotal margins slightly undulating; pronotum basally without distinct crescentic depression2
- 1'. Body more convex, more robust, not as parallel-sided; pronotal margins distinctly undulating; pronotum basally with distinct crescentic depression3
- 2(1). Coarsely, densely punctate and pubescent dorsally, punctures deep; color piceous
..... *repandus* (LeConte)
- 2'. Dorsal surface appearing almost impunctate, punctures very shallow and ill-defined, dorsal surface glabrous; color castaneous
..... *sahlbergi* Grouvelle
- 3(1'). Pronotum with a distinctly less densely punctate area medially (cosmopolitan, stored products pest) *clavicornis* (Kugelann)
- 3'. Pronotum without a distinctly less densely punctate area medially *major* Zimmermann

Nausibius clavicornis (Kugelann)

Cucujus clavicornis Kugelann 1794:511

Nausibius clavicornis, Fauvel 1889:132

Corticaria dentata Marsham 1802:108; syn. by Fauvel 1889:132

Silvanus denticulatus Macleay 1825:46; syn. by Halstead 1980:345

Silvanus intermedius Smith 1851:16; syn. by Gemminger and Harold 1868:880

Silvanus latus Fairmaire 1850:53; syn. by Fauvel 1884:73

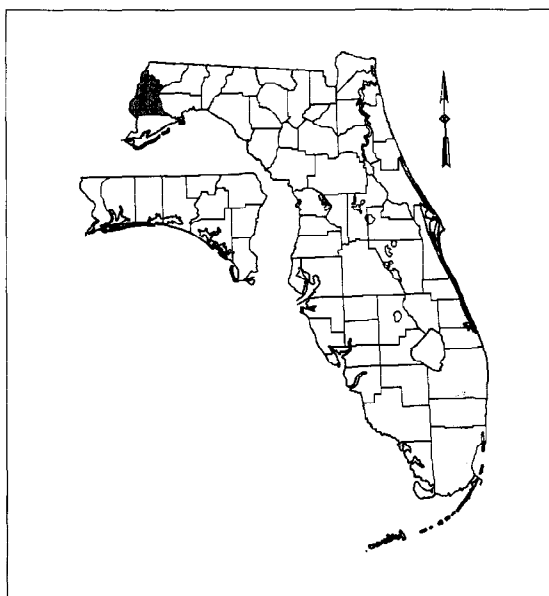
Rhizophagus parallelus Walker 1858:206; Hetschko 1930:73

Diagnosis. Length 3.2mm - 4.1mm. Adults of this species can be distinguished from the very similar *major* by the sparser punctation of the pronotal disc.

Taxonomic notes. Halstead (1980:349) noted that many North American literature records for this species actually refer to *major*, with which it has long been confused.

Biology. Halstead (1980:349) wrote that it is “. . . undoubtedly subcorticolous in the field . . .”, and Ganglbauer (1899:581) reported that it is found in old nests of bees in South America. Breese and Wise (1959) reviewed the literature records and reported in detail on its biology in the laboratory. They list the following commodities in which *clavicornis* has been found: rice, dried apples, ginger, logwood (*Haematoxylon*), and cassia husks. It is most common in sugar, especially those kinds of unrefined sugars with a high proportion of molasses, but Breese and Wise (1959:257) concluded: “It is unlikely that *N. clavicornis* could multiply rapidly in raw or unrefined sugar, and any deterioration in stored sugar directly attributable to it would probably be small in comparison with that caused by other factors.” Wolcott (1950: 298) reported it from Puerto Rico and noted it “. . . has repeatedly been found since in brown sugar.”

Distribution. Halstead (1980:347) wrote that “Although indigenous to the Neotropical region, this species has been carried to all parts of the world by commerce and has become established in warmer regions.” He reported specimens from Madeira, Zaire, Uganda, Zimbabwe, Reunion, Sri Lanka, Burma, China, Japan, Philippines, Hawaii, Australia, Canada, U.S.A., Mexico, Guatemala, Belize, Nicaragua, Panama, Brazil, Cuba, Jamaica, Puerto Rico, Dominica, St. Vincent, and Trinidad. In the U.S., he reported it from California, Texas, New York, Pennsylvania, Maryland, North Carolina, South Carolina, and Florida.



Map 3. Florida distribution of *Nausibius major* Zimmermann.

Specimens examined. Only three, and none from Florida.

Nausibius major Zimmermann (map 3)

Nausibius major Zimmermann 1869:257

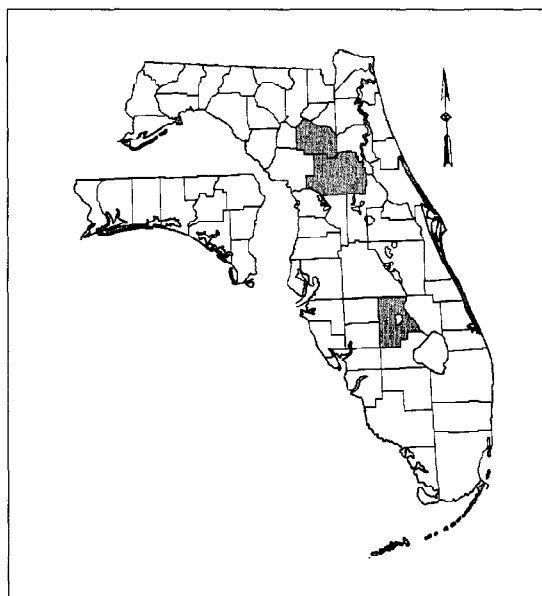
Nausibius dentatus var. *major*, Crotch 1873:44

Nausibius clavicornis, *auctorum* (in part), not Kugellann 1794:511

Nausibius major, Halstead 1980:349

Diagnosis. Length 3.9mm - 5.1mm. Adults have denser punctation of the thoracic disc than those of *clavicornis*. Halstead (1980:349) also stated that antennomere VIII is less transverse and pronotal teeth less prominent in *major* than in *clavicornis*.

Taxonomic notes. Zimmermann (1869:257) noted the close resemblance of his species to *clavicornis*, but wrote that *major* is “. . . somewhat larger, of black color, with reddish-brown antennae and legs, and perceptibly more coarsely punctured.” Crotch (1873: 44) treated *major* as a variety of *dentatus*. Casey (1884:75) wrote, after examining specimens of *major*, “. . . that it is simply *N. dentatus* [=clavicornis] without



Map 4. Florida distribution of *Nausibius repandus* LeConte.

any difference at all, as far as I can discover." After being treated as a variety or synonym of *clavicornis* for nearly a century, this name was revived by Halstead (1980:349), who stated that "... I am convinced that the magnitude of difference shown by external characters warrants specific status for *N. major*."

Biology. Zimmermann (1869:257) wrote, "... found only under the bark of old oaks." Halstead (1980:350) reported one specimen "... collected on 'Scarlet oak assoc carpenter worm attack' and two were caught at light." Although most of the specimens I have seen were without data or were collected in ultraviolet light traps, I collected two specimens from an oak (*Quercus* sp.) with a slime flux.

Distribution. Zimmermann (1869:257) described it from "Carolina". Halstead (1980:350) reported specimens from Arizona, Arkansas, Colorado, District of Columbia, Florida, Georgia, Illinois, Kentucky, Louisiana, Maryland, Michigan, New Jersey, New York, North Carolina, Tennessee, Texas, and Virginia. I have seen additional specimens from the states of Ohio and Oklahoma. There is also a specimen in the FSCA with the following data: MEXICO, Nuevo Leon, 4 mi. S. Monterrey nr. Siesta Motel, 12-VII-1963 R.H. Arnett, Jr. and E.R. VanTassell. This is the first record from Mexico and the first from outside the U.S.A.

Specimens examined. More than 30, of which three were from Florida, representing two collection records: 2, Liberty Co., Torreya State Park, 14-X-1978, M.C. Thomas (FSCA); 1, Jackson Co., Florida Caverns St. Pk., 26-IV-1986, R. Turnbow, blacklight & mercury vapor light (RHTC).

Nausibius repandus LeConte

(fig. 16, map 5)

Nausibius repandus LeConte 1866:70

Diagnosis. Length 2.4mm - 2.8mm. Adults of this species are most similar to those of *sahlbergi* in the Florida fauna, but differ in their much more coarsely punctured and distinctly pubescent dorsal surface. Adults of both *repandus* and *sahlbergi* differ from those of *major* and *clavicornis* by their smaller size, more parallel-sided and flattened body form, and lack of a basal crescentic depression on the pronotum.

Taxonomic notes. This is a distinctive species with no specific synonyms. As noted above, Halstead (1980:344

and *in litt.*) stated that it and several other species, including *sahlbergi*, are not congeneric with *clavicornis*.

Biology. Blatchley (1918:423) reported collecting a specimen "... at Dunedin while sweeping huckleberry and other low shrubs ..." and (1928:67) "... beaten from the tops of recently felled pine." On two occasions, I have collected adults of this species from beneath outer bark scales of small, cut pines and pine branches infested with scolytids, and one first instar silvanid larva from within the bark beetle galleries.

Distribution. LeConte (1866:379) described it from Washington, D.C. and Schwarz (1878:445) recorded it from Florida. I have not been able to find any additional published distribution records. I have seen specimens from Florida and Alabama.

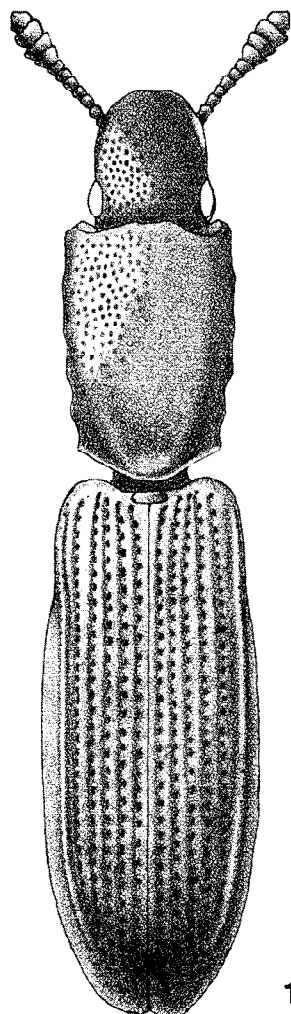
Specimens examined. Twenty, of which 18 were from Florida, representing seven collection records: 1, Alachua Co., Gainesville 23-25-VI-1978 F. Mead blacklight trap (FSCA); 1, Alachua Co. Gainesville 17-III-1984 M.C. Thomas (FSCA); 1, Highlands Co. Archbold Biol. Sta., Lake Placid 26-III-1986 M. Deyrup window trap trails 1 & 2 SSo (ABSC); 1, Highlands Co. Archbold Biol. Sta., Lake Placid 10-III-1986 M. Deyrup window trap burn area (ABSC); 1, Highlands Co. Archbold Biol. Sta., Lake Placid 20-I-1985 M. Deyrup window trap trails 1 & 2 SSo (ABSC); 1, Highlands Co. Archbold Biol. Sta., Lake Placid 22-XI-1982 M. Deyrup small fallen branch of *Pinus elliottii* (ABSC); 2, Marion Co. Village of Rainbow Springs 31-V-1982 M.C. Thomas (FSCA).

Nausibius sahlbergi Grouvelle

Nausibius sahlbergi Grouvelle 1896:206

Diagnosis. Length 3.0mm - 3.3mm. Similar to *repandus* in general body form, but dorsally glabrous and with very shallow, ill-defined punctures that give the impression that the surface is almost impunctate. Additionally, all specimens I have seen of *sahlbergi* have been castaneous in color, those of *repandus* piceous.

Taxonomic notes. This species has only been mentioned in the literature once since its description, and that was Halstead's (1980:344) opinion that this and related species are not congeneric with *clavicornis* and *major*.



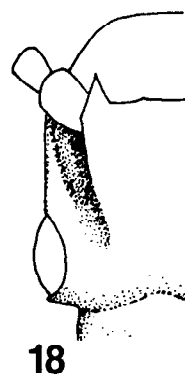
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Figure 17. *Eunausibius salutaris* Parsons, habitus.

Biology. Nothing has been published on its biology. Most specimens I have seen were collected in ultraviolet light traps.

Distribution. It was described from Brazil; I have seen specimens from Panama and Florida.

Specimens examined. More than 50, of which four were from Florida, with the following label data: 2, "Dade Co. Fla. v. 1949"/ "Cathartus quadricollis det. H.F. Strohecker" (FSCA); 2, "[Dade Co.] Royal Palm Park, 14-II-1951, A.M. Nadler" (AMNH).



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Figure 18. *Eunausibius salutaris* Parsons, antennal cavity.

Genus *Eunausibius* Grouvelle

Eunausibius Grouvelle 1912a:314

Type species. Grouvelle (1912a:314) described this genus for *Nausibius tenebrionoides* Grouvelle and *N. elongatus* Grouvelle, without designating a type species. Since Halstead is currently revising this group of genera, I will leave it to him to designate a type species.

Diagnosis. The species are most similar to those of *Nausibius* related to *repandus*, but they possess ventral antennal grooves on the head (fig. 18).

Taxonomic notes. Except for the assignment of three additional species by Schwarz and Barber (1921:192) and Parsons (1974:181-184), there has been little taxonomic activity in this genus. The species appear to be relatively uncommon in collections.

Biology. Wheeler (1921:88-91) reported on the biology of *E. wheeleri* Schwarz and Barber in Guyana. It inhabits the hollow petioles of the ant tree, *Tachigalia* sp., where all stages feed on the tissue of the inner walls of the petiole and on honeydew, which the beetles actively solicit from coccids that also inhabit the petioles.

Distribution. Except for the single specimen from Florida, the members of this genus appear to be restricted to South America.

***Eunausibius salutaris* Parsons**
(fig. 17, 18)

Eunausibius salutaris Parsons 1974:182

Diagnosis. Length 3.3mm - 4.1mm. The well-marked antennal grooves (fig. 18) and general habitus (fig. 17) easily distinguish this species in the Florida fauna.

Taxonomic notes. Parsons (1974:181) noted that it and *E. lophius* Parsons key to *E. elongatus* (Grouvelle) in Grouvelle's (1912a:314) key, but both can be distinguished from that species by their depressed and laterally carinate elytra (*cf.* convex and not carinate). *Eunausibius salutaris* can be immediately distinguished from *lophius* by its much smaller eyes and by the antennal insertions, which are situated one-third of the length of an eye in front of the eyes in *lophius* and the

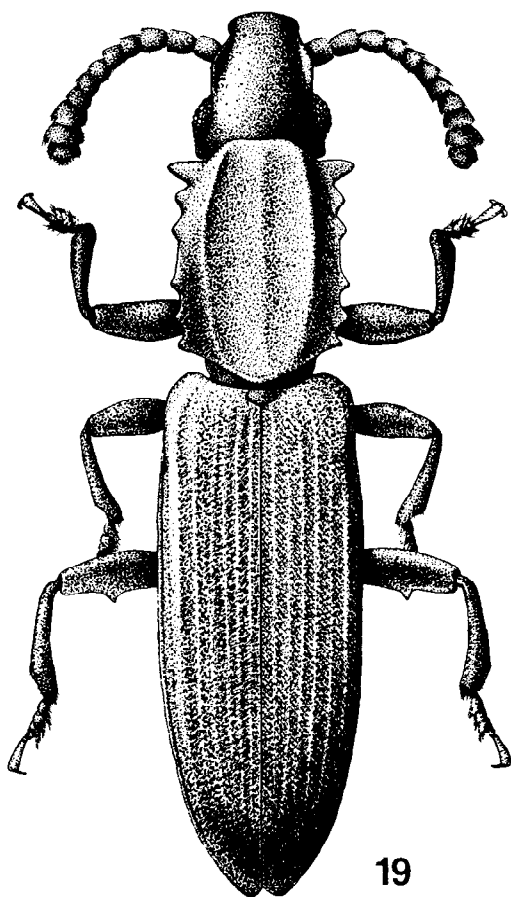


Figure 19. *Oryzaephilus acuminatus* Halstead, habitus.

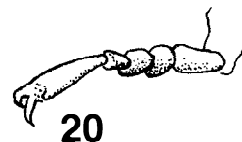


Figure 20. *Oryzaephilus acuminatus* Halstead, front tarsus.

length of an eye in *salutaris*. Halstead (*in litt.*) questioned the generic assignment of *salutaris*.

Biology. Nothing has been published on the biology of this species. I have examined specimens from Venezuela that were collected in association with Pseudococcidae.

Distribution. It was described from Brazil (Parsons 1974:184) and has not been reported in the literature since. It is here recorded from Florida and Venezuela for the first time.

Specimens examined. Four, of which one was from Florida, with the following data: "FLORIDA: Broward Co. Ft. Lauderdale V-1983 Coll. by F.W. Howard" (FSCA), and three were from Venezuela: "Est. Exb. Yaritagua Edo Yaracuey 1967 Osorio Coll." "asociados con Pseudococcidae en caña de azúcar" (FSCA).

Genus *Oryzaephilus* Ganglbauer

Silvanus (*Oryzaephilus*) Ganglbauer 1899:584

Oryzaephilus, Reitter 1911:45

Type species. *Silvanus surinamensis* (Linnaeus) [by subsequent designation of Halstead 1980].

Diagnosis. Of Florida silvanids, only members of *Oryzaephilus* possess six distinct teeth on the lateral margin of the prothorax (fig. 19). Additionally, members of this genus can be distinguished by the combination of the following character states (Halstead 1980:276-277): body elongate, more or less parallel-sided; tarsomere III incrassate; head without ventral grooves; antennae with 11 antennomeres, antenna with antennomeres IX-XI forming a distinct club, antennomere XI not obviously acuminate; temples present; femoral lines not produced caudally.

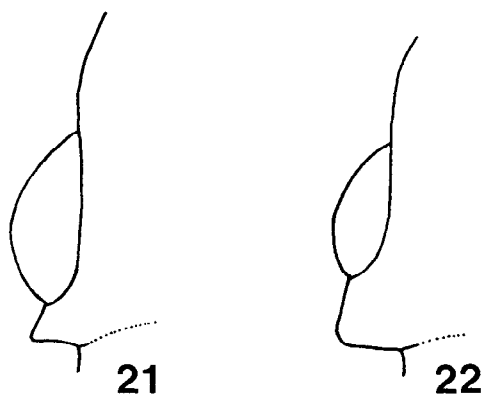


Figure 21-22. *Oryzaephilus* spp., temples. 21) *O. mercator* (Fauvel); 22) *O. surinamensis* (L.).

Taxonomic notes. With Halstead's (1980) revision, this has become one of the taxonomically best known of flat bark beetle genera. One of the prime reasons for this is their economic importance as stored-products pests, especially *O. surinamensis*, the saw-toothed grain beetle, and *O. mercator*, the merchant grain beetle. Described as a subgenus of *Silvanus* by Ganglbauer in 1899, it was raised to generic rank by Reitter (1911:45). Hetschko (1930:67-70) listed eight species; Halstead (1980) included 13 species. Major references to the taxonomy and morphology of members of the genus include Grouvelle (1912a), Guillebeau (1890), Honomichl (1978), Howe (1953), Joshi (1976), Pajni and Bedi (1975), Slow (1958), and Spilman (1960).

Biology. Their natural habitat appears to be under bark (Halstead 1980:274), although Thomas (1984b: 53) suggested that their occurrence under bark may be incidental to other factors. References that deal with the biology of members of this genus include: Aitken (1966), Arbogast (1976), Ashman and Higgs (1968), Back and Cotton (1926), Barnes and Kaloostian (1940), Blackman (1966), Corbett et al. (1937), Howe (1956), Jacob (1981), Loschiavo (1976), Pierce et al. (1981), Saxena and Kaul (1976), Sinha (1965), Surtees (1963), White and Sinha (1981), Wojcik (1969).

Oryzaephilus surinamensis and *O. mercator* are common and serious pests of stored products, with *surinamensis* being more abundant on cereals and cereal products, dried fruit, copra, nuts, and carob, whereas *mercator* is more common on oil nuts and their products (Halstead 1980:290, 309). Two other species, *O. gibbosus* Aitken and *O. acuminatus* Halstead, have been intercepted in Great Britain on coconut shells (Aitken 1965; Halstead 1980). The latter species was

collected in large numbers in Florida in a shipment of neem (*Azadirachta indica* A. Juas) seed imported from India (Thomas and Woodruff 1984).

Distribution. Except for the widely distributed stored products species, the members of this genus are restricted to the Old World, especially to the warmer areas. Three species have been collected in Florida.

Although both *surinamensis* and *mercator* are virtually worldwide in distribution, only the former is capable of surviving temperate zone winters but cannot complete development at temperatures below 20 degrees Celsius (Halstead 1980:290, 309). See Aitken

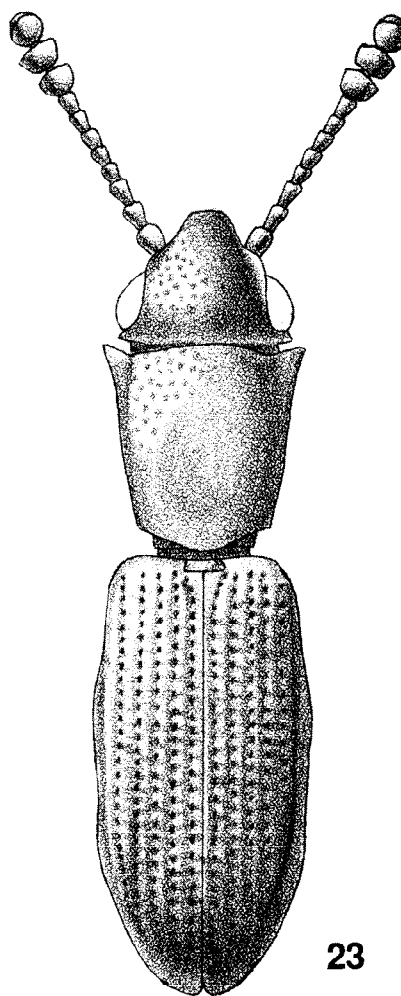
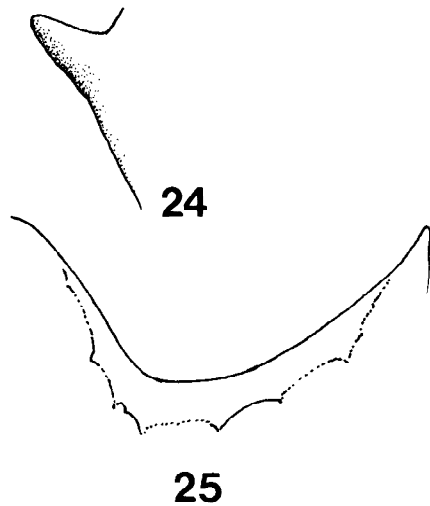


Figure 23. *Silvanus planatus* Germar, habitus.



Figures 24-25. *Silvanus muticus* Sharp. 24) anterior pronotal angle; 25) femoral line.

(1975) for detailed distribution records. Probably none of the species is established in the wild in Florida.

Key to the adults of species of *Oryzaephilus* collected in Florida

1. Temple at least one-half length of eye (fig. 22), not sharply angulate behind
..... *surinamensis* (Linnaeus)
- 1'. Temple less than one-third length of eye (fig. 21), sharply angulate behind 2
- 2(1'). Anterior pronotal angle moderately developed in large males, body less elongate (3.6-4.1:1); pronotum of large males with lateral ridges not strongly elevated *mercator* Fauvel
- 2'. Anterior pronotal angles strongly developed in large males (fig. 19); body more elongate (3.9-4.4:1); pronotum of large males with lateral ridges strongly produced
..... *acuminatus* Halstead

Genus *Silvanus* Latreille

Silvanus Latreille 1804:158

Leptus Duftschmidt 1823:156 [replacement name for *Silvanus*]

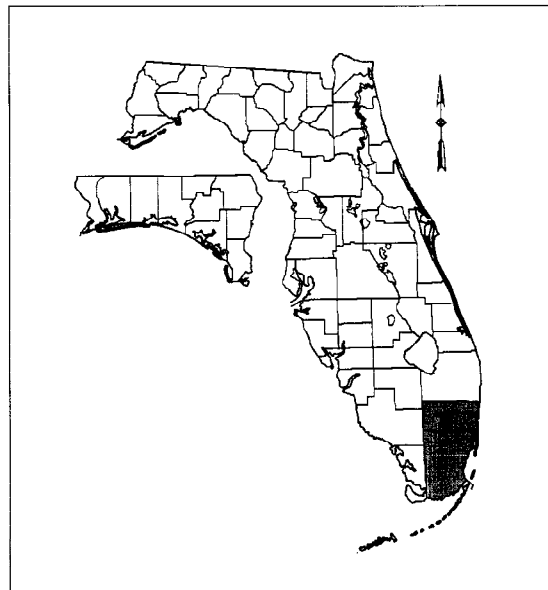
Type species. *Ips unidentata* Olivier [by monotypy].

Diagnosis. The species of *Silvanus* can be distinguished in Florida by the following combination of character states: lateral margins of pronotum simple; anterior angles produced anterolaterally (fig. 23, 25); tarsomere III simple.

Taxonomic notes. The taxonomic history of *Silvanus* is similar to that of *Laemophloeus* in the Laemophloeidae. As traditionally constituted, it was a highly polyphyletic assemblage of silvanids sharing little more than a vague external similarity. Grouvelle (1912a) recognized this and proposed a number of subgenera, none of which was accepted until recently.

Hetschko (1930:59-63) included 55 species in *Silvanus*. Halstead (1973) adopted three of the four subgenera proposed by Grouvelle (1912a) and elevated them to generic rank, in addition to proposing three new genera. As defined by Halstead (1973), *Silvanus* contains 17 species and is a more natural, easily characterized taxon than it was previously.

Biology. These beetles are generally found under the bark of logs and dead trees, where they are at least partly fungivorous (Halstead 1973:42). Eight species of *Silvanus* have been recorded from stored products imported into Great Britain, but none is a serious pest; Halstead (1973:42) noted that their presence "... may often be due to cross-infestation from dunnage and timber."



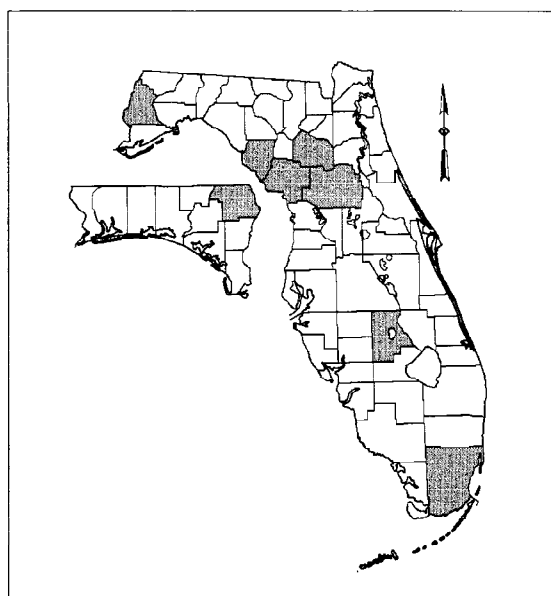
Map 5. Florida distribution of *Silvanus lewisi* Reitter.

Distribution. This genus is represented throughout the world except for South America.

**Key to adults
of Florida species of *Silvanus***

(Modified from Halstead 1973)

1. Pronotum more or less parallel-sided, at least in apical half; anterior angles obtusely lobed, not at all acute; temples rounded
.....*recticollis* Reitter
- 1'. Pronotum not obviously parallel-sided, more or less strongly convergent to base; anterior angles more or less angulate, not lobed; temples toothed2
- 2(1'). Anterior angles of pronotum less acute, not strongly produced laterally (fig. 25)3
- 2'. Anterior angles of pronotum more acute, strongly produced laterally (e.g. fig. 23)4
- 3(2). Head and pronotum glossy, punctuation of frontal triangle obviously different from sides of head; temple extending laterally beyond eye (fig. 25) (common, widespread species under bark)
.....*planatus* Germar
- 3'. Head and pronotum dull; punctuation of frontal triangle not obviously different from sides of head; temple not extending laterally beyond eye (single southern Florida record)
.....*proximus* Grouvelle



Map 6. Florida distribution of *Silvanus muticus* Sharp.

- 4(2'). Eyes very large, separated dorsally by 1.5 to 1.7 times their length; pronotum without well-defined lateral depressions*lewisi* Reitter
- 4'. Eyes not as large, separated dorsally by 1.9 to 2.1 times their length; pronotum with well-defined lateral depressions*muticus* Sharp

***Silvanus lewisi* Reitter**

(map 5)

Silvanus lewisi Reitter 1876:57

Diagnosis. Length 2.1mm - 2.3mm. The very large eyes distinguish adults of this species from those of all other Florida species of *Silvanus*.

Taxonomic notes. This is a distinctive species with no recorded synonyms.

Biology. Often imported into Great Britain on stored products or dunnage from the Oriental region and Africa, this species has been recorded on desiccated coconut, tapioca flour, rice, pulses, bark residues, gum arabic, groundnut kernels, and red beans, as well as under bark, on freshly fallen coconut palms, and at light (Halstead 1973).

Distribution. Halstead (1973) listed the distribution of *S. lewisi* as India, Sri Lanka, China, Vietnam, Taiwan, Japan, West Malaysia, Singapore, Philippines, Java, Borneo, New Guinea, Solomon Islands, Australia, Congo, and Ghana. It is likely that this species has become established in southern Florida.

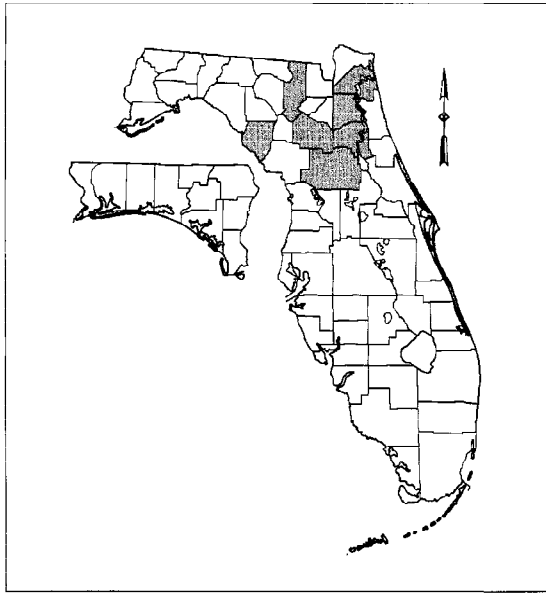
Specimens examined. Seven, of which five were from Florida with the following data: 1, "Dade Co., Fla. 19" (FSCA); 1, "FLA., Broward Co., Davic 24-II-1983 L. Daigle"/"on book in office" (FSCA); 3, "FLORIDA: Dade Co. Homestead Baver Rd W. of Redlands 13-III-1992 M.C. Thomas"/"under bark of burned Brazilian pepper" (FSCA).

***Silvanus muticus* Sharp**

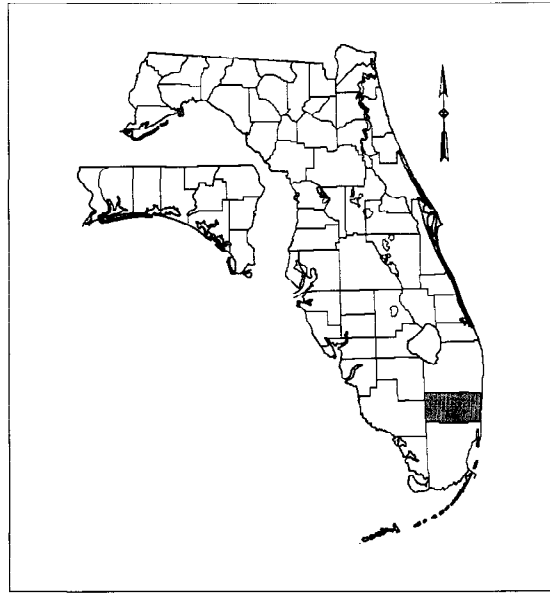
(fig. 24-25, map 6)

Silvanus muticus Sharp 1899:560

Diagnosis. Length 2.3mm - 3.0mm. In Florida, only adults of *S. lewisi* could be confused with those of this species; both have acute, well-developed anterior



Map 7. Florida distribution of *Silvanus planatus* Germar.



Map 8. Florida distribution of *Silvanus proximus* Grouvelle.

pronotal angles. However, in *S. muticus* the eyes are smaller and the longitudinal pronotal depressions are distinct.

Taxonomic notes. This is a distinctive species with no recorded synonyms. However, Halstead (1973:70) noted that it has often been confused with the similar *S. bidentatus*, which also occurs in North America, but apparently much less frequently than does *S. muticus*.

Biology. Halstead (1973:70) recorded it from under bark of pine, maple, oak, chestnut, and juniper, and at lights.

Distribution. The type locality is Guatemala. Halstead (1973:70) recorded it from Canada (Montreal), and in the United States from Alabama, Arkansas, California, Florida, Georgia, Illinois, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wisconsin.

Specimens examined. More than 120, of which 40 were from Florida, representing 17 collection records (for complete data see Appendix).

Silvanus planatus Germar (fig. 23, map 7)

Silvanus planatus Germar 1824:466

Silvanus zimmermanni Guérin-Mèneville 1829-44:198

Silvanus cognatus LeConte 1854:77

Diagnosis. Length 2.3mm - 2.8mm. From adults of other Florida species, those of *S. planatus* can be distinguished by the following combination of character states: Anterior pronotal angles obtuse (fig. 25); head and pronotum glossy; longitudinal pronotal depressions absent (fig. 25).

Taxonomic notes. Adults of this species are very similar to the European *S. unidentatus* (Olivier), which is established in North America, and *S. nitidulus* LeConte. Neither species is known to occur in Florida. From the former, adults of *planatus* can be distinguished by their glossy dorsal surface and longer temple, and from the latter by the presence of basal pronotal angles and generally larger body size.

Biology. Under bark of various hardwoods (Halstead 1973:65).

Distribution. Halstead (1973:65) recorded it from Ontario and Quebec in Canada and, in the United States, from Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, and Virginia.

Specimens examined. More than 120, of which 77 were from Florida, representing 17 collection records (for complete data see Appendix).

***Silvanus proximus* Grouvelle**
(map 8)

Silvanus proximus Grouvelle 1904:183

Silvanus amabilis Grouvelle 1914:140; syn. by Halstead 1973:61

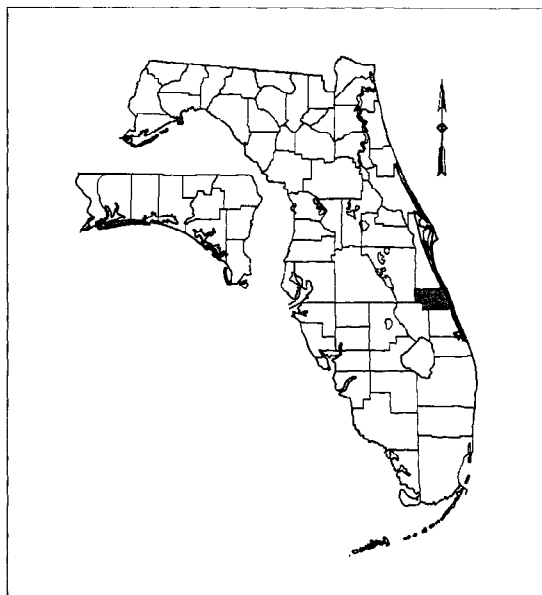
Diagnosis. Length 1.8mm - 2.3mm. The following combination of character states distinguishes adults of this species from those of other Florida species: Head and pronotum dull; anterior pronotal angles gradually developed, broad and blunt; elytral apex often toothed.

Taxonomic notes. Adults of *proximus* most resemble those of *planatus* in the Florida fauna, but the dorsal surface is dull rather than glossy as in the latter species.

Biology. "Occurs occasionally in association with stored products imported into Britain from Africa and one specimen was found on brazil-nut residues in a ship carrying nuts from Belon, Brazil. It has been sifted from oil-palm fruits, *Elaeis* . . . , caught at light and found in humus and forest-floor litter." (Halstead 1973:63)

Distribution. Widespread in Africa and introduced into the Neotropics. Halstead (1973:63) recorded it from Guinea, Sierra Leone, Ivory Coast, Ghana, Cameroun, Gabon, Zaire, South West Africa, Tanzania, Mexico, Venezuela, Brazil, St. Thomas, Martinique, and Grenada. It is here recorded from Florida for the first time.

Specimens examined. Six, of which five were from Florida, with the following data: "FLORIDA: Broward County I-1984 in a building Collected by Jacques" (FSCA).



Map 9. Florida distribution of *Silvanus recticollis* Reitter.

***Silvanus recticollis* Reitter**
(map 9)

Silvanus recticollis Reitter 1876:61

?*Leucohimatium breve* Wollaston 1873-74:170; see Halstead 1973:55

Silvanus reflexus Reitter 1880:25; syn. by Halstead 1973:56

Silvanus vitulus Grouvelle 1882:294; syn. by Halstead 1973:56

Silvanus (Microsilvanus) pumilus Grouvelle 1912a:332; syn. by Halstead 1973:56

Silvanus (Microsilvanus) minimus Grouvelle 1912a:334; syn. by Halstead 1973:56

Diagnosis. Length 1.7mm - 2.2mm. Adults of this species can be distinguished from those of other Florida species of this genus by the following combination of character states: Sides of pronotum more or less parallel to apex; anterior angles obtuse and directed more anteriorly than laterally; eyes small; dorsal surface dull.

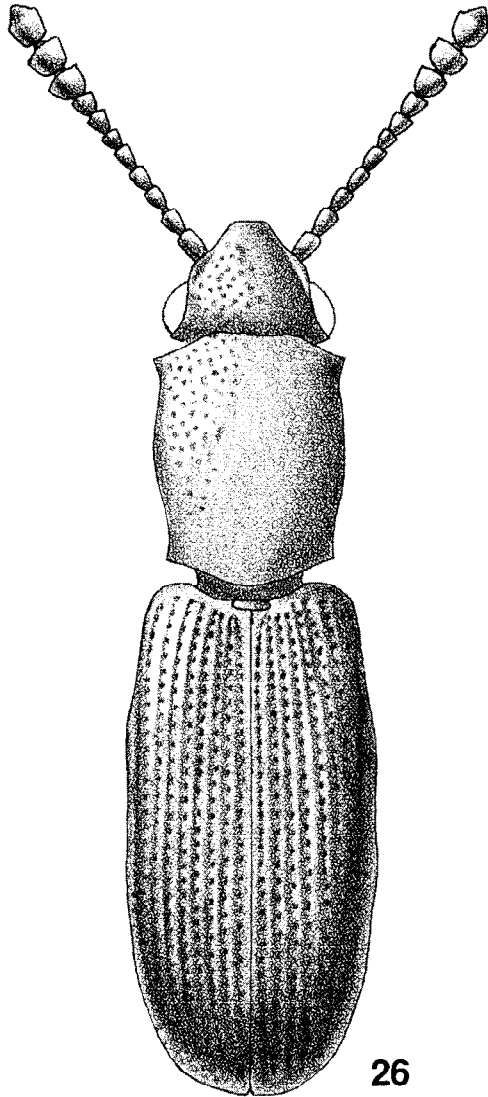


Figure 26. *Cathartosilvanus imbellis* (LeConte), habitus.

Taxonomic notes. A widespread, variable species, it was described several times by Reitter and Grouvelle, whose species were synonymized by Halstead (1973:56). Grouvelle (1912a:332) described *Microsilvanus* as a subgenus of *Silvanus* for this species (and its synonyms). Halstead (1973) did not employ subgenera in his revision of *Silvanus* and related genera, and the status of *Microsilvanus* has not been resolved.



Figure 27. *Cathartosilvanus imbellis* (LeConte), femoral line.

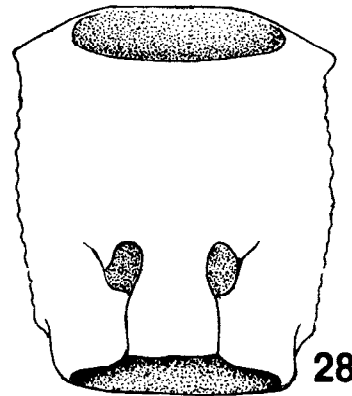
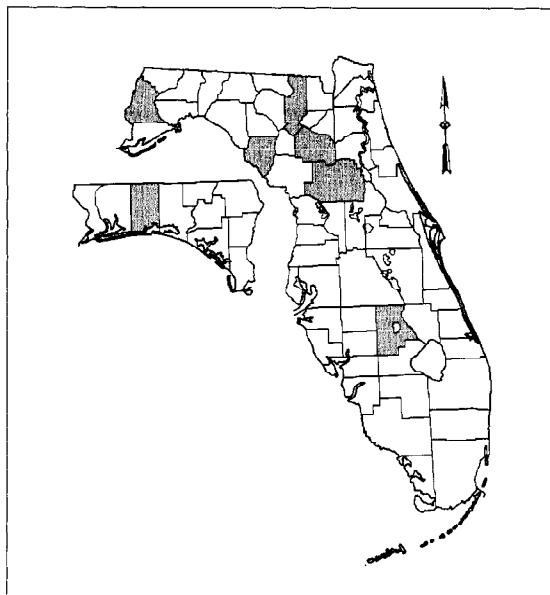


Figure 28. *Cathartosilvanus imbellis* (LeConte), prosternum.

Halstead (1973:55) wrote that *Leucohimatium breve* Wollaston, described from Japan, is “. . . almost certainly the same species as *recticollis* . . .”, but was unable to locate Wollaston's type.

Biology. Nothing is known about the biology of this species except that it is attracted to light.

Distribution. Widespread in the Old World tropics, it has been recorded from India, Thailand, Vietnam, Laos, Sulawesi, Japan, Ryukyu Islands, Congo, Zaire, and Zimbabwe (Halstead 1973:57). Thomas (1979:357) reported it for the first time from the New World, based



Map 10. Florida distribution of *Cathartosilvanus imbellis* (LeConte).

on a Florida specimen. There was some doubt whether the specimen was adventitious, but specimens subsequently collected in Georgia and Oklahoma (see below) suggest that this species is established in the United States.

Specimens examined. Forty-nine, 46 of which were from the United States with data as follows: 1, Florida, Indian River Co., Fellsmere 4-IX-1975 M.C. Thomas blacklight trap (FSCA); 2, Florida, Brevard Co., Hatcliff St. Pk. 12-IX-1987, Watts, Matthews & Lott, at light (FSCA); 1, Georgia, Clarke Co., Whitehall Forest 21-VI-1979 R. Turnbow blk. light (RHTC); 42, Oklahoma, Latimer Co., [various dates June-September, 1986, 1988] K. Stephan (FSCA).

Genus *Cathartosilvanus* Grouvelle

Silvanus (*Cathartosilvanus*) Grouvelle 1912a:340

Cathartosilvanus, Halstead 1973:81

Type species. *Silvanus opaculus* LeConte [by synonymy of *Silvanus trivialis* Grouvelle, type by monotypy].

Diagnosis. Members of this genus most resemble those of *Silvanus* and can be distinguished by the following combination of character states: different form of

anterior pronotal angles, which are located posterior to anterior margin of pronotum, and femoral lines open.

Taxonomic notes. Grouvelle (1912a:340) described this as a subgenus for *trivialis*; Halstead (1973:81) raised it to generic rank.

Biology. Primarily subcortical in habitat.

Distribution. Restricted to the New World, where four species are primarily Neotropical (one is restricted to the Galapagos Islands; one penetrates the Nearctic in the southwestern United States and in Florida), and one is widespread in the Nearctic.

Cathartosilvanus imbellis (LeConte) (fig. 26, 27, 28, map 10)

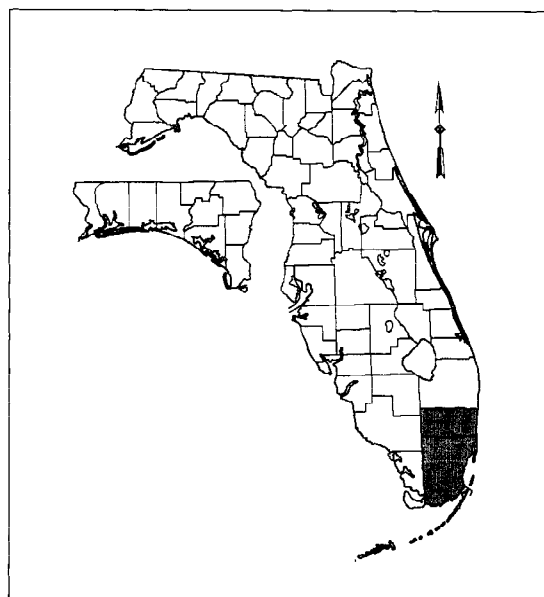
Silvanus imbellis LeConte 1854:77

Cathartosilvanus imbellis, Halstead 1973:82

?*Silvanus communis* Grouvelle 1878a:75; see Halstead 1973:82

Diagnosis. Length 2.5-2.9mm. The larger size and elongate pronotum distinguish individuals of this species from those of *opaculus*.

Taxonomic notes. The synonymy of *communis* (Halstead 1973:82) was based on the original de-



Map 11. Florida distribution of *Cathartosilvanus opaculus* (LeConte).

scription and illustration (Grouvelle 1878a:75); Halstead was unable to locate the type, which was from Brazil. Grouvelle (1912a:373) suggested that Guérin's (1829-44:198) description of *Silvanus* (= *Cathartus*) *quadricollis* applied best to this species, but this has not been followed by subsequent authors.

Biology. Found almost exclusively under bark in Florida, especially that of *Quercus* spp.

Distribution. Halstead (1973:84) reported it from "CANADA: Ontario and Quebec. U.S.A.: Oregon, Nebraska, Iowa, Illinois, Kansas, Texas, Louisiana, Michigan, Indiana, Ohio, New York, Massachusetts, Pennsylvania, W. Virginia, Maryland, New Jersey, N. Carolina, Alabama, Georgia, S. Carolina." I have seen specimens from localities in Florida, Connecticut, Missouri, New Hampshire, Oklahoma, and Wisconsin.

If *communis* is a synonym, then this species also ranges into the Neotropics; however, neither Halstead (1973:83) nor I have seen any specimens from south of the United States.

Specimens examined. More than 180, of which 60 were from Florida representing 13 collection records (for complete data see Appendix).

***Cathartosilvanus opaculus* (LeConte)**
(map 11)

Silvanus opaculus LeConte 1854:78

Cathartosilvanus opaculus, Halstead 1993:168

Silvanus trivialis Grouvelle 1878:75

Silvanus (*Cathartosilvanus*) *trivialis*, Grouvelle
1912a:340

Cathartosilvanus trivialis, Halstead 1973:84

Diagnosis. Length 1.7mm - 2.1mm. Adults of this species can be distinguished from those of *imbellis* by their smaller size and strongly transverse pronotum.

Taxonomic notes. Halstead (1993:168) synonymized Grouvell's name after examining LeConte's types.

Biology. Halstead (1973:84) reported the following associations: eggplants, pineapple, bananas, cedar and mahogany logs, *Primavera* log, dried fruit of *Musa textilis*, withered foliage of sugarcane and banana, in nest of weaver bird, and at light. It occasionally is

transported on produce, but there are no records to my knowledge of it being of economic importance.

Distribution. The type locality of *opaculus* is "Colorado River, California" (LeConte 1854:78). Halstead (1973:84) reported it from Central and South America south to Brazil and Bolivia, as well as from Jamaica, Grenada, Guadeloupe, and St. Vincent in the Caribbean, and from California and Arizona. Thomas (1979) reported it from southern Florida. I have seen specimens from additional localities in Trinidad, U.S. Vir-

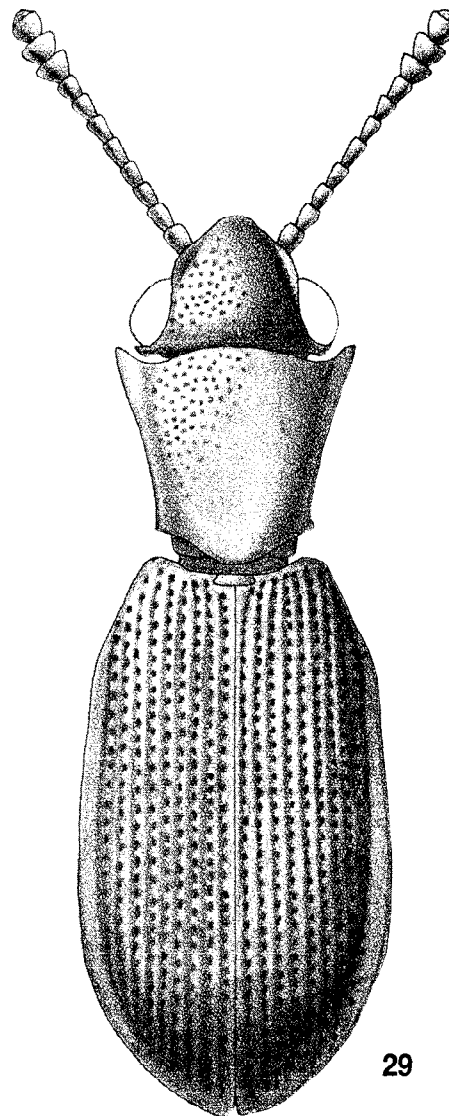


Figure 29. *Silvanoprus scuticollis* (Walker), habitus.



Figure 30. *Silvanoprus scuticollis* (Walker), femoral line.

gin Islands (St. Croix), and the Dominican Republic. In Florida it has been collected only in Dade and Broward counties.

Specimens examined. More than 25, of which nine were from Florida, representing four collection records: 3, "Dade Co., Goulds 18-IV-1983 M.C. Thomas & J.H. Frank" (FSCA); 1, "Dade Co., Miami Springs 14-VI-1962 R.E. Woodruff" (FSCA); 2, "Dade Co., Homestead 13-III-1992 M.C. Thomas under bark of burned Brazilian pepper (FSCA); 3, "Broward Co., Oakland Park 5-II-1991 M.C. Thomas under bark" (FSCA).

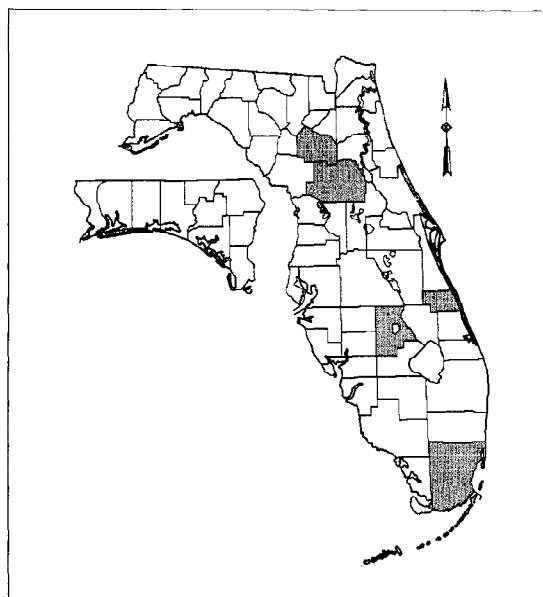
Genus *Silvanoprus* Reitter

Silvanoprus Reitter 1911:45

Type species. *Silvanus fagi* Guérin-Mèneville [by monotypy].

Diagnosis. The following combination of character states will distinguish adults of this genus: tarsomere III lobed; femoral lines closed (fig. 30); anterior angles of pronotum acute (fig. 29).

Taxonomic notes. Reitter (1911:45) described this genus for *Silvanus fagi*, which does not have produced temples, to distinguish it from other European *Silvanus* which have temples. Grouvelle (1912a:341) pointed out that the development of the temples is variable in this genus and is not a good character. He wrote that the most consistent character is a lobed tarsomere III. Grouvelle (1912a:341-342) transferred 11 additional species to *Silvanoprus* and added a new one. He also divided the genus into two groups, a *fagi* group of seven species in which the notosternal suture of the prothorax ends at the lateral edge of the prothorax near the anterior angles, and a *scuticollis* group of six species in which the suture attains the anterior margin of the prothorax.



Map 12. Florida distribution of *Silvanoprus scuticollis* (Walker).

Biology. Horion (1960:162) recorded *fagi* from various European hardwoods and conifers, and Vogt (1967:92) recorded it from wreaths in cemeteries.

Distribution. Except for one pantropical species (*scuticollis*) and one species introduced into northeastern North America (*angusticollis*), this genus is restricted to the Old World.

Silvanoprus scuticollis (Walker) (fig. 29, 30, map 12)

Silvanus scuticollis Walker 1859:53

Silvanoprus scuticollis, Grouvelle 1912a:342

Silvanus triangulus Reitter 1876:60; syn. by Grouvelle 1912a:342

Diagnosis. Length 2.2mm - 2.5mm. The combination of lobed tarsomere III, closed femoral lines (fig. 30), and acute anterior pronotal angles (fig. 29) characterize the adults of this species in the Florida fauna.

Taxonomic notes. This is a distinctive, widespread species with only the one recorded synonym.

Biology. Nothing has been recorded about the biology of this widespread species. Most of the specimens I have seen were collected at ultraviolet light traps. One

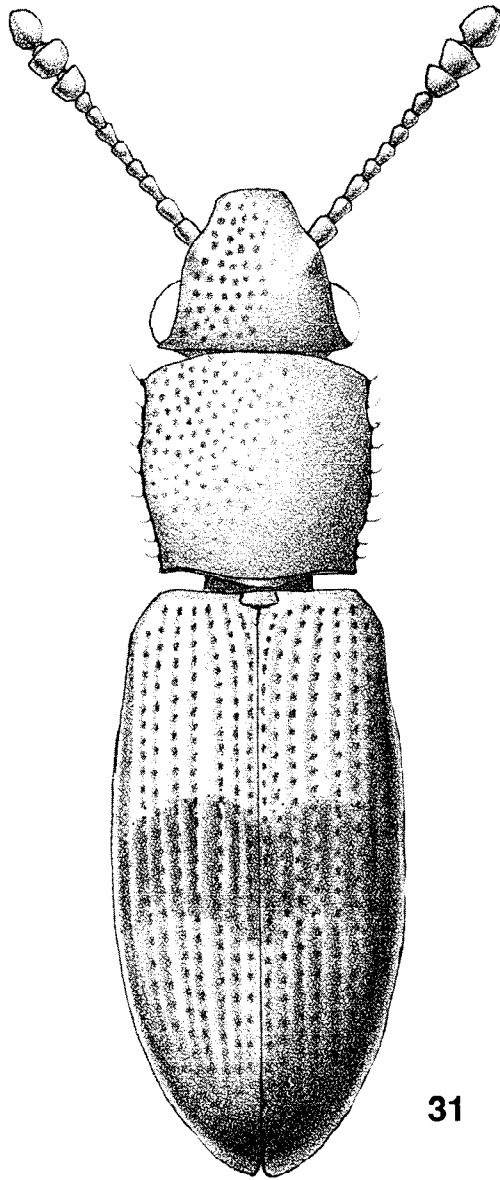


Figure 31. *Monanus concinnulus* (Walker), habitus.

specimen from St. Croix was collected in an ethanol-baited vane trap. I have never collected it under bark, even in areas which produced specimens from ultraviolet light traps.

Distribution. Hetschko (1930:64) recorded it from East Africa, France, Guyana, Madagascar, East Indies, Ceylon, Malay Archipelago, Japan, Sumatra, Antilles, Grenada, Guadeloupe, and St. Vincent. Thomas (1979:358) recorded it from Florida, Georgia, and North Carolina. I can add the following U.S. localities: Alabama, Louisiana, Oklahoma, and West Virginia. I have also seen specimens from U.S. Virgin Islands (St. Croix), Costa Rica, Taiwan, Dominican Republic, Panama, Brazil, and Jamaica.

Specimens examined. More than 85, of which 43 were from Florida, representing 22 collection records (for complete data see Appendix).

Genus *Monanus* Sharp

Monanus Sharp 1879:85

Emporius Ganglbauer 1899:578; syn. by Sharp and Scott 1908:429

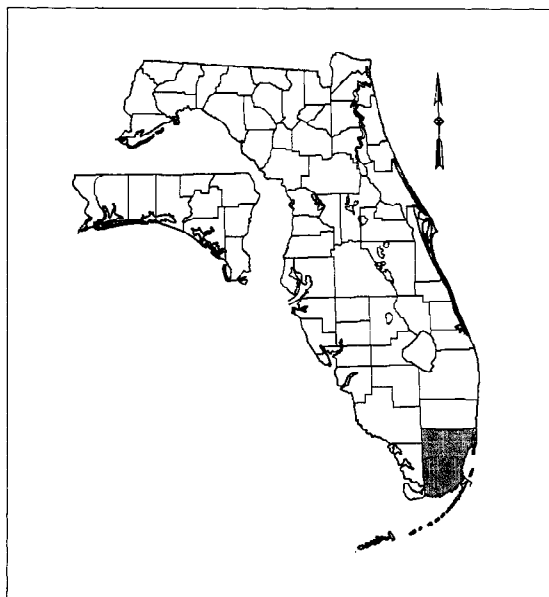
Type species. Of *Monanus*, *M. crenatus* Sharp [by monotypy]; of *Emporius*, *Monotoma concinnula* Walker

Diagnosis. The combination of lobed tarsomere III, closed femoral lines, denticulate, setose pronotal margins, and elytra with transverse dark fascia characterizes this genus in the Florida fauna.

Taxonomic notes. Sharp and Scott (1908:429) synonymized *Emporius* Ganglbauer with *Monanus* Sharp. Grouvelle (1912a:344) divided *Monanus* into two subgenera, *Monanus* (*sens. str.*) and *M. (Monanops)*, separating them on the basis of body form, relative length of elytra, and length of metasternum.

He listed four species in the subgenus *Monanops* and 17 in *Monanus* (*sens. str.*), of which three are now considered synonyms of *concinulus*. Recently, Pal (1981) revised the Indian members of the genus, adding a new species of *M. (Monanops)*, and describing the larva of *concinulus*. He compared members of this genus with those of *Airaphilus* Redtenbacher, which also is restricted to the Old World.

Biology. Pal (1981:241) reviewed the biology of the species of *Monanus*, citing earlier records of *M. concinnulus* in the roots of *Lonchocarpus* in Peru and in stored grain products in Nigeria, as well as recording Indian species from "... haystack, leaf garbage and under ... leaf sheath ..."



Map 13. Florida distribution of *Monanus concinnulus* (Walker).

Distribution. According to Pal (1981:241-242), the genus *Monanus* is “. . . restricted to warm climatic zones, a few species extend to warm temperate zones but none occur in the cool temperate climate. It is unrepresented in Europe.” Only the pantropical *M. concinnulus* occurs in the New World.

***Monanus concinnulus* (Walker)**
(fig. 31, map 13)

Monotoma concinnula Walker 1858:207

Monanus concinnulus, Grouvelle 1912a:371

Silvanus signatus von Frauenfeld 1867:438; syn. by Grouvelle 1908b:489

Cryptamorpha fasciatus Wollaston 1873-74:169; syn. by Waterhouse 1876:122

Cathartus fascipennis Reitter 1876:129; syn. by Ganglbauer 1899:586

Diagnosis. Length 1.9-2.2mm. According to Grouvelle (1912a:370-371) individuals of *concinnulus* can be distinguished from those of other species of *Monanus* by their poorly developed temples, elytra about two times longer than wide, antennomeres IV-VIII quadrate, elytra with transverse fascia.

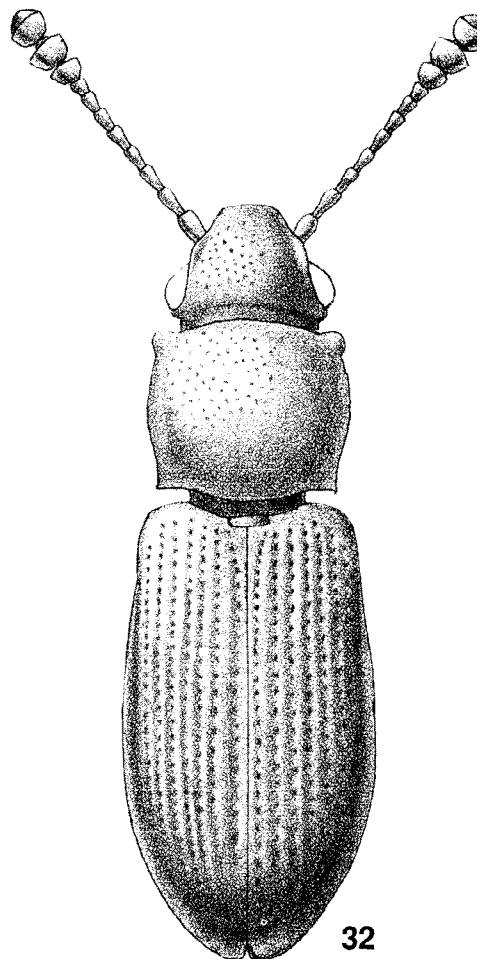


Figure 32. *Ahasverus rectus* (LeConte), habitus.

Taxonomic notes. The wide distribution of this species has resulted in it being described under several names. The synonymy listed above was based on that by Pal (1981:247).

Biology. Little has been published on the biology of this widespread species. I collected specimens on an old, moldy palm frond in Port-au-Prince, Haiti; the only Florida specimens I have seen were collected on *Bambusa vulgaris*. Wolcott (1950:298) reported it from bananas, grapefruit, and pomarrosa (*Eugenia jambos*).

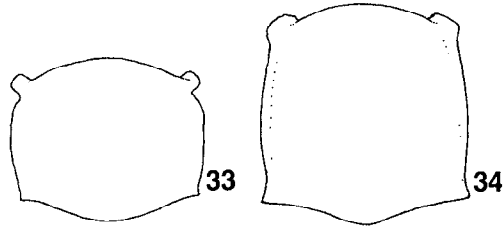


Figure 33-34. *Ahasverus* spp., prothorax. 33) *A. advena* (Waltl); 34) *A. longulus* (Blatchley).

Distribution. Found throughout the warm areas of the world. In the New World it has been recorded (Blackwelder 1945:421) from Mexico, Nicaragua, Puerto Rico, Guadeloupe, St. Vincent, Mustique, and Grenada. I have seen specimens from Taiwan, India, Jamaica, Belize, Panama, U.S. Virgin Islands (St. Croix and St. John), Haiti, and Florida. It is not known whether it is established in Florida.

Specimens examined. More than 55, of which two were from Florida, with the following data: "Coral Gables Fla."/"C.F. Dowling, Jr. coll. 6-III-59"/"at *Bambusa vulgaris*".

Genus *Ahasverus* Gozis

Ahasverus Gozis 1881:cxxvii

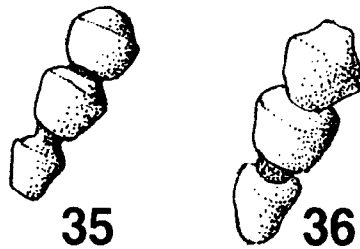


Figure 35-36. *Ahasverus* spp., antennal club. 35) *A. advena* (Waltl); 36) *A. rectus* (LeConte).

Type species. *Cryptophagus advena* Waltl [by monotypy].

Diagnosis. Members of this genus can be distinguished by the following combination of character states: tarsomere III lobed, lateral margins of pronotum simple, femoral lines open, body ovate, intercoxal process of sternum III rounded anteriorly.

Taxonomic notes. Halstead (*in litt.*) concluded that this is a polyphyletic genus, with *rectus* and related species forming a group deserving of generic status. He is preparing a revision of this group that will clarify the supraspecific relationships.

Biology. Based on literature records and my collecting experience, these are rarely, if ever, found under bark. Only the biology of *A. advena* has been studied to any extent, and it seems to be primarily fungivorous, even in stored products.

Distribution. Except for the cosmopolitan stored products pest *A. advena* (and occasionally *excisus*), members of this genus are restricted to the Nearctic and Neotropical regions. There are three described species in the United States; all occur in Florida.

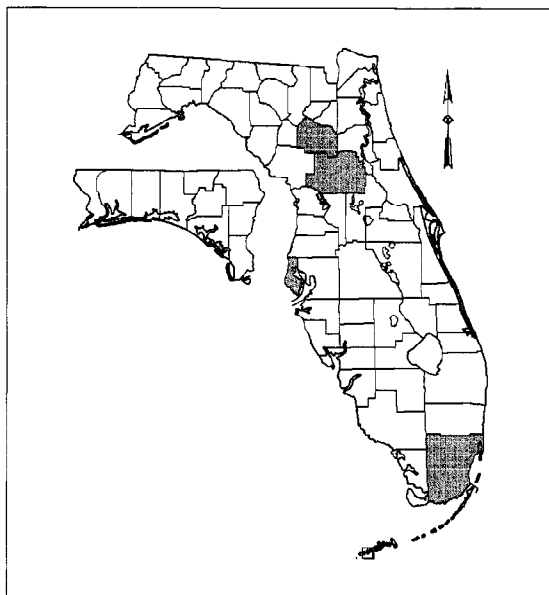
Key to the adults of Florida species of *Ahasverus*

1. Antennomere XI acuminate apically (fig. 35); anterior pronotal angles strongly lobed (fig. 33); body ovate, strongly convex dorsally
..... *advena* (Waltl)
- 1'. Antennomere XI not acuminate apically (fig. 36); anterior pronotal angles not strongly lobed (fig. 32, 34); body more parallel-sided; not strongly convex 2
- 2(1'). Pronotum transverse, at apex clearly wider than at base (fig. 32) *rectus* (LeConte)
- 2'. Pronotum quadrate, at base slightly broader than at apex (fig. 34) *longulus* (Blatchley)

Ahasverus advena (Waltl) (fig. 33, 35, map 14)

Cryptophagus advena Waltl 1834:169

Ahasverus advena, Gozis 1881:cxxvii



Map 14. Florida distribution of *Ahasverus advena* (Waltl).

Latridius musaeorum Ziegler 1844:270; syn. by Fauvel 1889:132

Silvanus guerini Allibert 1847:12; syn. by Ganglbauer 1899:589

Silvanus angustatus Lucas 1847:221; syn. by Ganglbauer 1899:132

Cryptophagus striatus Rouget 1876:ccvii; syn. by Reitter 1880:86

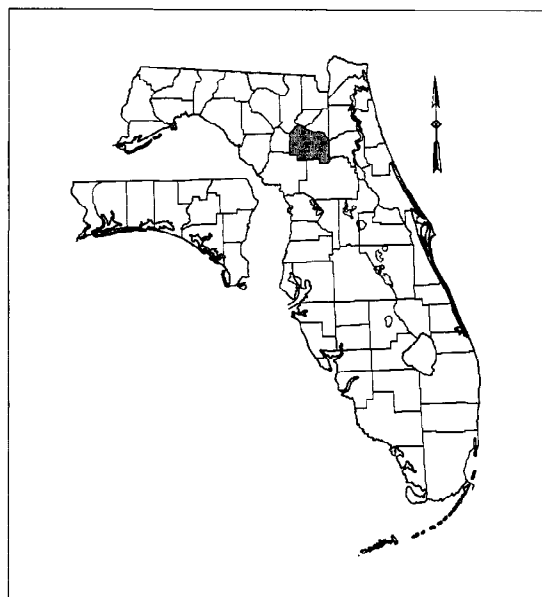
Diagnosis. Length 1.8-2.2mm. The ovate, convex body shape, produced anterior pronotal angles (fig. 33), and acuminate antennomere XI (fig. 35) distinguish this species.

Taxonomic notes. Despite the distinctiveness of this species, its wide distribution has led to numerous synonyms. It is most similar to *excisus*, a Neotropical species sometimes also found in stored products and which can be distinguished from *advena* by the very deep emarginations behind the anterior pronotal angles.

Biology. Corbett *et al.* (1937) studied the biology of this species on copra in Malaya and found that it preferred copra infested with the surface molds *Penicillium glaucum* and *Aspergillus* sp., and they rarely completed development on good copra. "It is practically entirely mycetophagous and, after having consumed the surface moulds, has been observed on

several occasions leaving good quality copra" (Corbett *et al.* 1937:85). Wolcott (1950:298) reported that it had been intercepted in Puerto Rico in lima beans and pigeon peas, as well as being collected in dry pods of *Inga laurina* and under bark of a dead tree. Smith (1910:262) recorded it in New Jersey as "... rare under bark; more common in stored grain, fruit, nuts, etc., particularly such that are spoiled." Brimley (1938:179) reported it in North Carolina from ears of corn. Other records include: Leonard (1928:381) in New York in dried pears from California; Löding (1945:77) in Alabama in cereals; Blatchley (1910:563) in Indiana in "... various articles of commerce, especially damp flour, meal, rice, figs, beans, apples, etc."; Hatch (1961:205) "in copra, in coffee beans from Colombia; in flour mills and grain elevators; in aerial trap; in grass pile; in moldy peas and oats; and in sacked grain"; Kirk (1969, 1970) in South Carolina in cured ham, woods trash, corn bin, and stored oats. I have collected it at light and in a pile of decaying soybeans in a mixed hardwood-pine forest.

Distribution. Virtually worldwide in stored products and established in many regions. In the United States it has been recorded from New Jersey (Smith 1910:262), North Carolina (Brimley 1938:179), New York (Leonard 1928:381), Alabama (Löding 1945:77), Indiana (Blatchley 1910:563), Washington, Idaho, and Oregon (Hatch 1961:205), South Carolina (Kirk 1969, 1970), Florida, southern California, and Arizona (Leng 1920:198). I have seen specimens from Arizona, Ar-



Map 15. Florida distribution of *Ahasverus longulus* (Blatchley).

kansas, California, Florida, Georgia, Indiana, Iowa, Kentucky, Kansas, Maryland, Massachusetts, Missouri, New York, New Hampshire, Ohio, Oklahoma, Ontario, Texas, Vermont, Washington, and Wisconsin, as well as Cuba and Thailand.

Specimens examined. More than 50, of which 16 were from Florida, representing 10 collection records (for complete data see Appendix).

***Ahasverus longulus* (Blatchley)**
(fig. 34, map 15)

Cathartus longulus Blatchley 1910:564

Ahasverus longulus, Hetschko 1930:67

Silvanus parviceps Casey 1916:136; syn. by Halstead 1973:40

Diagnosis. Length 2.3-2.5mm. The non-acuminate antennomere XI, anterior pronotal angles not strongly produced, and quadrate pronotum which is slightly broader basally than apically (fig. 34) distinguish adults of this species.

Taxonomic notes. Except for the original descriptions and the synonymy proposed by Halstead (1973:40) nothing has been published on the taxonomy of this species.

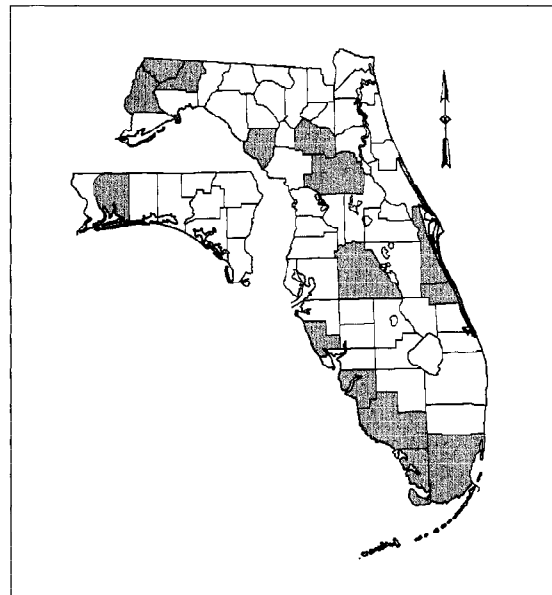
Biology. Blatchley (1910:564) reported that the type(s) had been sifted from the borders of a sphagnum marsh. Nothing else has been published on its biology. Specimens in the CNCC bear the data "ex nest of *Microtus pennsylvanicus*" and "sifting swamp". The single Florida specimen was collected in an ultraviolet light trap.

Distribution. The type locality of *longulus* is Starke Co., Indiana; that of *parviceps* is New York. Thomas (1979:358) recorded it from Florida. I have seen specimens from Florida, Illinois, Massachusetts, Missouri, New York, Ohio, and Ontario and Quebec.

Specimens examined. Twenty, of which one was from Florida with the following data: "FLA., Alachua Co., Gainesville 4-VII-1978 Coll. M.C. Thomas"/"black-light trap" (MCTC).

***Ahasverus rectus* (LeConte)**
(fig. 32, 36, map 16)

Silvanus rectus LeConte 1854:78



Map 16. Florida distribution of *Ahasverus rectus* (LeConte).

Alabama, Arizona, Florida, Georgia, Missouri, North Carolina, and Texas.

Specimens examined. More than 250, of which 228 were from Florida representing 83 collection records (for complete data see Appendix).

Genus *Cathartus* Reiche

Cathartus Reiche 1854:77

Type species. *Silvanus quadricollis* Guérin-Ménéville [by synonymy of *Cathartus cassiae* Reiche, type by monotypy].

Diagnosis. Members of this genus can be distinguished by the following combination of character states: tarsomere III lobed, pronotal margins simple, femoral lines open, antennomere XI at its broadest narrower than X, intercoxal process of sternum III pointed anteriorly.

Taxonomic notes. Many species, not strictly congeneric with *quadricollis*, have been assigned at one time or another to this genus. Hetschko (1930:70-71) listed four species, but since the group has never been completely revised it is uncertain if the other species, one each from Australia, New Guinea, and Central America, are properly assigned. *Cathartus quadri-*

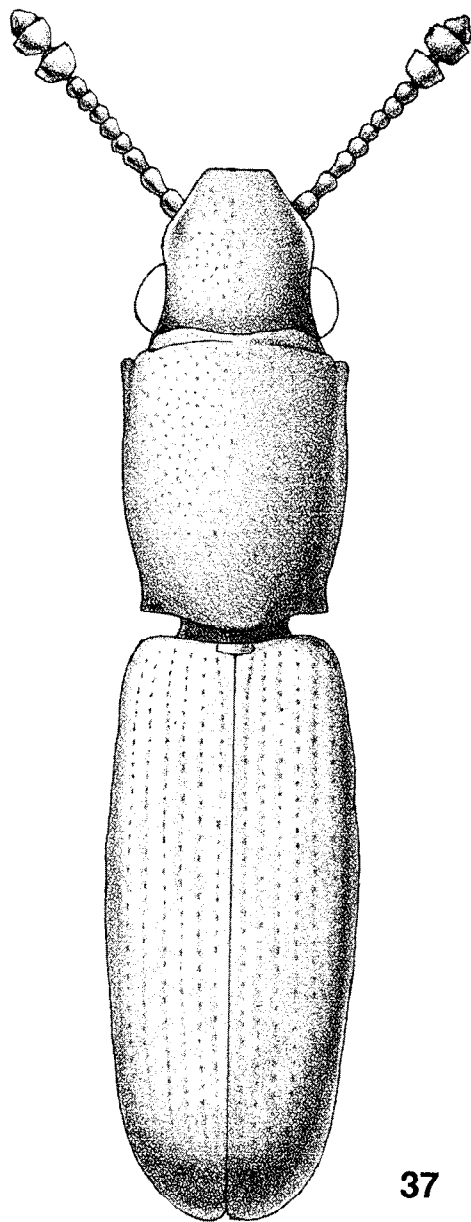


Figure 37. *Cathartus quadricollis* (Guérin-Ménéville), habitus.

collis, at least, seems to be most closely related to members of *Ahasverus*.

Biology. Only the biology of *Cathartus quadricollis*, a cosmopolitan stored products pest, has been reported.

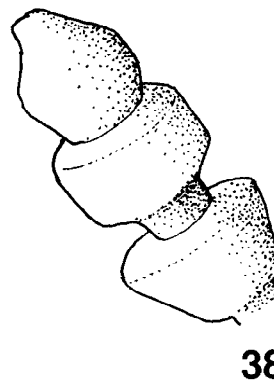


Figure 38. *Cathartus quadricollis* (Guérin-Ménéville), antennal club.

It seems to be especially associated with corn, both stored and in the field, and in the wild, pods of *Tamarindus indica*, from which I have collected numerous specimens in southern Dade County, Florida. Wolcott (1950:298) reported it "in abundance" in tamarind pods in Puerto Rico. On several occasions I have also collected it from under the bark of *Quercus* spp. It is often taken in ultraviolet light traps. Ganglbauer (1899:588) reported specimens in Germany from Havana cigars and from *Cassia fistula*. Kirk (1969, 1970) reported it from corn in the field, in corn bin, corn mill trash, pea-vine hay, and on plum foliage. Löding (1945:77) reported it from corn meal. Aitken (1975:127) reported it from maize, cocoa beans, and copra residuc, and as a field pest of corn in Nigeria and Jamaica.

Distribution. *Cathartus quadricollis* is almost cosmopolitan in distribution. The other three species currently assigned to *Cathartus* were described from New Guinea, Australia, and Honduras.

***Cathartus quadricollis* Guérin-Ménéville**
(fig. 37, 38, map 17)

Silvanus quadricollis Guérin-Ménéville 1829-44:198

Cathartus quadricollis, Ganglbauer 1899:587-588

Cathartus cassiae Reiche 1854:78; syn. by Ganglbauer 1899:587

Silvanus gemellatus Jacquelin du Val 1857-59:104; syn. by Ganglbauer 1899:588

Diagnosis. Length 2.1-3.2mm. The characters given in this section under the genus will distinguish individuals of this species in Florida.

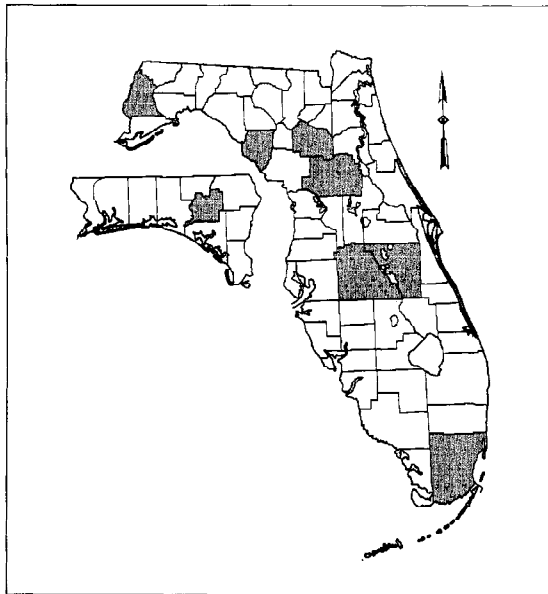
Taxonomic notes. The identity of this species was disputed for many years, primarily because of the great sexual dimorphism it exhibits and the fact that Guérin's type of *quadricollis* has been lost. Ganglbauer (1899:587-588) proposed the above synonymy, which was adopted by Hetschko (1930) for his world catalogue and by most modern authorities. Grouvelle (1912a:373) accepted the synonymy of *cassiae* with *gemellatus* but argued that Guérin's description of *quadricollis* actually applied to LeConte's *Silvanus* (= *Cathartosilvanus*) *imbellis*.

Biology. See this section under the genus.

Distribution. Hetschko (1930:70) recorded it merely as cosmopolitan. Aitken (1975:127) recorded specimens originating in Mexico, Ghana, Ivory Coast, Nigeria, and Borneo, as well as Jamaica and Alabama. He suggested that it is native to the southeastern United States. Sharp (1899:559) recorded it from Mexico, Guatemala, Nicaragua, Panama, and Cuba. Wolcott (1950:298) reported it from Puerto Rico. Casey (1884:73) recorded it from Florida, Georgia, and New York. Löding (1945:77) from Alabama; Blatchley (1910:563) from Pennsylvania and Georgia; Hatch

(1961:205) from Washington and Oregon; Leonard (1928:381) from New York; Kirk (1969, 1970) from South Carolina. I have seen specimens from Argentina, Bahamas, Bolivia, Brazil, British Honduras, Dominican Republic, Ghana, Jamaica, Mexico, Panama, Trinidad, and, from the United States: California, District of Columbia, Florida, North Carolina, and Texas. In Florida it ranges throughout the state.

Specimens examined. More than 170, of which 103 were from Florida, representing 31 collection records (for complete data see Appendix).



Map 17. Florida distribution of *Cathartus quadricollis* (Guérin-Méneville).

PASSANDRIDAE

Diagnosis. Members of this family can be distinguished by the following combination of character states: genae produced anteriorly as rounded plates which conceal maxillae (fig. 42); gular sutures confluent; aedeagus inverted, with articulated parameres; tarsal formula 5-5-5 in both sexes; dorsal surface of

head and prothorax with system of lines and grooves (fig. 39, 44) as in Laemophloeidae; elytra with system of elytral cells or remnants thereof; mesocoxal cavity closed laterally by sterna (fig. 43); hind wing venation well-developed.

Larval diagnosis. Body hypergastric, swollen; head and abdominal segment IX small; mouthparts reduced, articulations not evident on maxilla or labium; antennae short, inconspicuous, not articulated; legs short, stout; spiracles annular; urogomphi short, hook-like.

Taxonomic notes. This group of genera has long been recognized as distinct, although usually as a subfamily of Cucujidae. However, Crowson (1955: 102) recognized its distinctiveness and raised it to family rank. Thomas (1984a:78) considered that Passandridae is more closely related to Laemophloeidae than to Cucujidae and included it in a monophyletic lineage including also Propalticidae and Phalacridae. Hetschko (1930) listed eight genera (in three subfamilies of the Cucujidae) and 114 species. The largest genus is the Old World *Ancistria* Erichson, with 32 species. Lefkovitch (1963) reviewed the African species of *Hectarthrum* Newman. Slipinski (1983) synonymized *Hectarthrum* with *Passandra* Dalman in a revision of the genus. Slipinski (1989) revised the New World genus *Catogenus*. Burckhardt and Slipinski (1991) described a new genus, *Scalidiopsis*, from Brazil, and revised five other genera, including *Taphroscelidia* and *Passandrella* from the New World. Other important works on this family include Grouvelle (1912b, 1916b) and Newman (1839).

Biology. Larvae of these beetles are unusual because they seem to be exclusively ectoparasites on other wood-inhabiting insects, especially pupae of Cerambycidae. Dimmock (1884) and Fiske (1905) reported on the habits of the North American *Catogenus rufus*, and Gravely (1916) reported similar habits for *Hectarthrum* (= *Passandra*) *trigeminum* (Newman).

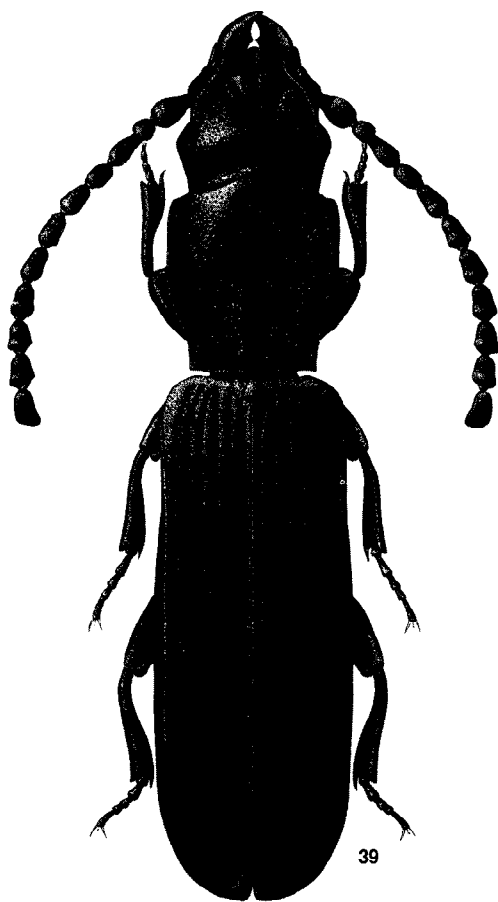


Figure 39. *Catogenus rufus* (Fabricius), habitus.

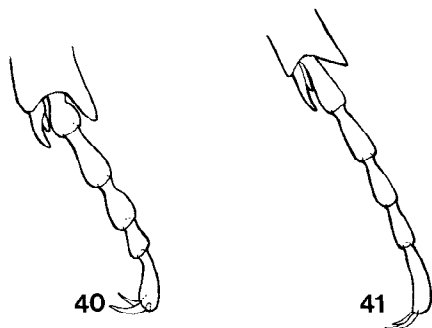


Figure 40-41. Hind tarsus. 40) *Catogenus rufus* (Fabricius); 41) *Taphrosclidia linearis* (LeConte).

Distribution. Worldwide except for the Palearctic and New Zealand. The genus *Passandra* is found in all faunal regions in which the family occurs except for the Nearctic; *Ancistria*, *Anisocerus* Westwood, *Passandra* Reitter, and *Aulonosoma* Motschulsky (= *Laemotmetus* Gerstaecker) are restricted to the Old World; *Taphrosclidia*, *Passandrella*, *Scalidiopsis*, and *Catogenus* are restricted to the New World.

Genus *Catogenus* Westwood

Catogenus Westwood 1835:221

Scalidia Erichson 1846:305

Type species. Of *Catogenus*, *Cucujus rufus* Fabricius [by original designation]; of *Scalidia*, *Scalidia cylindricollis* Lacordaire [by subsequent designation, see discussion under next genus].

Diagnosis. The following combination of character states will distinguish adults of this genus from those of other passandrid genera: antennae with 11 antennomeres; head with deep transverse basal groove (fig. 39); elytra with fully developed elytra cells (fig. 39); pronotum without lateral lines (fig. 39); tarsomere I shorter than tibial spur (fig. 40); body form in most species dorsoventrally compressed (fig. 39).

Taxonomic notes. Hetschko (1930:92-93) listed 19 species in this genus. At the generic level there has been little taxonomic confusion, but adults of the species are extremely similar externally and difficult to distinguish. That, and the great variation in size exhibited by most species, led to considerable taxonomic confusion over the identity of the species found in the United

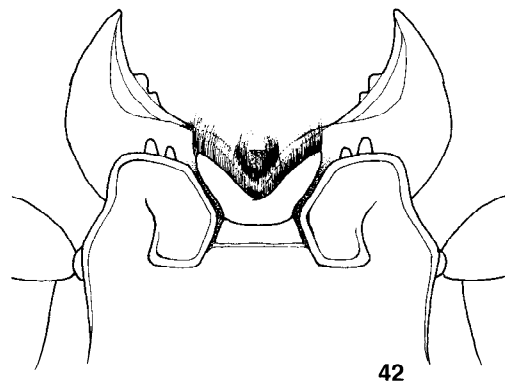
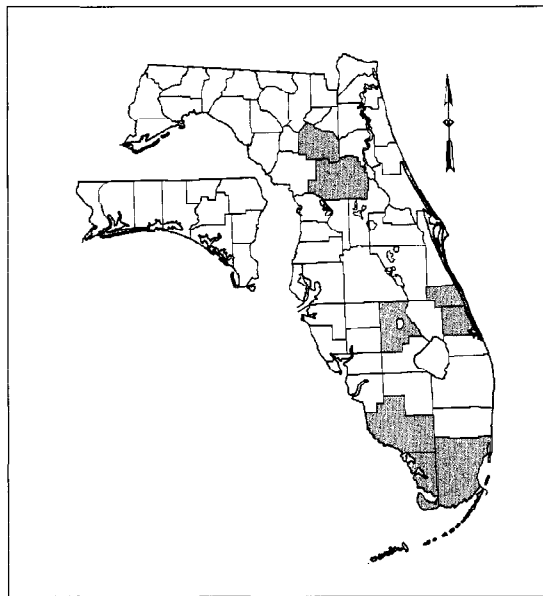


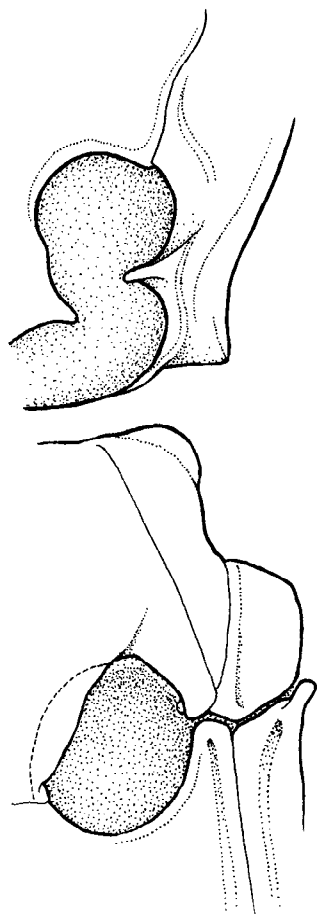
Figure 42. *Catogenus rufus* (Fabricius), mouthparts, ventral view.

States. Slipinski's much needed 1989 revision of the genus clarified the taxonomic and nomenclatural problems. He considered only two species to occur in the U.S., one of which he described from Arizona. He removed the Old World species from *Catogenus* and treated 17 species from the New World.

Biology. Dimmock (1884:341-342) reported rearing *Catogenus rufus* from a pupa of the cerambycid *Elaphidionoides parallelum* (Newman) (now *Anelaphus parallelus*). He first noticed a small larva on the pupa in early March; the larva fed until May 20, when it



Map 18. Florida distribution of *Catogenus rufus* (Fabricius).



43

Figure 43. *Catogenus rufus* (Fabricius), pro- and mesosternum.

pupated, and emerged around July 1. He could not determine if the larva had hatched from an egg laid within the cerambycid. Fiske (1905:90-92) gave a similar account on a species of *Goes*, and also reported *Catogenus rufus* emerging from the cocoons of the parasite *Bracon dorsatus* Say. The larva of *Catogenus rufus* has not been described, but it is probably similar to those described for *Taphrosclidia linearis* (LeConte) (Böving and Craighead 1930:35, pl. 33) and *Passandra trigeminum* (Newman) (Gravely 1916:151, pl. 22).

Distribution. There are two Nearctic species; the remainder are Neotropical.

***Catogenus rufus* (Fabricius)**

(fig. 39, 40, 42, 43, map 18)

Cucujus rufus Fabricius 1798:123

Catogenus rufus, Westwood 1835:221

Catogenus puncticollis Newman 1839:399; syn. by Casey 1884:106

Catogenus monilicornis Casey 1916:115; syn. by Slipinski 1989:122

Catogenus parvus Casey 1916:116; syn. by Slipinski 1989:122

Catogenus puncticeps Casey 1916:116; syn. by Slipinski 1989:122

Diagnosis. Length 5.3mm - 12.3mm. The generic character states will distinguish individuals of this species from those of *Taphrosclidia*, the only other Nearctic passandrid genus.

Taxonomic notes. LeConte (1854:73) suggested the synonymy of Newman's (1839:399) species with *rufus*, but Casey (1884:106) seems to have been the first to formally propose it. Casey's (1916:115-117) species have been treated as varieties of *rufus* (Hetschko 1930:93; Leng 1920:199); they are treated as synonyms of *rufus* by Slipinski (1989).

Biology. Discussed in this section under the genus.

Distribution. Casey (1884:75) recorded it from Pennsylvania, District of Columbia, Arizona, and Nebraska, and (1916:115-116) from Iowa, Maryland, and Florida. *Catogenus monilicornis* was described from Lake Worth, Florida; *C. puncticeps* from Pennsylvania and District of Columbia, and *C. parvus* from Indiana. *Catogenus rufus* has been recorded from New Jersey (Smith 1910:263), North Carolina (Brimley 1938:179), New York (Leonard, 1928:381), Alabama (Loding 1945:78), Indiana (Blatchley 1910:565), and South Carolina (Kirk 1969, 1970). Slipinski (1989:125) recorded specimens from Florida, Georgia, Illinois, Indiana, Missouri, New York, Ohio, Ontario, and Pennsylvania. Dajoz (1989) recorded it from Texas. I have seen

specimens from Florida, Georgia, Indiana, Louisiana, Missouri, New York, North Carolina, Ohio, and Ontario.

Specimens examined. More than 100, of which 74 were from Florida, representing 38 collection records (for complete data see Appendix).

Genus *Taphroscelidia* Crotch

Taphroscelidia Crotch 1873:44

Scalidia, *auctorum*, not *Scalidia* Erichson 1846:305 (Slipinski 1989:91)



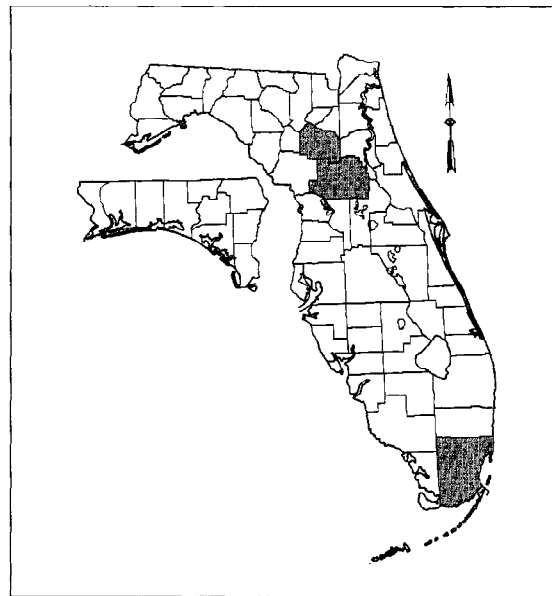
Figure 44. *Taphroscelidia linearis* (LeConte), habitus.

Syssitos Sharp 1899:541; syn. by Grouvelle 1916:24

Type species. See discussion in section on taxonomic notes.

Diagnosis. From other passandrid genera, members of this genus can be distinguished by the following combination of character states: antennae with 11 antennomeres; head without deep impressed basal line (fig. 43); tarsomere I about same length as tibial spur (fig. 44); body subcylindrical (fig. 43).

Taxonomic notes. Like several other cucujid genera, *Scalidia* was described by Erichson (1846:305) without any included species, a situation that has led to subsequent confusion. *Catogenus linearis* LeConte has been considered the type species of *Scalidia* since Grouvelle (1878:263) transferred it to *Scalidia*. However, Lacordaire (1854:397) redescribed the genus and briefly described the species *cylindricollis* from Brazil, listed but not described by Dejean (1837:340) as *Passandra cylindricollis*. In his world catalog Hetschko (1930:91-92) listed 16 species in *Scalidia* but included *cylindricollis* in *Catogenus*. According to Slipinski (1989:91) *cylindricollis* is a species of *Catogenus*, thus making *Scalidia* Erichson a junior synonym of *Catogenus*. *Taphroscelidia* Crotch is the next available name, with *Catogenus linearis* LeConte the type species by monotypy.



Map 19. Florida distribution of *Taphroscelidia linearis* (LeConte).

Biology. Little has been reported on the biology of the species of this genus except for some notes on *linearis* (see below). Presumably the larvae are ectoparasites of wood-inhabiting insects, possibly of Scolytidae.

Distribution. All described species are restricted to the New World. The recent revision of the genus by Burckhardt and Slipinski (1991) listed 14 species; only one is found in the United States.

***Taphroscelidia linearis* (LeConte)**
(fig. 41, 44, map 19)

Catogenus linearis LeConte 1863:70

Scalidia linearis, Grouvelle 1878:263

Taphroscelidia linearis, Crotch 1873:44

Syssitos longiceps Sharp 1899:542 (syn. by Burckhardt and Slipinski 1991:475)

Syssitos addendus Sharp 1899:543 (syn. by Burckhardt and Slipinski 1991:476)

Diagnosis. Length 4.4mm - 7.1mm. The characters given in the generic diagnosis will distinguish individuals of this species in Florida.

Taxonomic notes. Like those of *Catogenus rufus*, individuals of this species range greatly in size, presumably due to the differing nutritional resources available from their hosts. There are no recorded synonyms, but the differences between species in this genus are slight, and there may be undetected synonymy among the Neotropical species described by Sharp and Grouvelle.

Biology. Little has been published on its biology, except for a report by Schwarz (1890b:165) of a specimen in the galleries of the scolytid *Pityophthorus centralis* Eichhoff and in poisonwood (Schwarz 1890a:94). The morphology of the larva, illustrated by Böving and Craighead (1930:pl. 33), suggests that it has habits similar to those of *Catogenus rufus*.

Distribution. The type locality is Mexico, Baja California, and it was reported by Hetschko (1930:91) from Florida, California (apparently an erroneous reference to the type locality), Texas, Cuba, and Brazil. Burckhardt and Slipinski (1991) reported it from Florida, Texas, and California in the United States, south into Central America and in the Greater Antilles. I have seen specimens from Florida, Illinois, Texas, and the Bahamas (Andros Is.)

Specimens examined. More than 30, of which 22 were from Florida, representing 11 collection records (for complete data see Appendix).

LAEMOPHLOEIDAE

Diagnosis. The members of this family can be distinguished from all other Cucujoidea by the combination of the following character states: body usually dorsoventrally compressed; sublateral lines (composed of either grooves or carinae or a combination of the two) of the head and pronotum, the possession of elytral cells (secondarily reduced or absent in some taxa), anterior legs not modified for jumping; and the inverted aedeagus with parameres reduced to tooth-like processes fused to the basal piece.

Larval diagnosis. Body elongate, somewhat campodeiform, dorsoventrally compressed; abdomen usually with dorsal and ventral asperities arranged in ellipses; maxillary mala obtuse; maxillary articulating area reduced; cardines absent; abdominal segment VIII noticeably longer than VII; urogomphi present.

Taxonomic notes. This taxon is usually treated as a subfamily (along with Cucujinae) of the family Cucuji-

dae. However, I have argued (Thomas 1984a) that it forms a monophyletic lineage with the Passandridae, Propalticidae, and Phalacridae. Since I have been unable to identify any uniquely derived character states shared by the laemophloeines and the cucujines, I am here treating the Laemophloeinae as a family.

In addition to the characters discussed previously (Thomas 1984a), the internal mandibular structure is shared by laemophloeids, phalacrids, and propalticids, thus providing another uniquely derived character state for this lineage. In a previous paper (Thomas 1984a) I incorrectly described this structure as a pit and a seta, which is how the structure appears in slide-mounted material viewed by transmitted light. Scanning electron microscopy, however, reveals the only external feature to be a slit-like opening on the dorsal surface of the mandible. This opening appears to connect with a somewhat circular cavity inside of the mandible.

Sen Gupta and Crowson (1969: 589) and Crowson (*in litt.*) maintain that the mandibular structure in these

taxa is homologous with the mandibular mycangium found in Silvanidae, etc. If it is homologous, the condition of the structure in the laemophloeid assemblage is certainly derived relative to the condition of the structure found in silvanids and thus is still evidence of the monophyletic nature of the passandrid-propalcticid-phalacrid-laemophloeid lineage.

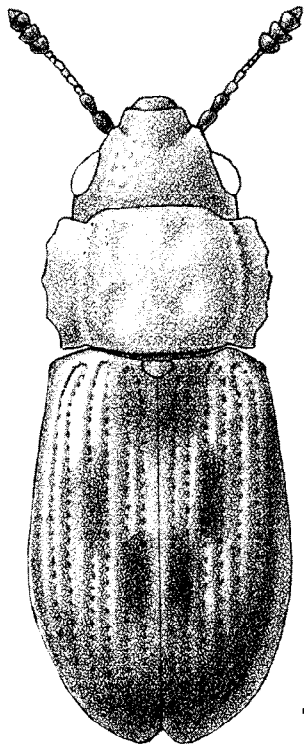
Biology. Little has been published on the biology of the non-economic laemophloeines, except that they are subcortical in habitat. They often have been reported to be predaceous, although this is doubtful in many cases.

Distribution. This family is represented in all forested areas of the world, but reaches its greatest diversity in the tropics.

Genus *Lathropus* Erichson

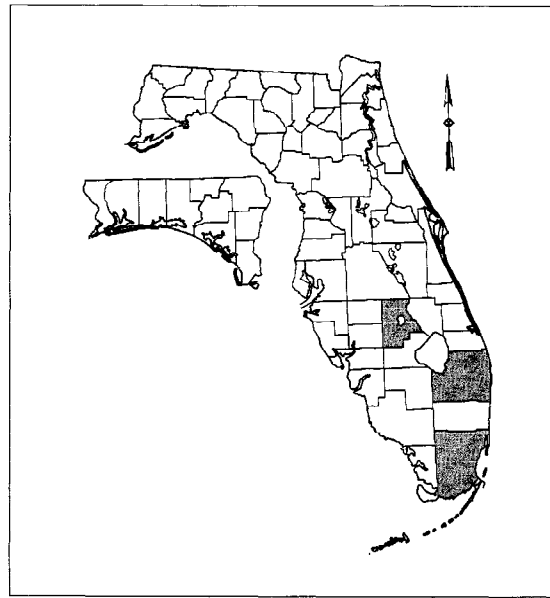
Lathropus Erichson 1846:327

Type species. *Trogosita? sepicola* Müller [by original designation].



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Figure 45. *Lathropus pictus* Schwarz, habitus.



Map 20. Florida distribution of *Lathropus pictus* Schwarz.

Diagnosis. This is one of the most distinctive and easily characterized of the laemophloeine genera. The combination of lateral lines on head absent, elytral cells absent, and mesocoxal cavities closed laterally by the sterna is diagnostic for this genus.

Taxonomic notes. It is easily defined and generally has not been confused with other laemophloeine taxa. Its affinities are with a group of genera including *Microlaemus* Lefkovitch, *Carinophloeus* Lefkovitch, *Rhabdophloeus* Sharp, *Lepidophloeus* Thomas, and *Odontophloeus* Thomas (Thomas 1984d). Hetschko (1930:44-45) listed 12 species in this genus, but the three Australian species he included apparently belong to *Microlaemus* Lefkovitch. There are several undescribed Neotropical species, and the genus is badly in need of revision.

Biology. Lefkovitch (1959a:99) recorded the European *L. sepicola* from "... the galleries of *Scolytus multistriatus* (Marsh.), *Pteleobius vittatus* (F.) and *P. kraatzi* Eich. under elm bark." Nothing has been recorded concerning the biology of the United States species. I have collected several specimens of *vernalis* in Florida under bark scales of scolytid-infested pine branches and by beating recently burned pines and hardwoods.

Distribution. There is only one species recorded from outside the New World. Within the New World, members of *Lathropus* range from southern Canada to Brazil and throughout the Greater and Lesser Antilles. There are two species in Florida.

***Lathropus pictus* Schwarz**
(fig. 45)

Lathropus pictus Schwarz 1878:358

Lathropus costatus Grouvelle 1902:763, **new synonym**

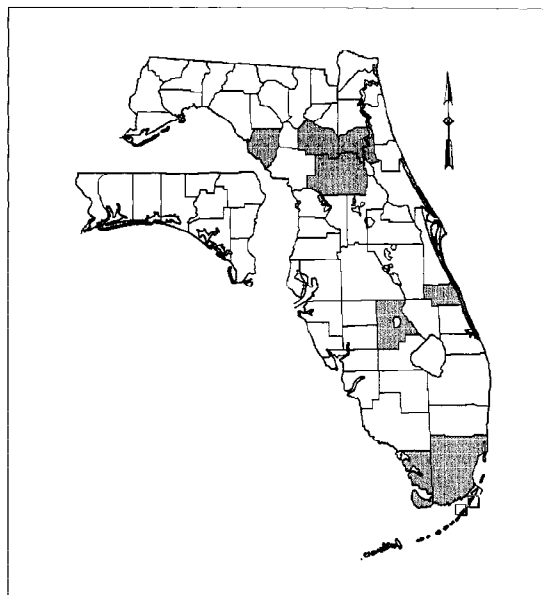
Diagnosis. Length 1.0mm - 1.4mm. The pale body with maculate elytra (fig. 45) distinguishes adults of this species from those of all other described species of *Lathropus*.

Taxonomic notes. Schwarz' species was described from four specimens (Schwarz 1878:359). I have examined a single specimen from the type series with the following data: "type Schwarz"/ "Haulover 4.3 Fla"/ "Coll Hubbard & Schwarz"/ "Type No. 4508 U.S.N.M." I here designate this specimen as lectotype. I have examined a male specimen in the MNHN with the following data: "Guadeloupe Vitrac"[?]/ "MUSEUM PARIS COLL. A. GROUVELLE 1917"/ "TYPE"/ "Lathropus costatus Grouv Ty". Grouvelle (1902:763) apparently described this species from a single specimen, but did not explicitly state so. Therefore, I designate the specimen above as lectotype. Although the ground color is darker than usual, the elytral maculae are evident and I feel this specimen is conspecific with the lectotype of *pictus*.

Biology. Schwarz (1878:359) wrote, "... found under bark of a dead *Quercus virens*." Virtually all the specimens I have seen were collected in ultraviolet light traps.

Distribution. Recorded from Guadeloupe ("Pas de localité précise." [Grouvelle 1902:764]); Mexico (Sharp 1899:531), and Florida. I have seen specimens from Florida and the U.S. Virgin Islands (St. Croix).

Specimens examined. More than 60, of which 47 were from Florida, representing 15 collection records (for complete data see Appendix).



Map 21. Florida distribution of *Lathropus vernalis* Casey.

***Lathropus vernalis* Casey**

Lathropus vernalis Casey 1884:95

Diagnosis. Length 1.2mm - 1.5mm. The dark overall body color and immaculate elytra distinguish adults of this species from *pictus* in Florida.

Taxonomic notes. LeConte (1866:379) reported the occurrence of *Lathropus* in North America, based on specimens collected in Washington, D.C. and California, but did not describe any species. LeConte (*in* Zimmermann 1869:257) pointed out that Zimmermann had used *vernalis* as a manuscript name, but that the species was still undescribed. Nevertheless, Crotch (1873:45) used the name, crediting it to LeConte, and Hubbard and Schwarz (1878:634, 652) listed "*Lathropus vernalis* Lec." in their work on the Coleoptera of Michigan. Casey (1884:95) used the name again in connection with a detailed description. This was the first time that *vernalis* had been used validly and thus Casey is the actual author of *Lathropus vernalis*, a fact to which he later called attention (Casey 1916: 118). All previous uses are *nomina nuda*. Despite this, Leng (1920:200) and Hetschko (1930:45) cited LeConte (1866:379) as the author of *vernalis*.

Because of the nomenclatural confusion surrounding this species its exact identity is in doubt. Casey (1884:95) was unaware that he was providing the first description of this species and did not furnish any

information on the specimens he examined. It will be difficult to identify with certainty the specimens he used in drawing up his description. It is likely that he had access to some, if not all, of LeConte's specimens. In the MCZ are eight specimens of *Lathropus* standing under a LeConte label reading "*Lathropus vernalis* Zim." The specimen bearing the identification label also bears a label reading "Md.", as do two others, and cannot be the specimen mentioned by LeConte (1866:379). Two specimens bear the label "Detroit June"; one, the label "Tyngs Mass"; and one, "D.C.", which is probably the specimen mentioned by LeConte (1866:379). A single specimen bears a gold disc (indicating California) and a label reading "656."; it is probably the holotype of *Lathropus pubescens* Casey (1884:96). Except for the California specimen, all are conspecific and also appear to be conspecific with the holotype of *Lathropus striatus* Casey (1916: 120), described from Detroit, Mich.

Because of the problems discussed above, there is probably more than one species represented by the specimens listed in the Appendix; there is certainly more than one phenotype present in Florida. However, I am treating all these specimens as belonging to *vernalis* and am not proposing either any new species or new synonyms pending a revision of this most difficult genus.

Biology. Smith (1910) recorded that it had been collected by beating dead branches, and Löding (1945) reported it from a dead fig limb. I have collected specimens in ultraviolet light traps, under the outer bark scales of dead pine branches infested with scolytids, and by beating branches of recently burned pines and hardwoods.

Distribution. As mentioned above, it has been recorded from Washington, D.C. (LeConte 1866:379) and Michigan (Hubbard and Schwarz 1878:634, 652). Casey (1884:96) recorded it from "Atlantic and Mississippi regions." Other records are for New Jersey (Smith 1910) and Alabama (Löding 1945). I have seen specimens from Florida, Oklahoma, Indiana, and Ontario.

Specimens examined. More than 80, of which 48 were from Florida, representing 29 collection records (for complete data see Appendix).

Genus *Rhabdophloeus* Sharp

Rhabdophloeus Sharp 1899:531

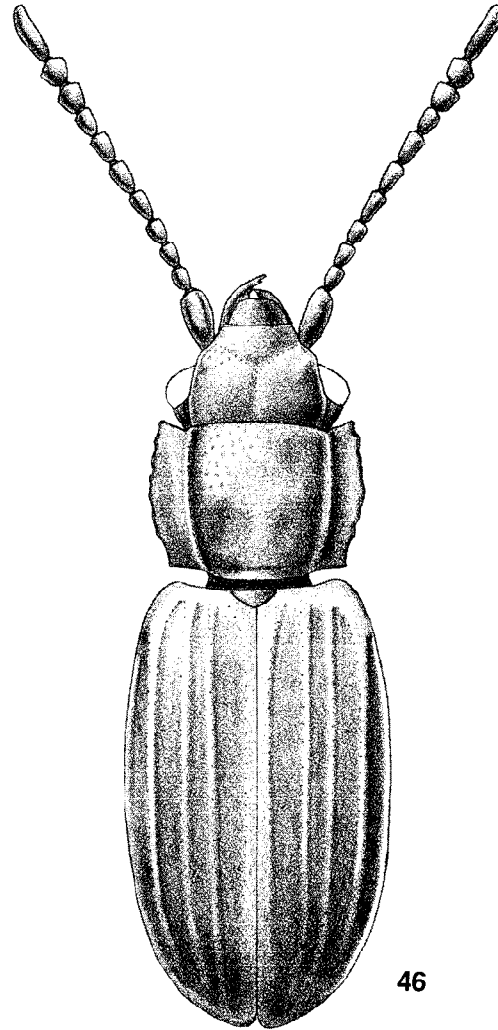


Figure 46. *Rhabdophloeus horni* (Casey), habitus.

Type species. *Laemophloeus costatus* Grouvelle [here designated, see below].

Taxonomic notes. Sharp (1899:531) included three new species in this genus: *Rhabdophloeus concolor* Sharp, *Rhabdophloeus dispar* Sharp, *Rhabdophloeus chiriquensis* Sharp, and transferred *Laemophloeus costatus* Grouvelle into it. I here select the latter as type species of *Rhabdophloeus*. Hetschko (1930:45) listed six species in this genus. Thomas (1988:58) transferred another two species into this genus from *Cryptolestes* but, judging from descriptions of Reitter and Grouvelle species, there are at least several others that probably

should be assigned. The genus is badly in need of revision.

Biology. Nothing has been published on their biology. Florida specimens of *Rhabdophloeus horni* were collected under the bark of gumbo limbo (*Bursera simaruba* (L.) Sarg.). I have seen many specimens of Neotropical species collected in ultraviolet light traps.

Distribution. Recorded in the United States from California and Texas. I have also seen specimens from Arizona and Florida, as well as from Central and South America south to Argentina. I have not seen any representatives of this genus from the Antilles.

***Rhabdophloeus horni* (Casey)**
(fig. 46)

Laemophloeus horni Casey 1884:89

Cryptolestes horni, Casey 1916:133

Rhabdophloeus horni, Thomas 1988a:58

Diagnosis. Length 1.5mm - 2.0mm. The combination of costate elytra (fig. 46), carinate sublateral lines of the pronotum, narrowly rounded intercoxal process of sternum III, and lack of transverse epistomal groove distinguishes this species from all others in the Florida fauna.

Taxonomic notes. Casey (1916:133) transferred this species to *Cryptolestes* and wrote that it and *Cryptolestes disseptus*, "... form a distinct subgeneric group of *Cryptolestes*." Both species have been transferred to *Rhabdophloeus* (Thomas 1988a:58). I have examined specimens of both species from the Casey Collection in the USNM and consider the Florida specimens to be conspecific with *horni*. However, the species of this genus are very similar externally and specific identifications must remain tentative at this point.



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Figure 47. *Cryptolestes* sp., intercoxal process of sternum III.

Biology. The Florida specimens were collected under the bark of gumbo limbo (*Bursera simaruba* (L.) Sarg.) and at light. Nothing else is known about the biology of this species.

Distribution. Casey (1884:89) described it from California, and later (1916:133) reported an additional specimen from Ventura Co., Calif. I have seen specimens from Arizona and Florida. In Florida, it occurs only in the extreme southern part of the state. Because of the taxonomic state of the species in this genus it is uncertain what the distribution of this species is in the Neotropics, but it is probably widespread.

Specimens examined. Fifteen, of which seven were from Florida, as follows: 4, Monroe Co., Upper Key Largo 30-V-1976 M.C. Thomas & J.H. Frank blacklight trap; 1, Monroe Co., Upper Key Largo 3-VI-1976 M.C. Thomas blacklight trap; 2, Monroe Co., Upper Key Largo 3-IV-1976 M.C. Thomas & J.H. Frank under bark of gumbo limbo log (FSCA).

Genus *Cryptolestes* Ganglbauer

Leptus Thomson 1863:92 (not Latreille, 1796; not Duftschmid, 1825)

Cryptolestes Ganglbauer 1899:608 (not Tate, 1934; not Novacek, 1976)

Fractophloeus Kessel 1921:28

Type species. Of *Cryptolestes*, *Cucujus ferrugineus* Stephens [by subsequent designation of Casey (1916)]; of *Fractophloeus*, *Laemophloeus fractipennis* Motschulsky [by subsequent designation of Lefkovitch (1959a)].

Diagnosis. The combination of the following character states is diagnostic for this genus: epistomal suture not marked with transverse groove; labrum rounded anteriorly; mandible with additional tooth between apical teeth and prostheca; sublateral lines of pronotum carinate; anterior coxal cavities closed or nearly closed posteriorly; intercoxal process of prothorax more or less truncate or emarginate or rounded posteriorly; metasternal suture not attaining anterior edge of sclerite; intercoxal process of sternum III broadly rounded anteriorly; elytra with three complete cells; body dorsoventrally compressed.

Taxonomic notes. Thomas (1988a) revised this genus for the New World. Most U.S. species are readily

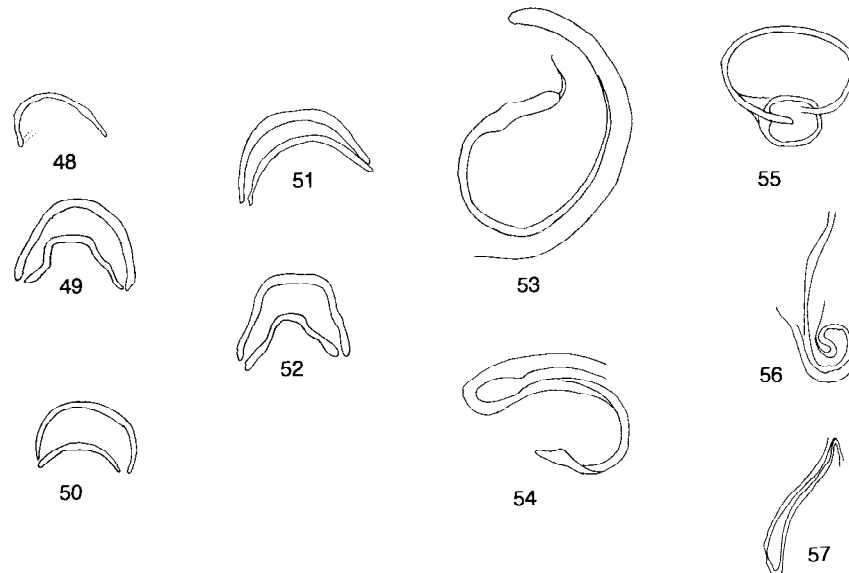


Figure 48-57. *Cryptolestes* spp. 48-52, genital sclerite. 48) *C. pusillus* (Schönherr); 49) *C. klapperichi* Lefkovitch; 50) *C. pusilloides* (Steel & Howe); 51) *C. ferrugineus* (Stephans); 52) *C. turcicus* (Grouvelle). 53-57, sclerotization of bursa. 53) *C. ferrugineus*; 54) *C. klapperichi*; 55) *C. pusilloides*; 56) *C. pusillus*; 57) *C. turcicus*.

identifiable using a combination of external and genitalic characters. However, the question of generic limits remains to be resolved and it is likely that *Cryptolestes* as presently constituted is polyphyletic and further subdivision will be necessary.

Biology. Four species of this genus (*ferrugineus* (Stephens), *turcicus* (Grouvelle), *pusillus* (Schönherr), and *pusilloides* (Steel and Howe)) are important stored products pests throughout the world. Three others (*capensis* (Waltl), *ugandae* Steel and Howe, and *klapperichi* Lefkovitch) are also pests, but of more limited distribution. I did not encounter *capensis* during a previous study (Thomas 1988a:44); however, since then I have seen a few specimens in stored products imported from Mexico. Thomas (1988a:45) reported *klapperichi* from the New World for the first time based on specimens collected in the wild in the U.S. Virgin Islands (St. Croix); it is also regularly intercepted in stored products imported from the Far East into California (Zimmerman 1987a and pers. comm.). For those reasons, *capensis* and *klapperichi* are included in the following key. Although the stored products species of *Cryptolestes* thrive on grain products of various kinds, the non-economic species, for the most part, seem to be fungivorous. However, *dissimulatus* Thomas, described from Arizona and California, has been reported to feed

on the red date-palm scale, *Phoenicoccus marlatti* Cockerell (Borden 1921:665).

Distribution. The genus is probably worldwide in distribution. Thomas (1988a) recorded 13 non-economic species from the New World, six of which occur in the U.S. Four are found in Florida.

Key to the adults of the Florida species of *Cryptolestes*

1. Pronotum with a secondary line between sublateral line and lateral margin 2
- 1'. Pronotum without a secondary line between sublateral line and lateral margin 3
- 2(1). Secondary sublateral line diverging posteriorly from sublateral line and attaining basal angle; male antennal scape without apical process; male genitalia as in fig. 62
..... *punctatus* (LeConte)
- 2'. Secondary sublateral line paralleling sublateral line and becoming obsolete at about midpoint of pronotum; male antennal scape with hook-shaped apical process; male genitalia as in fig. 63
..... *uncicornis* (Reitter)

- 3(1'). Basal angles of pronotum absent
 *capensis* (Waltl)
- 3'. Basal angles of pronotum present 4
- 4(3'). First and second elytral cells enclosing four
 rows of setae 5
- 4'. First and second elytral cells enclosing three
 rows of setae 6
- 5(4). Males with mandibles expanded laterally; pro-
 notum strongly constricted posteriorly in
 males; abdominal tergites heavily sclerotized
 (Arbogast 1991); accessory sclerite of inter-
 nal sac as in fig. 48; sclerotization of bursa
 in female as in fig. 53
 *ferrugineus* (Stephan)
- 5'. Males without mandibles expanded laterally;
 pronotum not strongly constricted posteri-
 orly in males; abdominal sclerites weakly
 sclerotized (Arbogast 1991); accessory scler-
 ite of internal sac as in fig. 51; sclerotization
 of bursa in female as in fig. 56
 *pusillus* (Schönherr)
- 6(4'). Mandibles of males expanded laterally; ac-
 cessory sclerite of internal sac as in fig. 49;
 sclerotization of bursa in female as in fig. 54
 *klapperichi* Lefkovitch
- 6'. Mandibles of males not expanded laterally .
 7

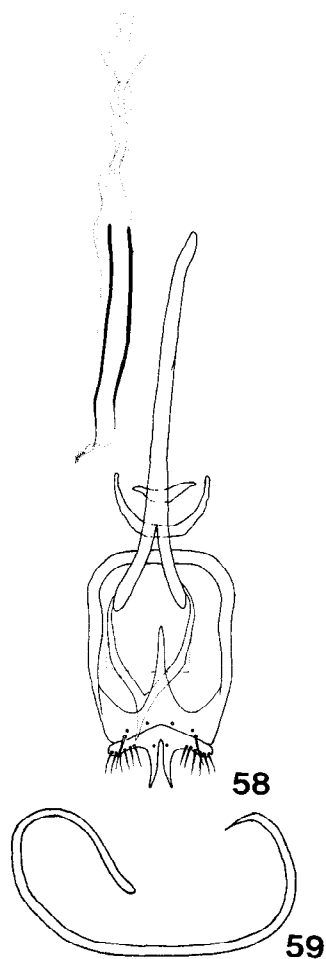


Figure 58-59. *Cryptolestes dybasi* Thomas. 58) aedeagus;
 59) sclerotization of bursa.

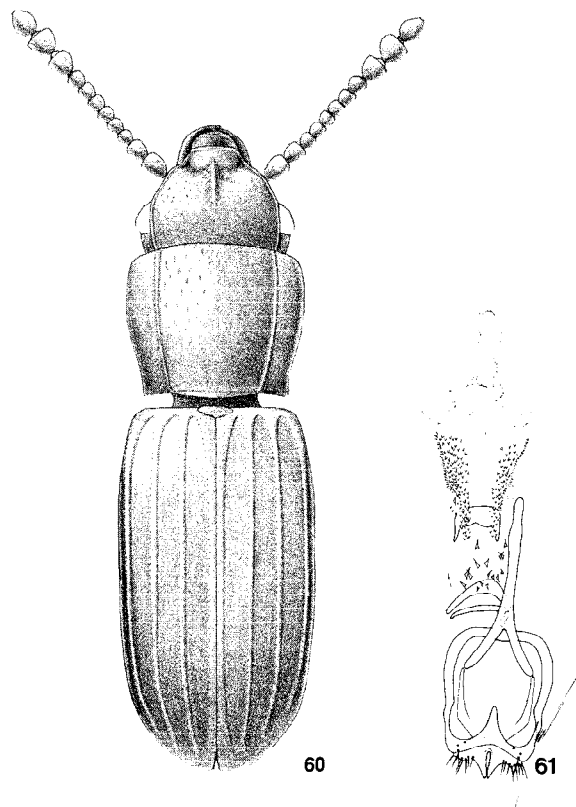


Figure 60-61. *Cryptolestes schwarzi* (Casey). 60) habitus;
 61) aedeagus.

- 7(6'). Dorsal surface of head and prothorax coarsely punctate, more so laterally where punctures are two or more times the diameter of an eye facet, almost contiguous and tending to form longitudinal furrows; antennae moniliform (fig. 60); male genitalia as in fig. 61*schwarzi* (Casey)
- 7'. Punctuation of dorsal surface of head and prothorax not as above, punctures laterally not almost contiguous nor forming longitudinal furrows; antennae filiform or moniliform 8
- 8(7'). Accessory sclerites of internal sac as in fig. 52; sclerotization of bursa in female as in fig. 57*turcicus* (Grouvelle)
- 8'. Accessory sclerites of internal sac and sclerotization of bursa not as above 9
- 9(8'). Accessory sclerites of internal sac as in fig. 50; sclerotization of bursa in female as in fig. 55*pusilloides* (Steel and Howe)
- 9'. Accessory sclerites of internal sac as in fig. 58; sclerotization of bursa in female as in fig. 59*dybasi* Thomas

***Cryptolestes dybasi* Thomas**
(fig. 58, 59)

Cryptolestes dybasi Thomas, 1988a:48, fig. 15, 16, 17

Diagnosis. Length, 1.3mm - 1.5mm. The male genitalia (fig. 58) and sclerotization of the bursa in the female (fig. 59) are diagnostic.

Taxonomic notes. The small, slender body, moniliform antennae, and genitalia make this species distinctive in the Florida fauna.

Biology. The type series was collected at blacklight trap and under the bark of a dead oak (*Quercus* sp.).

Distribution. All Florida specimens seen were collected at a single locality in Dixie County. Recently, Throne *et al.* (1989) reported the collection of a single specimen near Scotia, Hampton Co., South Carolina.

Specimens examined. Five, including four from Florida representing two collection records: 2, Dixie Co., 3.5mi. N. Old Town Rt. 349 21-V-1978 R.E. Woodruff & S.A. Frago blacklight trap; 1, Dixie Co., 3.5mi. N. Old Town Rt. 349 13-I-1980 M.C. Thomas; 1, Dixie

Co., 3.5mi. N. Old Town Rt. 349 13-I-1980 H.S. Dybas (FSCA).

***Cryptolestes punctatus* (LeConte)**
(fig. 62, map 22)

Laemophloeus punctatus LeConte 1854:75

Cryptolestes punctatus, Lefkovitch 1958a:93

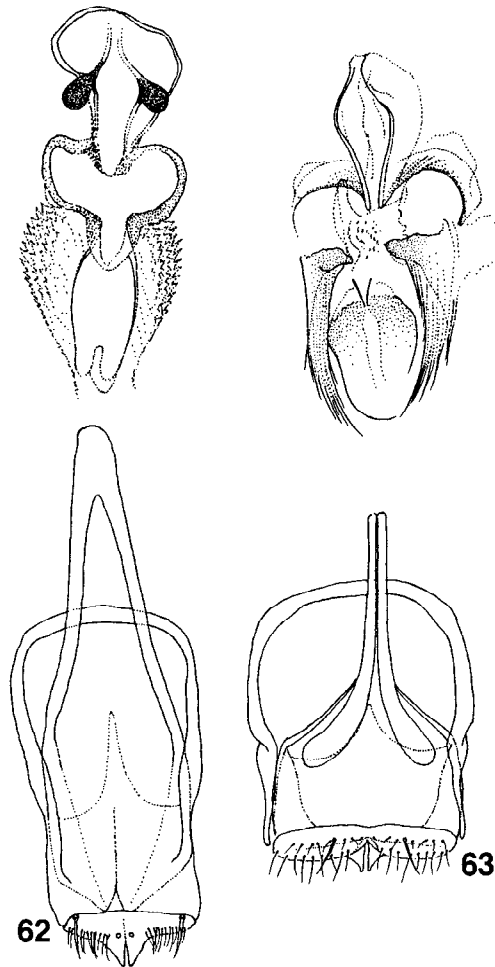
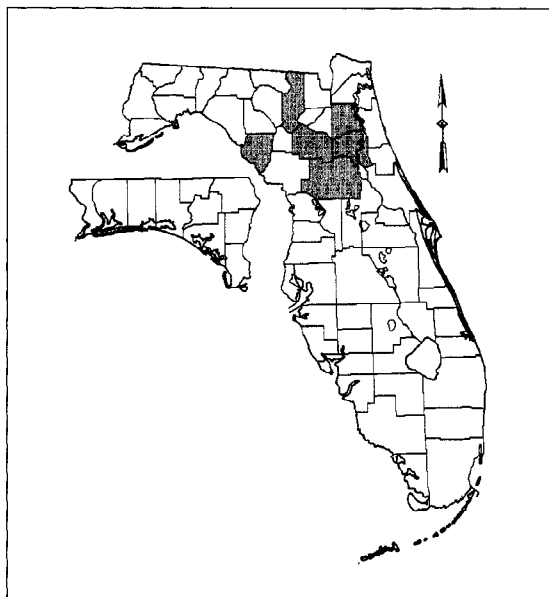


Figure 62-63. Aedeagus. 62) *Cryptolestes punctatus* (LeConte); 63) *Cryptolestes unicolornis* (Reitter).



Map 22. Florida distribution of *Cryptolestes punctatus* (LeConte).

Laemophloeus geminatus LeConte 1854:75; syn. by Casey 1884:108

Laemophloeus extricatus Casey 1884:92, syn. by Thomas 1988a:55

Cryptolestes adumbratus Casey 1916:134, syn. by Thomas 1988:55

Diagnosis. Length 1.4mm - 1.8mm. See corresponding section under the preceding species.

Taxonomic notes. Sexual dimorphism and allometry have led to this species being described several times, and to its confusion in collections and by Lefkovitch (1958b:93) with *uncicornis*. Individuals of this species and *uncicornis*, plus several other species treated as *Cryptolestes* by Thomas (1988a) differ in some structures from *Cryptolestes ferrugineus*, the type species of the genus, and may not belong to *Cryptolestes*.

Biology. What is known of its biology is similar to that of *uncicornis*. The larva was characterized briefly by Thomas (1988b:82) but has not been described.

Distribution. It ranges from New York south to Florida and west to Texas. In Florida, it has been collected from Duval County south to Marion County. There are no records from the Panhandle, although it undoubtedly occurs there.

Specimens examined. More than 150, of which 134 were from Florida representing 23 collection records (for complete data, see Appendix).

***Cryptolestes schwarzi* (Casey)**
(fig. 60, 61)

Laemophloeus Schwarzii Casey 1884:91

Cryptolestes weisei (Reitter) (in part, *sensu* Lefkovitch 1967:246)

Cryptolestes schwarzi, Thomas 1988a:51

Diagnosis. Length 1.3 - 1.4mm. The combination of pubescent, coarsely punctate dorsal surface of the head and prothorax; short, moniliform antennae; and conspicuous median longitudinal line from vertex to anterior margin of epistome is diagnostic (fig. 60) for the adults of this species. The male genitalia (fig. 61) are also diagnostic.

Taxonomic notes. This species was incorrectly synonymized with the European *weisei* (Reitter) by Lefkovitch (1967:246) and was resurrected by Thomas (1988a:53).

Biology. One specimen was collected beating a dead branch of live oak (*Quercus virginiana* L.).

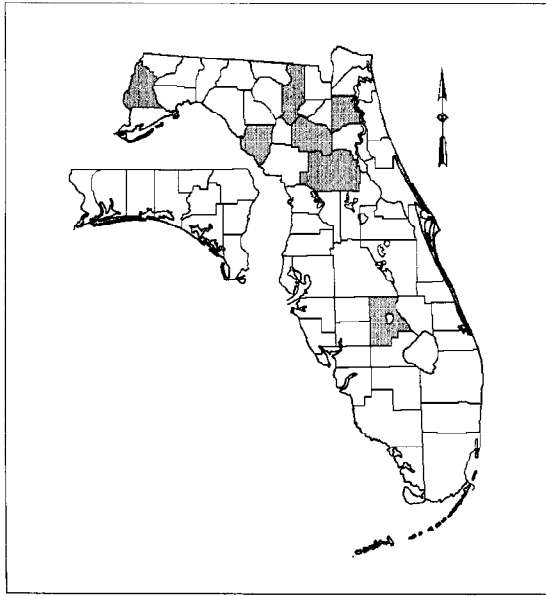
Distribution. It was described from "Fla." and "D.C." I have seen specimens from Florida and Georgia.

Specimens examined. I have seen only two Florida specimens: the lectotype female in the USNM collected by Hubbard and Schwarz at Tampa and a male with the following data: "FLORIDA: Highlands Co., Highlands Hammock St. Pk. 23-IV-1982 M.C. Thomas" (FSCA). There also is a specimen in the FSCA from Georgia (Thomas 1988:51), and another in the Canadian Museum of Nature with the following data: "Raleigh, N.C. Mar. 29 1949 A.E. Thompson"/"under bark pine log".

***Cryptolestes unicornis* (Reitter)**
(fig. 63, map 23)

Microbrontes unicornis Reitter 1876:45

Cryptolestes unicornis, Lefkovitch 1958b:93



Map 23. Florida distribution of *Cryptolestes uncicornis* (Reitter).

Laemophloeus recticollis Reitter 1876:52; syn. by Lefkovitch 1958b:93

Laemophloeus denticornis Casey 1884:94; syn. by Lefkovitch 1958b:93

Laemophloeus iteratus Sharp 1899:528; syn. by Lefkovitch 1958b:93

Laemophloeus addendus Sharp 1899:529; syn. by Lefkovitch 1958b:93

Laemophloeus quadratus Casey 1884:90, syn. by Thomas 1988a:57

Cryptolestes punctatus, *sensu* Lefkovitch 1958b:93, not LeConte 1854

Diagnosis. Length 1.3mm - 1.8mm. In Florida individuals of this species can be confused only with those of *punctatus*: both have two lateral pronotal lines and elongate antennal scapes in the male. Major males of *uncicornis* possess an elongate and sinuate antennal scape, which bears at its apex a hook-shaped process. The scape of major males of *punctatus* is not sinuate and does not bear an apical process. The aedeagus and internal sac of the two species differ considerably (fig. 62, 63). A pronotal character is useful in distinguishing both sexes of each species. The secondary sublateral line of the pronotum in *punctatus* attains the anterior

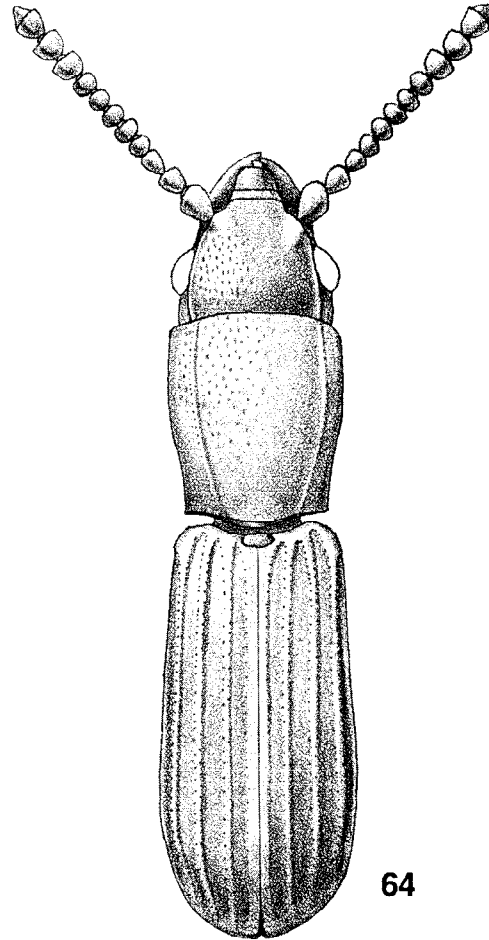


Figure 64. *Leptophloeus angustulus* (LeConte), habitus.

pronotal margin, diverges posteriorly from the sublateral line and attains the basal angle. In *uncicornis* the secondary sublateral line attains the anterior pronotal margin, parallels the sublateral line to about the midpoint of the pronotum and then becomes obsolete.

Taxonomic notes. As can be seen from the synonymy, this species has been the subject of considerable confusion, primarily due to its wide distribution, sexual dimorphism, and allometry. Lefkovitch (1958b: 93) examined the type specimens of the species described by Reitter and Sharp and established their conspecificity. However, he did not examine the type of the *punctatus* and incorrectly synonymized *uncicornis* under *punctatus*. Thomas (1988a:57), based on examination of the type specimens of the species described

by Casey and LeConte, revived *unicornis* as a valid species.

Biology. Nothing is known of its biology except that it is found under the bark of hardwoods, primarily *Quercus* spp. in Florida, and it has been collected abundantly in ultraviolet light traps throughout its extensive range. The larva is unknown.

Distribution. Thomas (1988a:58) reported it as occurring from the Gulf of Mexico states of the United States south to Argentina and Paraguay, and throughout the Greater and Lesser Antilles. In Florida it has been collected from Marion County in the south to Liberty County in the north.

Specimens examined. More than 700, of which 48 were from Florida, representing 16 collection records (for complete data, see Appendix).

Genus *Leptophloeus* Casey

Leptophloeus Casey 1916:119, 135

Truncatophloeus Kessel 1921:28; syn. by Lefkovich 1959a:104

Type species. Of *Leptophloeus*, *Laemophloeus angustulus* LeConte (by original designation); of *Truncatophloeus*, *Laemophloeus mobilis* Grouvelle [by subsequent designation of Lefkovich 1962c].

Diagnosis. Members of this genus resemble those of *Cryptolestes* but can be distinguished by their usually more elongate and more cylindrical body form and narrow intercoxal process of sternum III. From members of *Dysmerus* Casey, those of *Leptophloeus* can be recognized by the normal antennal scape in the male and more elongate body form. From adults of *Narthecius*, which also are subcylindrical in body form, those of *Leptophloeus* can be distinguished by their truncate rather than acuminate epistome.

Taxonomic notes. Casey (1916:119, 135) described this genus for *Laemophloeus angustulus* and included also the European *L. perrisi* Grouvelle. Considered at most a subgenus of *Laemophloeus* by most authors, *Leptophloeus* was treated as a valid genus by Lefkovich (1959a, 1962c) and is so treated here. However, Iablokoff-Khnzorian (1978) considered it a subgenus of *Cryptolestes*. Although the type species of *Leptophloeus*, *Cryptolestes*, and *Dysmerus* are distinctive and certainly appear to represent separate genera, other species bridge many of the gaps. Lefkovich

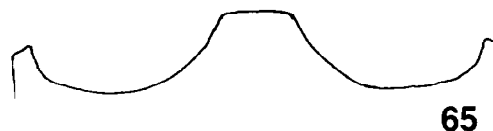
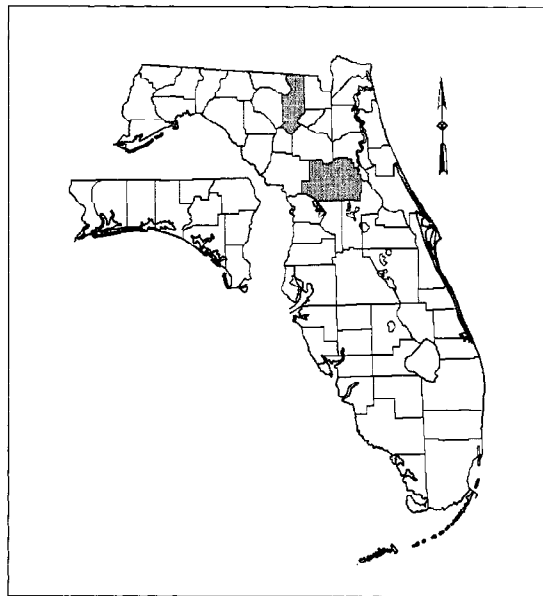


Figure 65. *Leptophloeus angustulus* (LeConte), intercoxal process of sternum III.

(1962c) grouped three African species into a species group distinct from other *Leptophloeus* because of their variously modified epistome and 5-5-4 tarsal formula in the males. However, the type species of the genus, *L. angustulus*, has 5-5-4 tarsi in the male also and would thus appear to belong to Lefkovich's *problematicus* species group. Illustrative of the problem of determining generic limits is an undescribed species from the western U.S., which in most characters greatly resembles *Cryptolestes ferrugineus* but would have to be assigned to *Leptophloeus* because of the narrow intercoxal process of sternum III.

Biology. Lefkovich (1959a) recorded several European species as being predaceous on scolytid larvae. Schedl (1962) recorded seven African species from the galleries of various species of Scolytidae. Schwarz (1890a) recorded *L. angustulus* in *Rhus toxicodendron* infested with *Pityophthorus consimilis* LeConte.



Map 24. Florida distribution of *Leptophloeus angustulus* (LeConte).

Distribution. Lefkovitch (1959a) recorded six species of this genus from Europe, including one African species sometimes found in stored products, and (Lefkovitch 1962c) 16 species from Africa. Sasaji (1986) reported three species from Japan. In addition to the type species, *L. angustulus*, the European *L. alternans* (Erichson) is also recorded from the U.S. (LeConte 1869, Casey 1884, Hatch 1961). However, Casey (1916:132) noted of the records of the latter species, "... I also have strong doubts concerning the occurrence of the European *alternans* Er., in this country and believe some allied native species has been mistaken for it." Specimens I have seen that agree with the description and illustration of *alternans* in Hatch (1961) represent an undescribed species, and I believe the records for *alternans* are based on misidentifications of this species. I have seen at least two other undescribed species of *Leptophloeus* from the western United States. Although no species of *Leptophloeus* are recorded from the Neotropics, there are undescribed species in Mexico and Argentina. I also have seen specimens apparently referable to *Leptophloeus* from Australia and Southeast Asia.

***Leptophloeus angustulus* (LeConte)**
(fig. 64, 65, map 24)

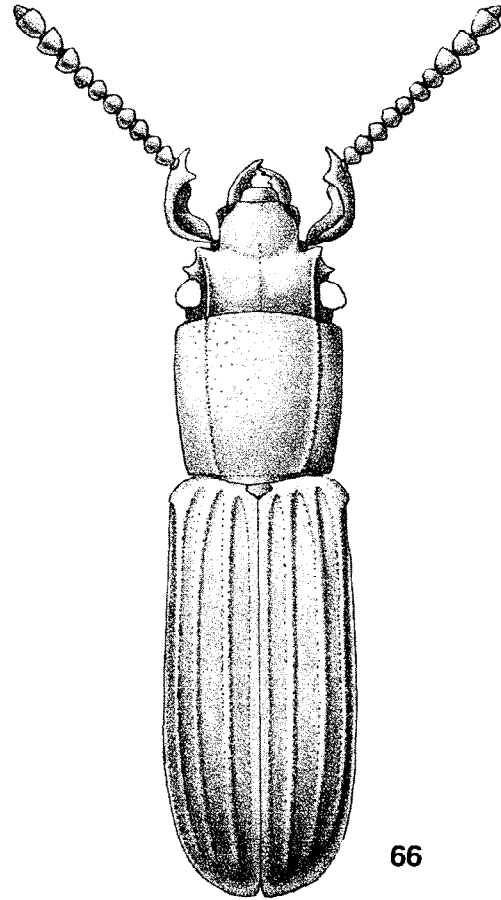
Laemphloeus angustulus LeConte 1866:379

Leptophloeus angustulus, Casey 1916:119

Diagnosis. Length 1.6mm - 2.0mm. Characters useful for distinguishing this species are given under the diagnosis of *Dysmerus basalis* Casey.

Taxonomic notes. Little has been published on it besides the original description. A female from Florida, Marion Co., Ocala, has more convex eyes than other specimens and may represent an undescribed species.

Biology. The biological notes published by DeLeon (1934) apparently refer to a species other than *angustulus*, which was pointed out by Chamberlin (1939), who, however, mistakenly identified that species as *Leptophloeus alternans*, a European species that apparently does not occur in the New World. Schwarz (1890a) recorded specimens of *L. angustulus* from *Rhus toxicodendron* infested with *Pityophthorus consimilis* LeConte and Karl Stephan collected a long series in Oklahoma on recently cut oaks infested with



66

Figure 66. *Dysmerus basalis* Casey, habitus.

Pseudopityophthorus pruinosus. I also have seen specimens with the label data: "under bark of scarlet oak"; "reared from oak"; and "ex galleries of scolytid in bark of dead scarlet oak".

Distribution. LeConte (1866) described this species from Washington, D.C. Casey (1884) added Colorado (although this record also may refer to the undescribed species discussed above) and Schwarz (1890a) also recorded it from Washington, D.C. I have seen specimens from Florida, Indiana, Missouri, Ohio, and Oklahoma.

Specimens examined. Forty-eight, of which three were from Florida, representing three collection records: 1, Columbia Co., O'Leno State Park 10-V-1981 M.C. Thomas under bark of *Quercus* sp. log; 1, Marion Co., Ocala 21-VII-1977 M.C. Thomas blacklight trap;

1, Marion Co., Ocala 13-VI-1977 M.C. Thomas black-light trap (FSCA).

Genus *Dysmerus* Casey

Dysmerus Casey 1884:97

Dasymerus, Grouvelle 1908a:56 [misspelling]

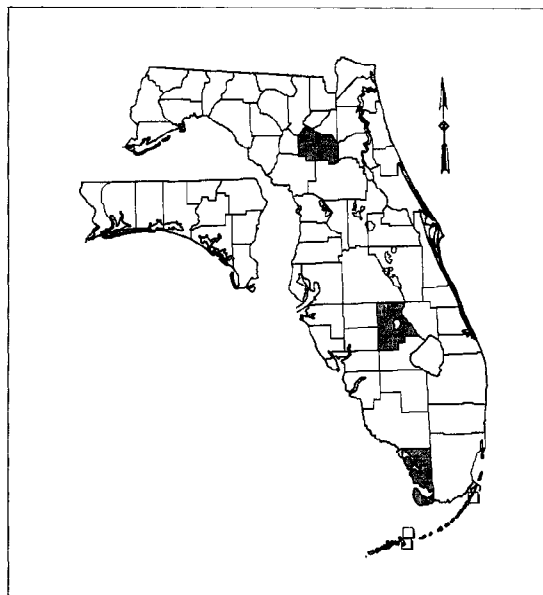
Brontophloeus Kessel 1921:28; syn. by Lefkovitch 1958b:97

Type species. Of *Dysmerus*, *D. basalis* Casey (by monotypy); of *Brontophloeus*, *Dysmerus basalis* Casey (by subsequent designation of Lefkovitch (1958b)).

Diagnosis. The species of this genus resemble those of both *Cryptolestes* and *Leptophloeus*; from the former they can be distinguished by their narrow intercoxal process of abdominal sternum III, and from the latter by the curiously modified antennal scape in the male and the lateral attachment of the pedicel to the scape in both sexes.

Taxonomic notes. This genus was described by Casey for the single U.S. species, *D. basalis*; later, Grouvelle (1908a) added the Antillean species *Dasymerus* [sic] *sulcicollis*. Lefkovitch (1958b) synonymized both *D. sulcicollis* and *Laemophloeus caseyi* Grouvelle (1898) under *D. basalis*. I accept his conclusion that Grouvelle's species are conspecific, since he examined the types of both. However, I have compared the type specimen of *D. caseyi* with specimens of *D. basalis* and conclude that *D. caseyi* is a valid species not especially closely related to *D. basalis*. *Dysmerus caseyi* (Grouvelle) is here revived as a valid species.

Schwarz (1890a) considered *Dysmerus* at most as a subgenus of *Laemophloeus*. Lefkovitch (1958b) pointed out the close resemblance of *Dysmerus* to *Leptophloeus*, and wrote, "Upon a female specimen alone, it is likely that Casey ... would have included *Dysmerus* in his genus *Leptophloeus*. But since the adaptive radiation of this latter genus is not yet fully known, and since *Dysmerus* appears to be quite distinct from it as at present understood, I consider that *Dysmerus* should be kept as a valid genus." Presently, species with modified scapes in the male are assigned to *Dysmerus*, while those without modified scapes in the male are assigned to *Leptophloeus*. Obviously, this is an arbitrary and unsatisfactory situation, but will not be remedied until both genera are revised.



Map 25. Florida distribution of *Dysmerus basalis* Casey.

Biology. Schwarz (1890a, 1890b) recorded *D. basalis* from the burrows of several species of Scolytidae. There is no other published information on its biology. Adults are sometimes collected in ultraviolet light traps. The function of the modified antennal scape in the male is unknown.

Distribution. As presently defined this genus appears to be exclusively New World; the only described species are from the southern United States and the Lesser Antilles. I have seen about six undescribed species from Central and South America and one from the southeastern U.S.

Dysmerus basalis Casey (fig. 66, map 25)

Dysmerus basalis Casey 1884:97

Laemophloeus caseyi Grouvelle 1898:42; synonymized incorrectly by Lefkovitch 1958b:97

Dasymerus [sic] *sulcicollis* Grouvelle 1908a:56; synonymized incorrectly with *basalis* by Lefkovitch 1958b:97

Diagnosis. Length 1.6mm - 1.8mm. The modified antennal scape (fig. 66) in the male and lateral attachment of the pedicel to the scape in both sexes will

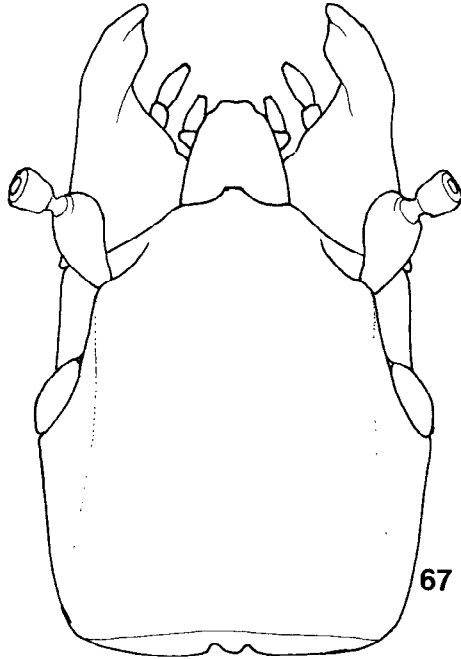


Figure 67. *Narthecius* sp., head, dorsal view.

serve to distinguish it from all other described Florida species.

Taxonomic notes. Although Lefkovitch (1958b) confused this species with *D. caseyi* (Grouvelle), it is an easily recognized species with no other recorded synonyms.

Biology. The only information on its biology comes from Schwarz (1890a, 1890b), who recorded it from *Liquidambar styraciflua* (L.) infested with *Pityophthorus annectens* LeConte, *Rhus toxicodendron* infested with *P. consimilis* LeConte, and from poisonwood infested with an undescribed species of *Pityophthorus*. I have seen several specimens reared from poisonwood. Adults are sometimes caught in ultraviolet light traps.

Distribution. Casey (1884) described *basalis* from a single specimen collected in Florida by Schwarz. Later, Schwarz (1890b) recorded it from the Florida localities of Key Biscayne (Dade Co.) and Haw Creek (Alachua Co.), as well as from Washington, D.C. It is rarely collected and very uncommon in collections. I have seen specimens from Florida and Alabama. It probably ranges throughout the southern United States.

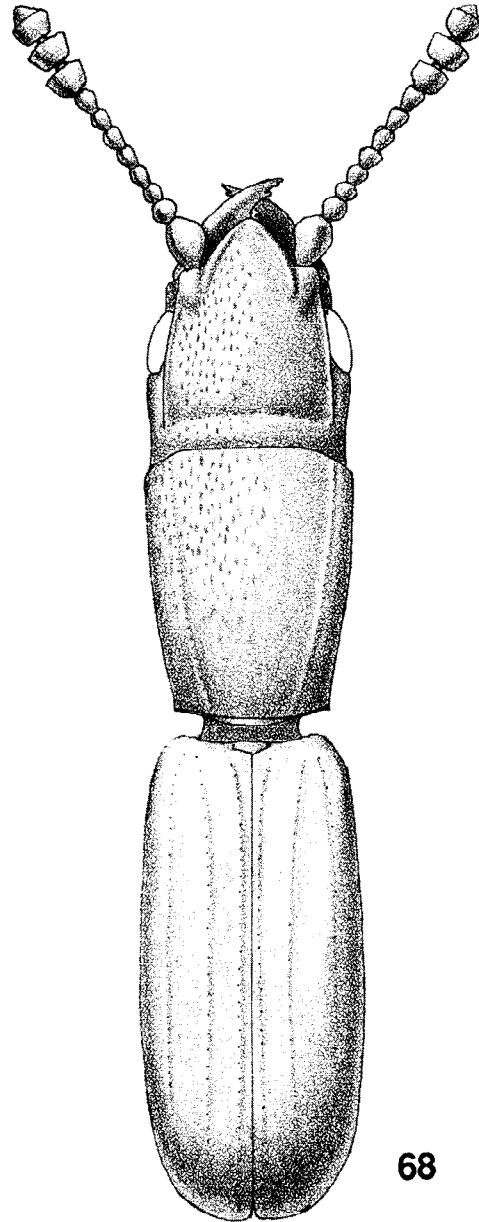


Figure 68. *Narthecius grandiceps* (LeConte), habitus.

Specimens examined. Twenty-one, of which 15 were from Florida, representing six collection records: 1, Alachua Co., Gainesville 23-V-1978 M.C. Thomas

blacklight trap (FSCA); 4, Highlands Co., Highlands Hammock State Park 5-III-1985 M. Deyrup from dead twig *Rhus toxicodendron* (ABSC); 4, Monroe Co., Key Largo 14-20-V-1977 R. Turnbow emerged ex *Metopium toxiferum* (TURN); 1, Monroe Co., Big Pine Key 1-7-VI-86 S. & J. Peck UVlight, hammock-mangrove transition (PECK); 4, Monroe Co., Key Largo 11-17-VI-1977 R. Turnbow emerged ex *Metopium toxiferum* (TURN); 1, Monroe Co., No Name Key 3-VI-27-VIII-86 S. & J. Peck hammock malaise-FIT, 86-14 (PECK).

Genus *Narthecius* LeConte

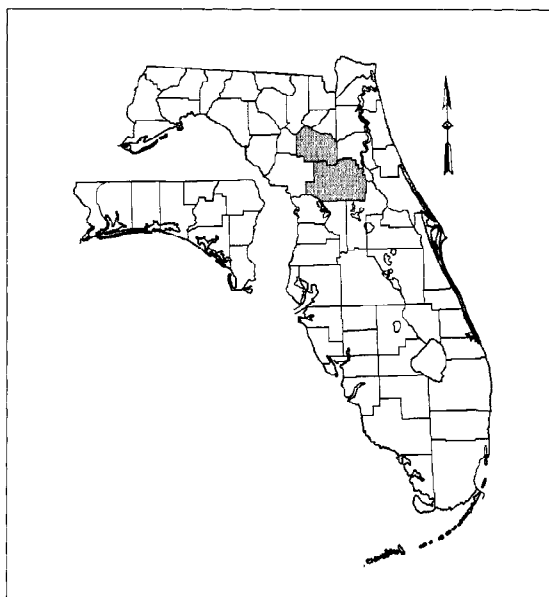
Narthecius LeConte 1861:95

Paraphloeus Sharp 1899:509; syn. by Lefkovitch 1962c:210

Type species. Of *Narthecius*, *Laemphloeus grandiceps* LeConte (by subsequent monotypy); of *Paraphloeus*, *Paraphloeus crassiceps* Sharp (by original designation).

Diagnosis. The acuminate, bifid epistome (fig. 67) makes adults of the species of this genus among the most easily recognized of Florida laemphloeines.

Taxonomic notes. Little has been published on the New World members of this genus except for the original descriptions. Lefkovitch (1962c) distinguished



Map 26. Florida distribution of *Narthecius grandiceps* (LeConte).

the New World species from those described from the Orient and suggested that a group of species related to *N. suturalis* Grouvelle is generically distinct from the other members of the genus.

Biology. Like the other genera of Laemphloeinae with subcylindrical adults, the species of *Narthecius* seem to be predaceous on Scolytidae and are found almost exclusively within their burrows. Schwarz (1890a) recorded collecting *Narthecius grandiceps* from twigs of *Liquidambar styraciflua* (L.) infested with *Pityophthorus consimilis* LeConte. Schedl (1962) recorded the African *N. schedli* Lefkovitch from the galleries of five species of Scolytidae.

Distribution. Hetschko (1930) listed 10 species of this genus and two of *Paraphloeus* Sharp (which was synonymized with *Narthecius* by Lefkovitch [1962c]) from North and Central America, Madagascar and the Orient. Since then, Lefkovitch (1962c) added one species from Africa and Hatch (1961) added another from the Pacific Northwest. There are six described species in the United States (one is here considered a synonym of *N. grandiceps*, see below), all but one of which are confined to the western part of the country.

Narthecius grandiceps LeConte (fig. 68, map 26)

Narthecius grandiceps LeConte 1863:70

Narthecius breviceps Casey 1890:323, **new synonym**

Diagnosis. Length 1.8mm - 2.0mm. The acuminate epistome (fig. 67) and longitudinally strigose head (fig. 68) characterize this species in the Florida fauna.

Taxonomic notes. LeConte (1863) described it from a single specimen from York Co., Pennsylvania. Casey (1884) wrote, "This curious species is of such excessive rarity that as far as my knowledge extends, only three specimens are known in the collections of the United States ..." Casey's redescription of this species was based on a Nevada specimen, which likely belongs to a species other than *grandiceps*. I have examined the holotype of *Narthecius breviceps* Casey, described from Haw Creek, Florida, and consider it conspecific with *grandiceps*. Casey (1890) was mistaken in reporting the epistomal process of this specimen as simply acuminate; it is distinctly bifid, as in *grandiceps*. In fact, all species of this genus in the U.S. have a bifid epistomal process, contrary to Fall (1905).

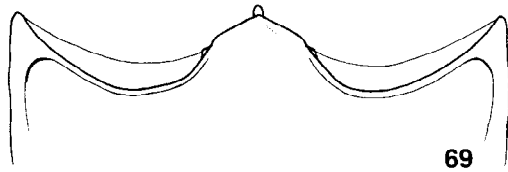


Figure 69. *Laemophloeus biguttatus* (Say), intercoxal process of sternum III.

Biology. Except for Schwarz (1890a) reporting this species from twigs of *Liquidambar styraciflua* (L.) infested with *Pityophthorus consimilis* LeConte, little is known about its biology. Karl Stephan recently collected a series in Oklahoma from cut red oak infested with *Pseudopityophthorus pruinosus*. It is likely that it, like other subcylindrical laemophloeines, is predaceous on scolytids. It occasionally is collected in ultraviolet light traps.

Distribution. It was described from Pennsylvania and, as *breviceps*, from Florida. Except for the type specimens I have seen specimens only from Florida and Oklahoma.

Specimens examined. Nineteen, of which five were from Florida, representing four collection records: 1, Alachua Co., Gainesville 24-V-1987 R.W. Lundgren fluorescent light (RWLC); 2, Alachua Co. 29°34 1/2'N, 82°29'W 6-III-1990 R.W. Lundgren fluorescent light (RWLC); 1, Marion Co. Village of Rainbow Springs 5-V-1982 M.C. Thomas; 1, Marion Co. Ocala 13-VI-1977 M.C. Thomas blacklight trap (FSCA).

Genus *Laemophloeus* Dejean

Laemophloeus Dejean 1836-37:340

Type species. *Cucujus monilis* Fabricius [by subsequent designation of Lefkovitch 1959:101].

Diagnosis. The following combination of character states is diagnostic for this genus: transverse groove marking epistomal suture present (reduced in major males of some species); humeral carinae of elytra present; intercoxal process of sternum III acuminate apically; tarsal formula 5-5-4 in males; tarsomere I shorter than penultimate tarsomere.

Taxonomic notes. Most laemophloeines were described in this genus and many which are not strictly

congeneric with *L. monilis* are still assigned to it. As restricted by Lefkovitch (1959), this is a rather small genus confined to the Holarctic and Neotropical regions. It belongs to a group of genera including *Charaphloeus* Casey, *Rhinomalus* Chevrolat, *Rhinophloeus* Sharp, and *Metaxyphloeus* Thomas. All are characterized by their possession of an acuminate intercoxal process of sternum III (fig. 69) and well-developed epistomal suture (major males of some species may have the transverse groove representing the suture reduced or obliterated by the secondary sexual development of the head).

Biology. Lefkovitch (1959) recorded *L. monilis* from "... the cones of conifers, in the burrows of *Taphrotychus bicolor* (Herbst) on lime trees and under the bark of dead lime." Iablokoff-Khinzorian (1977) recorded it also from "... dead twigs of various deciduous species occupied by various bark beetle species." Lawrence (1977) recorded the North American *L. biguttatus* from an ascomycete fungus. Gut contents of specimens of several species which I have examined consisted of fungal spores and hyphae.

Distribution. Members of this genus appear to be restricted to the Holarctic and Neotropical regions. Lefkovitch (1959a) recorded four species from Europe; Iablokoff-Khinzorian (1977) listed a total of six species from the Palaearctic. Ten species are here recorded from the United States. Members of the genus range south to southern South America, but since most Neotropical laemophloeines are still assigned to *Laemophloeus* (*sens. lat.*), it is impossible to determine the total number of Neotropical species without a generic revision of the fauna.

Key to the adults of Florida species of *Laemophloeus*

(Females are difficult to distinguish and are best identified by association with males.)

1. Antennomeres IX-XI each at least twice length of any preceding antennomere (fig. 72); epistomal horns well developed in large males; pronotum not angulate laterally; color entirely testaceous (extreme southern Florida only).....*lecontei* Grouvelle
- 1'. Antennomeres IX-X each much less than twice length of preceding antennomeres, although XI may be elongate; epistomal teeth not well-developed; pronotum angulate laterally at about basal third; body usually bicolored.....2

- 2(1'). Antennal scape flattened dorsally and with conspicuous brush of setae in males (fig. 73) *megacephalus* Grouvelle
- 2'. Antennal scape not flattened dorsally, without brush of setae 3
- 3(2'). Head and pronotum sparsely, finely punctate; antennal scape carinate posteriorly; color testaceous, elytra infuscate along suture and laterally *suturalis* Reitter
- 3'. Head and pronotum more densely punctate, punctures separated by about one diameter; antennal scape not carinate; color either not testaceous or elytra not infuscate along suture 4
- 4(3'). Head and pronotum densely, coarsely punctate; punctures separated by less than one diameter; dorsal surface usually conspicuously pubescent; color usually uniformly piceous (teneral individuals may be reddish brown); each elytron medially with a small, well-defined, pale spot (fig. 70) *biguttatus* (Say)
- 4'. Head and pronotum less densely punctate; punctures separated by at least one diameter; dorsal surface not conspicuously pubescent; color usually not uniformly piceous; elytral maculae not as above 5
- 5(4'). Scape shorter than length of eye in males; dorsal surface of head and prothorax with punctures about the size of an eye facet, separated mostly by about once their diameter; elytra with well-defined, somewhat triangular maculae (fig. 71); color usually testaceous with infuscate head and pronotum and piceous elytra *fasciatus* Melsheimer
- 5'. Scape longer than length of eye in males; dorsal surface of head and prothorax with punctures smaller than an eye facet, separated by 1-2 diameters; elytra with amorphous, pale maculae; color entirely castaneous (fig. 74) *woodruffi* Thomas, n.sp.

***Laemophloeus biguttatus* (Say)**

(fig. 69, 70, map 27)

Cucujus biguttatus Say 1827:267

Laemophloeus biguttatus, Smith 1851:5

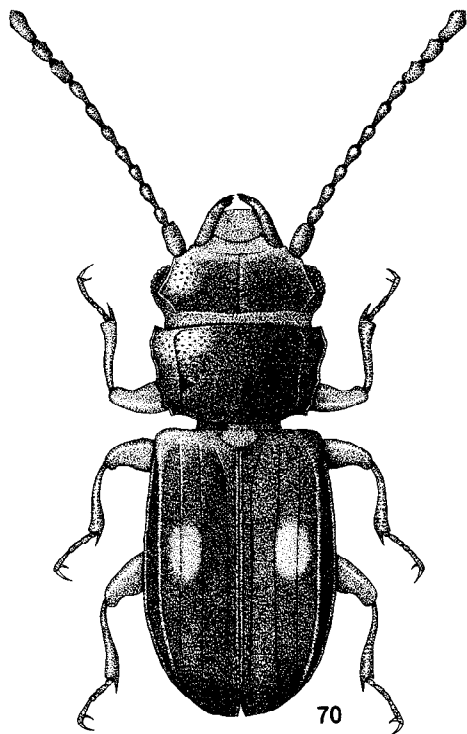
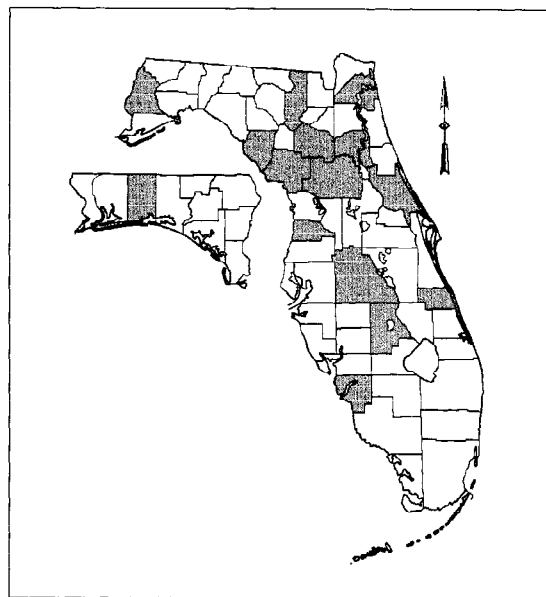
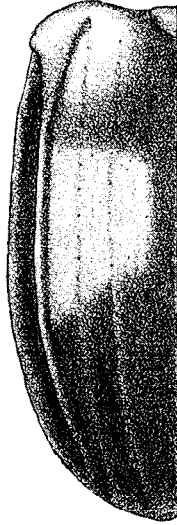


Figure 70. *Laemophloeus biguttatus* (Say), habitus.



Map 27. Florida distribution of *Laemophloeus biguttatus* (Say).



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Figure 71. *Laemophloeus fasciatus* Melsheimer, left elytron.

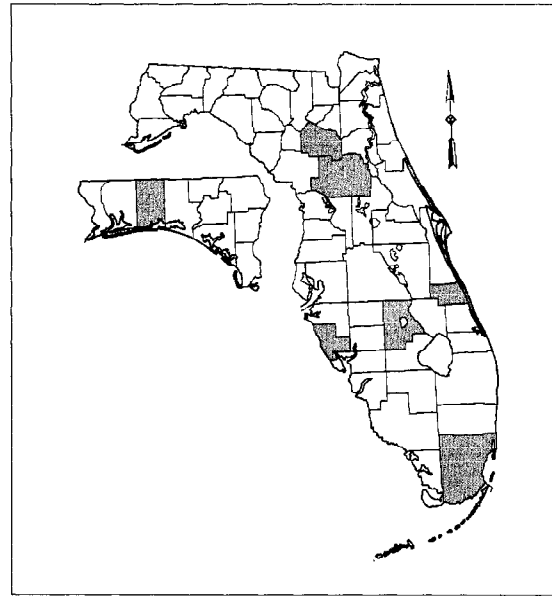
Laemophloeus bisignatus Guérin-Méneville 1829-44:205; syn. by Smith 1851:5

Diagnosis. Length 1.9mm - 3.3mm. The piceous coloration of most specimens, the small, oval elytral maculae (fig. 70), and the densely punctate dorsal surface will serve to distinguish individuals of this species from those of most other Florida species of *Laemophloeus*.

Taxonomic notes. *Laemophloeus californicus* Casey is very similar to this species and may prove to be conspecific. Individuals seem to differ from those of *biguttatus* only in their consistently paler color. Smith (1851:5) listed *bisignatus* as a synonym of *biguttatus* without any discussion; this has been followed in all subsequent literature, except for Melsheimer (1853:44).

Biology. Lawrence (1977) reported adults and larvae on, and reared larvae from, *Hypoxyton* prob. *atropunctatum* (Schweinitz ex Fries) Cooke (Ascomycetes: Xylariaceae). He noted that gut contents consisted almost entirely of conidia (asexual spores). I have collected numerous specimens on various ascomycete fungi and have found only fungal tissue and spores in their gut.

Distribution. LeConte (1854:74) recorded it from "... Middle and Southern States, and as far west as Nebraska." Casey (1916:123) reported it from "... Pennsylvania to Arizona." I have seen specimens from Ala-



Map 28. Florida distribution of *Laemophloeus fasciatus* Melsheimer.

bama, Arizona, Arkansas, British Columbia, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New York, North Carolina, Ohio, Oklahoma, Ontario, Pennsylvania, Quebec, Tennessee, Texas, Utah, Virginia, West Virginia, and Washington. Two specimens in the FSCA represent the first record of this species from Mexico: "Mexico, Nuevo Leon Hotel Chipinque Monterey 20-VII-1981 L. Stange" and "MEXICO S.L.P., Hwy 80, 4mi E. Cd. del Maiz, 4800' 23 July 1982 C.W. & L. O'Brien & G. Wibmer". In Florida, it ranges throughout much of the peninsula, with records from Lee County north to Okaloosa County in the Panhandle. Records are lacking for the extreme southeastern coast and the Keys.

Specimens examined. More than 580, of which 280 were from Florida, representing 68 collection records (for complete data, see Appendix).

***Laemophloeus fasciatus* Melsheimer**
(fig. 71, map 28)

Laemophloeus fasciatus Melsheimer 1846:113

Diagnosis. Length 2.1mm - 3.1mm. The following combination of character states distinguishes adults of

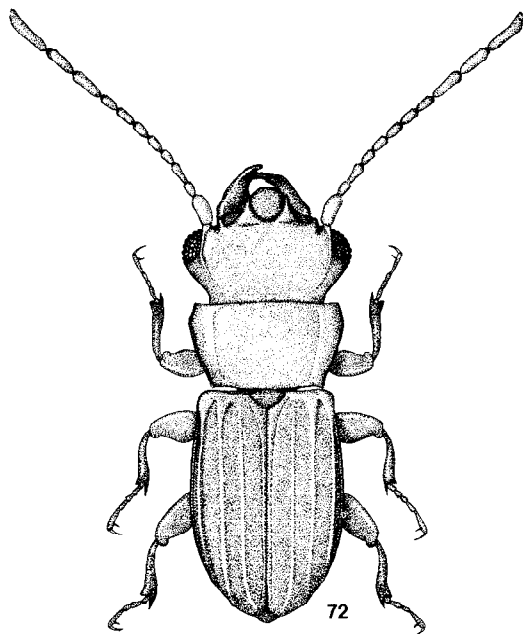
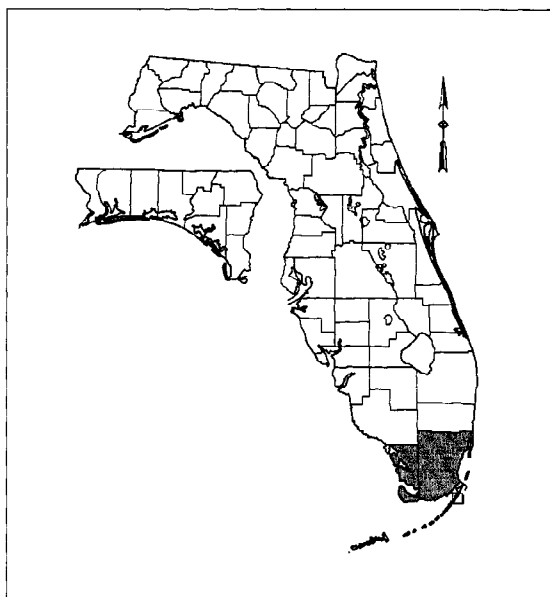


Figure 72. *Laemophloeus lecontei* Grouvelle, habitus.

this species from those of other Florida *Laemophloeus*: antennal scape shorter than length of eye; punctures of head and pronotum about the diameter of an eye facet, separated by about one diameter; elytra piceous or



Map 29. Florida distribution of *Laemophloeus lecontei* Grouvelle.

black, with somewhat triangular pale maculae (fig. 71).

Taxonomic notes. This is a distinctive species with no recorded synonyms.

Biology. Nothing has been recorded on the biology of this species except that it is found under bark.

Distribution. I have seen specimens from Connecticut, Delaware, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Ontario, Pennsylvania, Tennessee, Texas, Virginia, and West Virginia. In Florida it has been collected from Dade County in the south to Okaloosa County in the north.

Specimens examined. More than 60, of which 18 were from Florida, representing 14 collection records (for complete data, see Appendix).

Laemophloeus lecontei Grouvelle (fig. 72, map 29)

Laemophloeus lecontei Grouvelle 1876:496

Diagnosis. Length 2.0mm - 3.5mm. This is one of the most distinctive species of Florida *Laemophloeus*. The combination of elongate antennomeres IX-XI (fig. 72), non-angulate pronotal margins, and well-developed epistomal horns in major males are diagnostic (fig. 72).

Taxonomic notes. Virtually nothing has been published on it since its description and the mention by Casey (1884:84). There are no recorded synonyms, but *Laemophloeus chevrolati* Grouvelle, described from Cuba, probably is a synonym.

Biology. Nothing has been recorded on the biology of this species. Several Florida specimens were collected under the bark of a log of gumbo limbo (*Bursera simaruba* (L.) Sarg.); others were collected in ultraviolet light traps.

Distribution. The type locality is "Amérique boreal" (Grouvelle 1876:496), and it has only been recorded from Florida, where it occurs in the extreme southern part of the state. I have seen specimens of what appear to be the same species from Mexico, Jamaica, Trinidad, Costa Rica, and Venezuela.

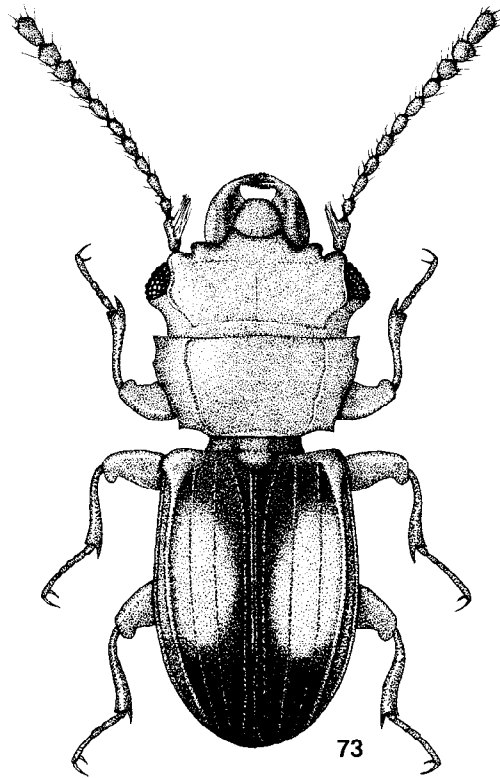


Figure 73. *Laemophloeus megacephalus* Grouvelle, habitus.

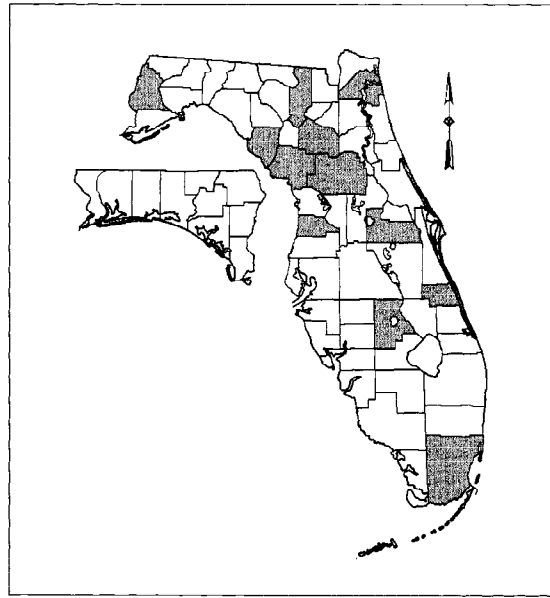
Specimens examined. Twenty-nine from Florida, representing 12 collection records (for complete data, see Appendix).

***Laemophloeus megacephalus* Grouvelle**
(fig. 73, map 30)

Laemophloeus megacephalus Grouvelle 1876:495

Laemophloeus floridanus Casey 1884:85, **new synonym**

Diagnosis. Length 2.3mm - 3.4mm. A tuft of setae on the dorsal surface of the antennal scape in the male (fig. 73) distinguishes this from all other Florida species. Females are indistinguishable from those of *suturalis*, but (except for the few specimens with reduced elytral maculation which resemble specimens of *fasciatus*)



Map 30. Florida distribution of *Laemophloeus megacephalus* Grouvelle.

can be distinguished from other Florida species by the shape and position of the elytral maculae (fig. 73).

Taxonomic notes. Grouvelle (1876:495) described *megacephalus* from "Nouvelle-Grenade. Collection Chevrolat." I have examined a single male from the MNHN with the following label data: "Chevrolat. Nlle. Grenada Magdalena"/"S. nom. megacephalus H. Deyrolle."/"/"Type"/ "TYPE"/ "MUSEUM PARIS COLL. A. GROUVELLE 1917"/"Megacephalus A. Grouv. Ann. Fr. p.". I accept this specimen as part of the type series and designate it as lectotype. The type of *floridanus* apparently has been lost (Buchanan 1935), but Casey's (1884:85) description is detailed enough to permit its identification. Specimens from the southern U.S. matching Casey's description are conspecific with *megacephalus*. *Laemophloeus distinguendus* Sharp, described from Guatemala and Panama, is almost certainly another synonym of *megacephalus*, but as I have not examined the types I hesitate to propose a formal synonymy at this time. There is a specimen from Jamaica in the FSCA that is very similar to *megacephalus* but which has an elongate antennomere XI and may represent an undescribed species.

Biology. Nothing has been recorded on the biology of this species. Gut contents of Florida specimens indicate it is fungivorous. Based on my collecting experience in Florida, it appears that individuals of *L. megacephalus* tend to be more abundant on logs in deep

woods rather than in more exposed situations, where individuals of *biguttatus* predominate.

Distribution. Except for the original descriptions and its inclusion in a key by Grouvelle (1896:203), it has been mentioned in the primary literature only once since, when Blatchley (1925:165) recorded it at light at Royal Palm Park (now Royal Palm Hammock in Everglades National Park, Florida). I have seen U.S. specimens from Florida, Alabama, North Carolina, Louisiana, and Texas, as well as from Mexico and Trinidad. I have seen Florida specimens from Dade County in the south to Jackson County in the north; I have not seen any specimens from the Keys.

Specimens examined. More than 260, of which 231 were from Florida, representing 56 collection records (for complete data, see Appendix).

Laemophloeus suturalis Reitter

Laemophloeus suturalis Reitter 1876:50

Laemophloeus suturalis var. *circumdatus* Sharp 1899:514

Diagnosis. Length 1.9mm - 3.0mm. Males are similar to those of *megacephalus* but lack the tuft of setae on the scape and the epistomal emarginations over the antennal insertions are not as deep. Females of *megacephalus* and *suturalis* cannot be distinguished except by association with males.

Taxonomic notes. Except for the variety *circumdatus*, described by Sharp (1899:514) and of doubtful validity, there are no recorded synonyms of this species. Adults of *suturalis* are very similar to adults of *terminalis* Casey, but those of the latter are larger, more brightly colored, and with a relatively much longer antennomere XI in major males.

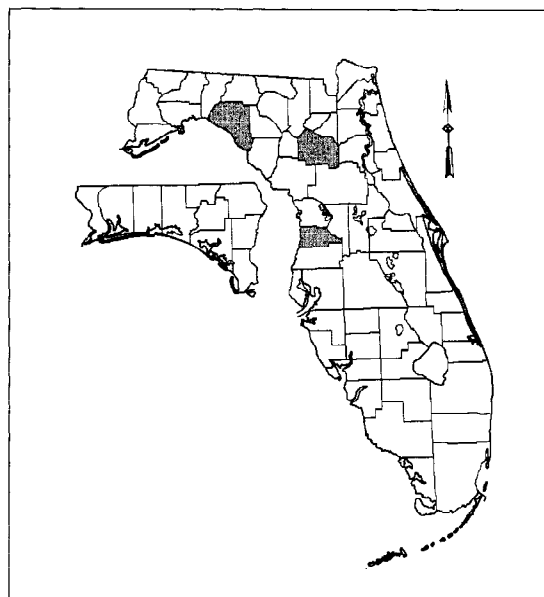
Biology. Nothing has been recorded on its biology. Most of the Florida specimens were collected on and under the bark of a dead, standing gumbo-limbo tree (*Bursera simarubra* (L.) Sarg.); gut contents consisted of fungal material. Many specimens from Neotropical areas were collected in ultraviolet light traps.

Distribution. Sharp (1899) recorded this species from Mexico, Guatemala, Panama, and Colombia. It has not been previously recorded from the United States. I



Figure 74. *Laemophloeus woodruffi*, n.sp., habitus.

have also seen specimens from Mexico, British Honduras, Bolivia, Costa Rica, Trinidad, and Panama.



Map 31. Florida distribution of *Laemophloeus woodruffi*, n.sp.

Specimens examined. More than 105 (almost entirely males, since females are inseparable at present from those of *megacephalus* and *distinguendus*), of which the following were from Florida: 26, Dade Co., Castellow Hammock, 17-IV-1982 M.C. Thomas and J.H. Frank; 1, Dade Co., Goulds, 18-IV-1982 M.C. Thomas and J.H. Frank (FSCA).

***Laemophloeus woodruffi* Thomas, n.sp.**
(fig. 74, map 31)

Diagnosis. The following combination of character states distinguishes individuals of this species from those of other Florida *Laemophloeus*: sparsely punctate, glabrous dorsal surface of head and prothorax; antennal scape not flattened dorsally, as long as eye in male; color pale castaneous, sometimes slightly infuscate, with ill-defined paler elytra maculae. Although a difficult character to quantify, the almost flat dorsal surface of head and prothorax contrasts with the slightly convex dorsal surface of the other species of this genus in Florida.

Description. Holotype male, with following data: "FLA: Dixie County, 3.5mi. N. Old Town Rt. 349, 21-V-78 R.E. Woodruff and S.A. Fragoso blacklight trap". Deposited in FSCA. Length 2.7mm. Dorsoventrally compressed, dorsal surface of head almost flat; elongate-oblong; color castaneous, elytra darker, each with a large amorphous pale macula from basal fifth to just past midpoint, attaining lateral carina laterally but not sutural stria.

Head. Transverse (1:2.5), epistome with five emarginations; median line impressed, complete from posterior transverse line to epistomal line; dorsal surface glabrous (at 75x), with punctures smaller than an eye facet, separated by 1-2 diameters, surface smooth and glossy between punctures; antennae elongate, filiform, attaining apical third of elytra; scape elongate, longer than length of eye, not flattened dorsally or posteriorly.

Thorax. Pronotum transverse (1:1.8), widest just behind anterior angles; breadth across anterior angles 1.25 times that across basal angles; anterior angles produced, acute; posterior angles produced slightly, obtuse; sublateral line represented by a deep groove; sublateral foveae well-marked; surface sculpture and pubescence as on head; elytra 1.4 times longer than broad; elytra appearing glabrous, but elytral cells enclosing 3-4 rows of minute setae.

Variation. Length of allotype, 2.2mm; proportions as follows: head, 1:2.4; pronotum, 1:2.2; elytra, 1.41:1.

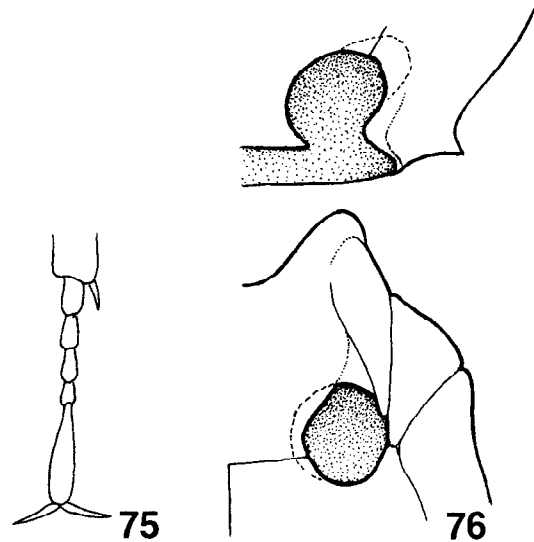


Figure 75-76. *Charaphloeus convexulus* (LeConte). 75) hind tarsus, male; 76) pro- and mesosternum.

Paratypes range in length from 2.3mm to 2.8mm. The discs of the pronotum and head in some specimens are infuscate.

Types. Allotype, (FSCA), same data as holotype; paratypes (75), as follows: 8, same data as holotype; 1, "Gainesville, Fla."/"E.M. Collins, Jr. coll. 10-IV-63"/"in blacklight trap" (FSCA); 1, "ONTARIO: Essex Co. Wheatley March 1967 K. Stephan leg." (FSCA); 2, "MISSOURI: Boone Co. Columbia 12 April 1978 Martin E. Rice coll" (FSCA); 1, "TENNESSEE: Oak Ridge 22-VI-68 R.E. Woodruff"/"in blacklight trap" (FSCA); 54, "Brooksville Fla I-21-40"/"Van Dyke Collection"; 4, same except I-28-40; 4, same except I-21-40 (CASC).

Genus *Charaphloeus* Casey

Charaphloeus Casey 1916:127 [as subgenus of *Laemophloeus* Dejcan]

Charaphloeus, Thomas 1984a:75 [elevated to genus]

Type species. *Laemophloeus convexulus* LeConte [by original designation]

Diagnosis. The combination of the following character states are diagnostic for the members of this genus: body shape generally more convex than in *Laemophloeus*; pronotum rounded laterally, not angulate (fig. 77); elytra without humeral carinae; elytral cells absent or poorly expressed; intercoxal process of sternum III acuminate anteriorly; tarsomere I as long as or longer than penultimate tarsomere (fig. 75); male tarsal formula 5-5-4 or 5-5-5.

Taxonomic notes. *Charaphloeus* was described by Casey (1916:127) as a subgenus of *Laemophloeus* but was treated as a full genus by Thomas (1984a:75). Most species are easily assignable to one genus or another; however, adults of *Charaphloeus flavosignatus* (Schaeffer) possess humeral carinae and are thus intermediate between *Charaphloeus* and *Laemophloeus*. Individuals of that species possess all the other distinguishing features of *Charaphloeus*, and possession of humeral carinae is here considered to be a retention of an ancestral character state.

Biology. Little is known about the biology of the species of *Charaphloeus*. Blatchley (1910:567) reported that individuals of *adustus* (probably an undescribed species, see below) are found on beech logs.

Distribution. Restricted to the New World, where the species range from Canada to southern South America and through the Antilles.

Key to the adults of Florida species of *Charaphloeus*

1. Anterior pronotal angles acutely angulate; males with elongate mandibles, without prominent frontal tubercles; color dark brown to piceous *convexus* (LeConte)
- 1'. Anterior pronotal angles obtusely rounded; males with or without elongate mandibles and frontal tubercles; color other than dark brown or piceous 2
- 2(1'). Punctures of head and pronotum smaller than an eye facet, separated mostly by about one diameter; color testaceous; males with elongate mandibles and frontal tubercles (fig. 77) (extreme southern Florida only) *bituberculatus* (Reitter)
- 2'. Punctures of head and pronotum larger than an eye facet, nearly contiguous; body usually bicolored, elytra darker than head and pronotum; males without elongate mandibles or frontal tubercles (northern Florida) *adustus* (LeConte)

Charaphloeus adustus (LeConte) new combination

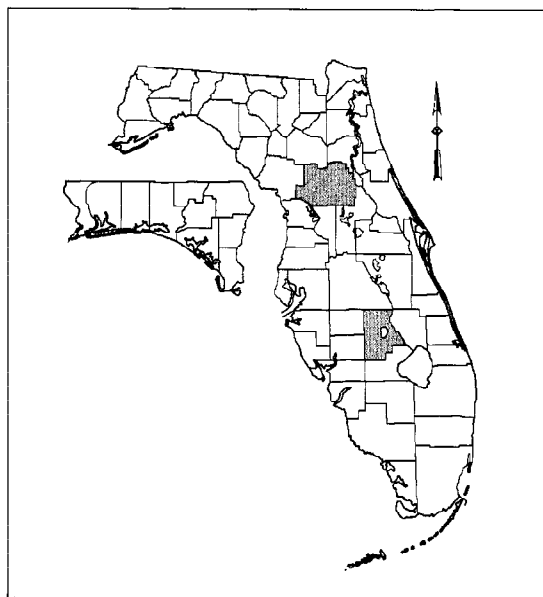
Laemophloeus adustus LeConte 1854:74

Laemophloeus (*Charaphloeus*) *adustus*, Casey 1916:126

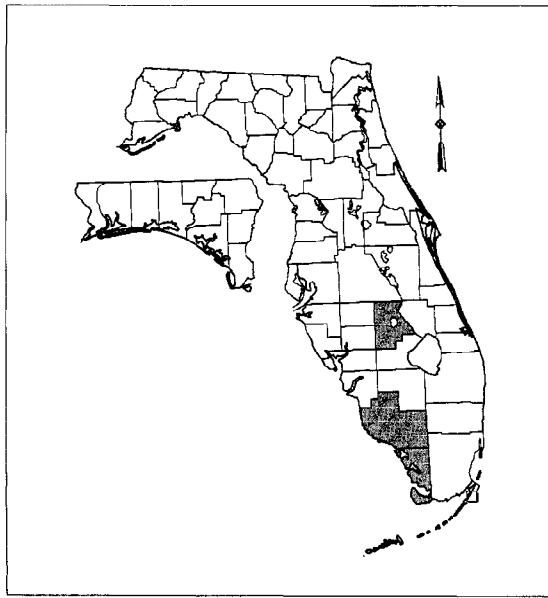
Laemophloeus (*Charaphloeus*) *fraterculus* Casey 1916:124, **n. syn.**

Diagnosis. Length 1.6mm - 1.9mm. The bicolored body, coarse punctation of head and pronotum, small mandibles, and simple anterior pronotal angles distinguish individuals of this species from those of other Florida *Charaphloeus*.

Taxonomic notes. I have examined LeConte's type of *adustus* (type locality, York Co., Penn.) and Casey's type of *fraterculus* (type locality, Buena Vista Spring, Franklin Co., Penn.), and conclude that they are conspecific. Casey's misidentification of *adustus* (1884:87) as an even more coarsely punctate, predominantly northern (and apparently undescribed) species with very small, abruptly protuberant eyes, led to his description of *fraterculus*. The aedeagus of LeConte's male holotype of *adustus* is very different from those of males of the undescribed species.



Map 32. Florida distribution of *Charaphloeus convexus* (LeConte).



Map 33. Florida distribution of *Charaphloeus bituberculatus* (Reitter).

Biology. Nothing has been published on the biology of this species except for Blatchley's note (see this section under the genus), which probably refers to the undescribed species.

Distribution. This species has been recorded from Virginia, Indiana, Vancouver, Pennsylvania, and New York (Hetschko 1930:21). Some of these records may refer to the undescribed species discussed above. I have seen specimens from Kentucky, Indiana, Missouri, and Florida.

Specimens examined. Eight, of which four were from Florida, representing three collection records as follows: 2, Alachua Co. San Felasco Hammock 11-XI-1988 M.C. Thomas beating dead branches; 1, Alachua Co. Gainesville 4-III-1979 M.C. Thomas blacklight trap; 1, Alachua Co. Gainesville 21-II-1981 M.C. Thomas (FSCA).

***Charaphloeus bituberculatus* (Reitter)
new combination
(fig. 77, map 33)**

Laemophloeus bituberculatus Reitter 1876:316

Diagnosis. Length 1.7mm - 2.1mm. The following combination of character states is diagnostic for adults

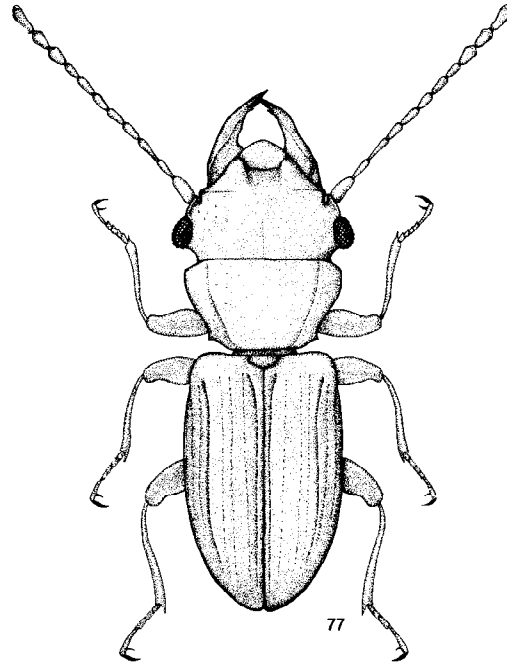


Figure 77. *Charaphloeus bituberculatus* (Reitter), habitus.

of this species: pale yellow color, elongate mandibles and epistomal tubercles (fig. 77) of males.

Taxonomic notes. There are no recorded synonyms of this distinctive species, which possesses the diagnostic characteristics of *Charaphloeus*, and is here transferred to that genus.

Biology. Nothing has been recorded about its biology.

Distribution. It was described from Puerto Rico and had gone unreported since then until recorded from Florida (Thomas 1979). I have seen specimens from Florida, Jamaica, U.S. Virgin Islands (St. Croix), the Dominican Republic, and the Bahamas (Exuma).

Specimens examined. Twenty-five, of which 17 were from Florida, representing 11 collection records (for complete data see Appendix).

***Charaphloeus convexulus* (LeConte)
(fig. 75, 76, map 32)**

Laemophloeus convexulus LeConte 1879:2

Laemophloeus (*Charaphloeus*) *convexulus*, Casey 1916:126

Charaphloeus convexulus, Thomas 1984a:81
Laemophloeus (Charaphloeus) filiger Casey 1916:
 125, **n. syn.**

Laemophloeus (Charaphloeus) sphaerops Casey
 1916:126, **n. syn.**

Diagnosis. Length 1.7mm - 2.4mm. The acutely angulate anterior pronotal angles, elongate mandibles in the male, and piceous coloration characterize adults of this species.

Taxonomic notes. I have examined LeConte's and Casey's types and consider that they are conspecific. Casey's specimens exhibit only the normal intraspecific variation expected in such a strongly sexually dimorphic species that also is subject to allometry.

Biology. Nothing has been recorded on its biology, except that it is found under bark.

Distribution. It has been recorded from New Jersey, Iowa, Michigan, New York (Hetschko 1930:26), Massachusetts, and District of Columbia (Casey 1916:126), and South Carolina (Kirk 1969, 1970). I have seen specimens from Ontario, New York, Rhode Island, Pennsylvania, New Hampshire, Oklahoma, and Florida.

Specimens examined. Twenty, of which five were from Florida, with the following data: 2, Highlands Co. Archbold Biol. Sta., Lake Placid 7-II-1986 M. Deyrup window trap burn area (ABSC); 1, Highlands Co. Archbold Biol. Sta., Lake Placid 21-XII-1987 M. Deyrup window trap trails 1 & 2 SSo (ABSC); 1, Levy Co., 3.8mi. SW Archer, 1-10-IV-1988, P. Skelley, window trap, turkey oak-rosemary scrub (FSCA); 1, Marion Co., Ocala Nat. Forest Big Scrub Campground 12-III-1977 blacklight D. Platt and E. Riley (FSCA).

Genus *Placonotus* Macleay

Placonotus Macleay 1871:168

Silvanophloeus Sharp 1899:537; syn. by Lefkovitch
 1959:110

Type species. Of *Placonotus*, *P. longicornis* Macleay (by monotypy); of *Silvanophloeus*, *Laemophloeus testaceus* (Fabricius) (by original designation).

Diagnosis. Adults of *Placonotus* species can be distinguished from those of other laemophloeine genera by the following combination of character states: distinct transverse line separating frons from epistome; anterior coxal cavities narrowly open posteriorly; intercoxal process of first visible abdominal sternite broadly rounded anteriorly; last visible abdominal segment usually exposed dorsally beyond elytral apices; tarsal formula 5-5-5 females, 5-5-4 males; males with genital claspers. This genus is well-defined, and there usually is no problem in identifying its members by habitus alone. However, it is very close to the African *Gannes* Lefkovitch, which may be synonymous, and with *Parandrita* LeConte and Horn.

Taxonomic notes. Although described by Macleay in 1871, it was not until Lefkovitch (1959) that *Placonotus* was accepted as a taxon distinct from *Laemophloeus*. The genus has been revised for Europe (Lefkovitch 1959), Africa (Lefkovitch 1962c), India (Mukhopadhyay and Sengupta 1977), and the New World (Thomas 1984c). The numerous species in the Oriental and Australian regions are unidentifiable, mostly undescribed, and badly in need of revision.

Distribution. Found throughout the forested areas of the world, but apparently absent from the oceanic islands of the Pacific. Lefkovitch (1959) recorded one species from Europe and 13 species from Africa (1962c). Mukhopadhyay and Sen Gupta (1977) recorded six species from India and Thomas (1984c) recorded 13 New World species, including two species also occurring in Africa. Of the 13 New World species, six occur in the U.S. Two of those, *P. nitens* (LeConte) and *P. arizonensis* Thomas, are restricted to the western U.S., and two others, *P. politissimus* (Wollaston) and *P. macrognathus* Thomas, are Neotropical species restricted to Florida in the U.S. Of the remaining two U.S. species, *P. zimmermanni* (LeConte) is widespread in the eastern U.S. west to Texas, while *P. modestus* (Say) occupies much of the same range west to Arizona.

Biology. Very little is known about the biology of most species of *Placonotus*. Both Iablokoff-Khnzorian (1977) and Lefkovitch (1959) recorded the European species, *P. testaceus*, from under bark of various hardwoods and in the galleries of several species of Scolytidae. Lawrence (1977) reported one U.S. species in association with an ascomycete fungus, and I have collected specimens of two species, *P. zimmermanni* and *P. modestus*, commonly under the bark of dead hardwoods, especially *Quercus* spp., on or near ascomycete fungi. The larva of *P. testaceus* has been described and illustrated (Perris 1877), but the description and illus-

trations are useless for modern taxonomic purposes and apply equally well to the larvae of many laemophloeine genera.

Key to the adults of Florida species of *Placonotus*

1. First visible abdominal segment with femoral lines (fig. 84); anterior pronotal angles rounded, not or little produced anterolaterally; third elytra cell impressed basally; elytra truncate apically, exposing much of last visible abdominal segment
 *politissimus* (Wollaston)
- 1'. First visible abdominal segment without femoral lines; anterior pronotal angles various; third elytral cell present or absent; elytra truncate or entire 2
- 2(1'). Anterior angles of pronotum with prominent anterolaterally directed tooth; elytra entire, evenly rounded to apices; elytra cells present *zimmermanni* (LeConte)
- 2'. Anterior angles of pronotum rounded, or declivous to small, blunt tooth; elytra entire or truncate; elytral cells absent 3

- 3(2'). Elytra truncate apically, exposing most of last visible abdominal segment; elytra with conspicuous rows of punctures (fig. 81); head not microreticulate ... *modestus* (Say)
- 3'. Elytra not truncate apically, exposing at most the tip of last visible abdominal segment; elytra without conspicuous rows of punctures (fig. 80); head microreticulate
 *macrognathus* Thomas

***Placonotus macrognathus* Thomas**
(fig. 78)

Placonotus macrognathus Thomas 1984c:12

Diagnosis. Length 1.6mm - 1.8mm. In addition to the key characters, individuals of this species can be distinguished from those of other Florida species of *Placonotus* by the combination of the following character states: large, distinctly microreticulate head; and laterally expanded mandibles in the male.

Taxonomic notes. This is one of the more distinctive species of the *pallentipennis* species subgroup (Thomas 1984c) and is not likely to be confused with any other species of *Placonotus* in the Florida fauna.

Distribution. It is known only from the Florida Keys and Cuba.

Biology. Part of the type series was collected under bark of gumbo limbo (*Bursera simaruba* (L.) Sarg.) and one was collected in an ultraviolet light trap. Nothing else is known about the biology of this species.

Specimens examined. I have seen no additional specimens since it was described from four specimens collected on Upper Key Largo in Monroe County and one Cuban specimen. One other Cuban specimen (not part of the type series) was recorded by Thomas (1984c).

***Placonotus modestus* (Say)**
(fig. 79, 80, map 34)

Cucujus modestus Say 1827:268

Laemophloeus modestus, LeConte 1854:75

Silvanophloeus modestus, Casey 1916:130

Placonotus modestus, Thomas 1984c:8

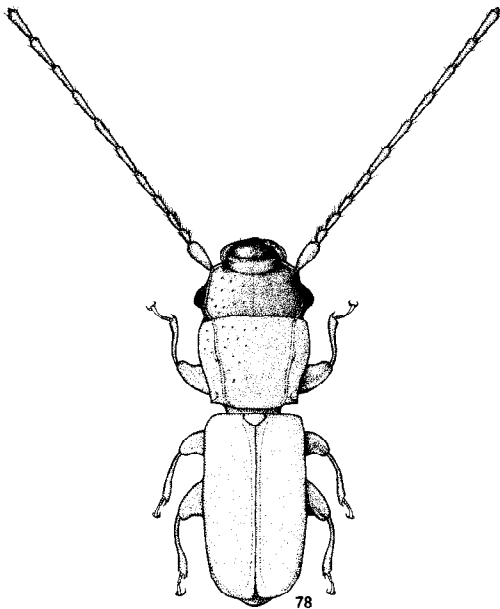


Figure 78. *Placonotus macrognathus* Thomas, habitus.

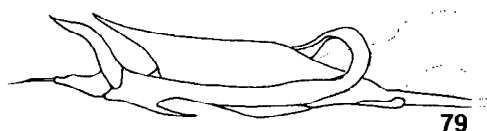


Figure 79. *Placonotus modestus* (Say), aedeagus, lateral view.

Laemophloeus singularis Smith 1851:7; syn. by LeConte 1854:105

Laemophloeus gundlachi Grouvelle 1876:499; syn. by Thomas 1984c:8

Silvanophloeus gundlachi, Sharp 1899:538

Silvanophloeus liquidus Casey 1916:130; syn. by Thomas 1984c:8

Diagnosis. Length 1.4mm - 2.2mm. The combination of truncate elytral apices exposing most of the last visible abdominal segment and anterior pronotal angles consisting of small, ventrally deflected tubercles (fig. 81) distinguishes adults of this species from those of the other known Florida species of *Placonotus*.

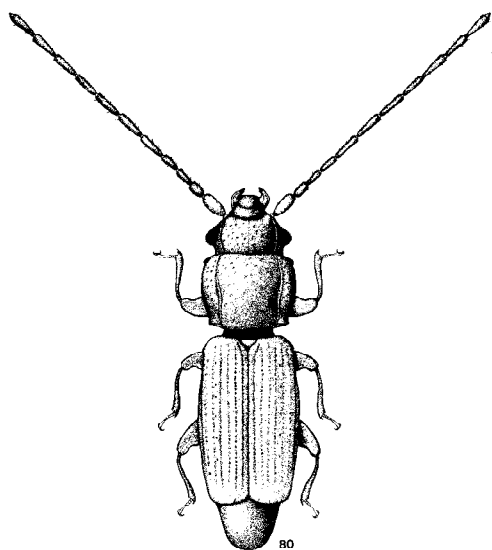
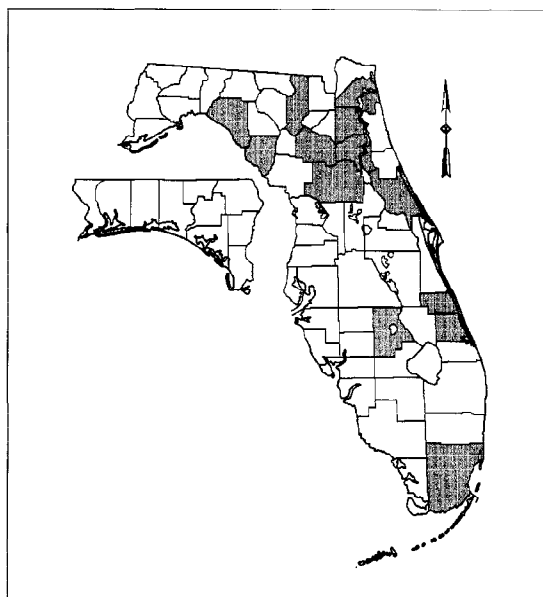


Figure 80. *Placonotus modestus* (Say), habitus.



Map 34. Florida distribution of *Placonotus modestus* (Say).

Taxonomic notes. Say's type material presumably was lost with most of his collection. Because this is one of the most widespread New World species of *Placonotus* and the one most commonly confused in collections with other species, Thomas (1984c) designated a neotype and provided a detailed redescription of the species. Casey (1916) described *liquidus* from Texas; *gundlachi* was described from "Amérique Centrale," and *singularis* was described from "East Florida."

Biology. Wheeler (1921) reported only two references to the habits of this species, recording it from hemp seed and from "under bark and in siftings." Lawrence (1977) reported an association with an ascomycete fungus in Texas for a species he tentatively identified as *P. liquidus*. I have collected it on numerous occasions under the bark of hardwoods, especially *Quercus* spp., usually in association with ascomycete fungi or Fungi Imperfecti. Examination of gut contents suggests that it is fungivorous. It is often collected in ultraviolet light traps.

Distribution. Thomas (1984c) recorded it from Florida north to New York and west to Arizona. It ranges south through Mexico and Central America to Panama and has also been collected in Cuba, Jamaica and Trinidad. Florida records range from Dade County in the South to Taylor County in the North. Although records are lacking for both the Keys and the Panhandle it is likely that it occurs throughout the state.

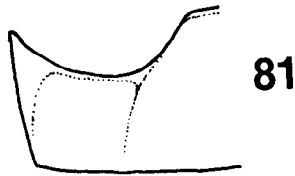


Figure 81. *Placonotus politissimus* (Wollaston), abdominal sternum III.

Specimens examined. More than 500, of which 334 were from Florida representing 79 collection records (for complete data, see Appendix).

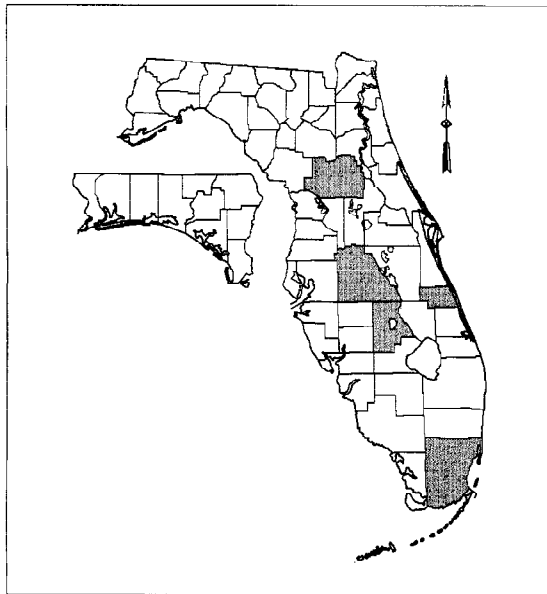
***Placonotus politissimus* (Wollaston)**
(fig. 81, map 35)

Laemophloeus politissimus Wollaston 1867:67

Placonotus politissimus, Lefkovitch 1962c:183

Laemophloeus (Silvanophloeus) mirus Grouvelle 1905:142; syn. by Lefkovitch 1962c:183

Laemophloeus commixtus Grouvelle 1912:304; syn. by Thomas 1984c:6



Map 35. Florida distribution of *Placonotus politissimus* (Wollaston).

Laemophloeus victus Kessel 1926:69; syn. by Thomas 1984c:6

Diagnosis. Length 1.2mm - 2.0mm. This is the only known species of *Placonotus* with femoral lines (fig. 81) on the first visible abdominal sternite; additionally, the rounded anterior pronotal angles, basally impressed third elytral cell and truncate elytral apices are diagnostic.

Taxonomic notes. Lefkovitch (1962c) examined the type series of *politissimus* and *mirus* and selected lectotypes. Thomas (1984c) examined the holotype of *commixtus* and established the synonymy of that species with *politissimus*. The type (or types) of *victus* have not been identified and the synonymy is based on the description in Kessel's (1926) key. The type locality of *politissimus* is Cape Verde Islands; of *mirus*, Madagascar; of *commixtus*, Guadeloupe, and of *victus*, Brazil.

Distribution. Lefkovitch (1962c) recorded it from "Atlantic islands off Africa, Congo, Ivory Coast, Madagascar, Seychelles." Thomas (1984c) noted additional African records from Zimbabwe and Nigeria, as well as an extensive New World distribution ranging from Florida south through Mexico and Central America to Peru and southern Brazil and throughout the Greater and Lesser Antilles. In Florida it ranges from the Keys north to Marion County.

Biology. Virtually nothing is known about its biology. Grouvelle (1912b) wrote in the original description of *commixtus* that the holotype was collected "... under the bark of a freshly fallen *Cedrela odorata*." Almost all of the specimens I have seen were collected in ultraviolet light traps.

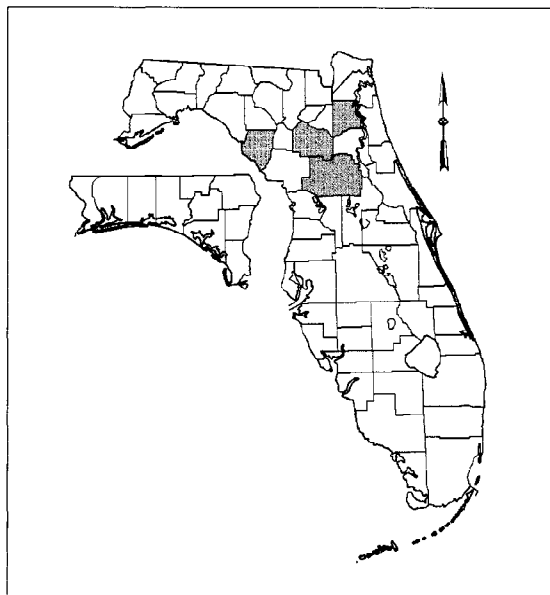
Specimens examined. More than 300, of which 55 were from Florida, representing 38 collection records (for complete data see Appendix).

***Placonotus zimmermanni* (LeConte)**
(map 36)

Laemophloeus Zimmermanni LeConte 1854:75

Placonotus zimmermanni, Thomas 1984c:5

Laemophloeus testaceus auctorum, not (Fabricius 1787:168)



Map 36. Florida distribution of *Placonotus zimmermanni* (LeConte).

Silvanophloeus apertus Casey 1916:128; syn. by Thomas 1984c:5

Silvanophloeus illustris Casey 1916:129; syn. by Thomas 1984c:5

Silvanophloeus sobrinus Casey 1916:129; syn. by Thomas 1984c:5

Diagnosis. Length 1.5mm - 1.9mm. This is the only North American *Placonotus* with conspicuously toothed anterior pronotal angles and well-developed elytral cells.

Taxonomic notes. *Placonotus zimmermanni* was considered conspecific with *P. testaceus* (Fabricius) of Europe (Casey 1884) until recently (Thomas 1984c). Although superficially similar, the two species differ considerably in surface sculpture, pubescence, and in the structure of the male genitalia. I have seen no North American specimens of *P. testaceus*. The type locality of *P. zimmermanni* is "Middle States." Casey described *apertus* from Indiana, *illustris* from "N. Braunfels, Tex." and *sobrinus* from North Carolina.

Distribution. Thomas (1984c) recorded it from Florida north to Ontario and west to Oklahoma and Kansas, with a single record from Oregon. In Florida, it seems to be restricted to the northern half of the state, where it is collected much less commonly than *P. modestus*.

Biology. Little is known about its biology, except that individuals are found under the bark of hardwood logs, especially those of *Quercus* spp., and are attracted to light. Examination of gut contents indicate they are fungivorous.

Specimens examined. More than 500, of which 27 were from Florida, representing 12 collection records (for complete data see Appendix).

Genus *Parandrita* LeConte and Horn

Parandrita LeConte and Horn 1883:133

Type species. *Laemophloeus cephalotes* LeConte [by original designation].

Diagnosis. Species of this genus are characterized by the large head (fig. 83), epistome foveate at basal angles (fig. 83), and weakly developed elytral epipleuron.

Taxonomic notes. Species of this genus are distinctive and there are no generic synonyms. Species of *Parandrita* seem to be most closely related to those of *Placonotus* Macleay. The Florida species treated below could have been included in *Placonotus* almost as well as in *Parandrita*. Criteria for its provisional assignment to *Parandrita* are discussed below. The New World species of *Parandrita* are without an external manifestation of the epistomal suture, while in Hawaiian species the clypeus is set off from the frons by an abrupt change in elevation.

Biology. Nothing has been reported about the biology of the species of this genus, other than they are found under bark.

Distribution. Confined to the New World and Hawaii. It is represented in the New World by four species in California and Central America, and one in Florida and the Antilles. The six species recorded from the Hawaiian Islands seem to be closely related to the New World species, but probably are deserving of a separate genus.

Parandrita permixtus (Grouvelle) new combination (fig. 82, map 37)

Laemophloeus permixtus Grouvelle 1912b:303

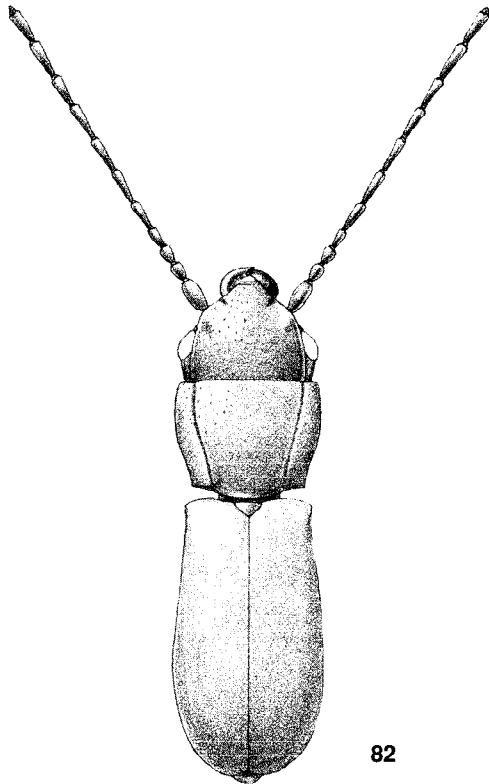
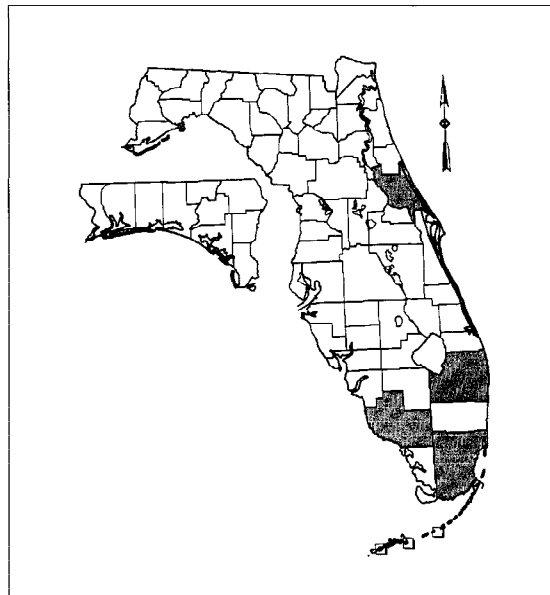


Figure 82. *Parandrita permixtus* (Grouvelle), habitus.

Diagnosis. Length 1.2mm - 1.5mm. Adults of this species can be distinguished from all other Florida Laemphlocinae by the following combination of character states: closed procoxal cavities; head almost as large as pronotum, with basal angles of epistome foveate. From adults of other described species of *Parandrita*, those of *permixtus* can be distinguished by their elongate and filiform antennae.

Taxonomic notes. Although superficially resembling adults of *Placonotus* species, especially those of the *pallentipennis* species subgroup (see Thomas 1984c), I am assigning *permixtus* to *Parandrita* LeConte and Horn. It differs from species previously assigned to that genus by its elongate, filiform antennae. Like those of other species of *Parandrita*, adult *permixtus* possess a large head and the basal angles of the epistome are foveate. As in other New World *Parandrita*, the epistomal suture is visible through the cuticle but is not marked by any external structure except for the foveae,



Map 37. Florida distribution of *Parandrita permixtus* (Grouvelle).

which seem to represent the basal angles of the suture and are perhaps remnants of an external groove.

Biology. Nothing has been recorded about its biology. Most specimens I have seen were collected at ultraviolet light traps, in flight intercept traps, or in ethanol-baited vane traps. There are two specimens in the USNM that were intercepted at Brownsville, Texas under the bark of mango wood from Cuba.

Distribution. It was described from Guadeloupe, and I have seen specimens from Cuba, U.S. Virgin Islands (St. Croix and St. Thomas), Panama, and Florida. In Florida, it has been collected only in the eastern and southern part of the state.

Specimens examined. More than 90, of which 66 were from Florida, representing 38 collection records (for complete data see Appendix).

Genus *Phloeolaemus* Casey new status

Phloeolaemus Casey, 1916:127 [as subgenus of *Laemphloeus*]

Typespecies. *Laemphloeus immersus* Sharp [by original designation and by monotypy].

Diagnosis. The combination of the following character states is diagnostic for this genus: epistomal suture not

marked with transverse groove; mandibles of males often with lateral or ventral tooth; procoxal cavities wide open; sublateral lines of pronotum grooved; oblique impression often present between sublateral line and lateral margin; elytra with only third cell developed; intercoxal process of sternum III broadly rounded anteriorly.

Taxonomic notes. Cascy (1916) described *Phloeolaemus* as a subgenus of *Laemophloeus*, and it is here raised to generic rank. Its relationships are by no means certain, but *Phloeolaemus* may be most closely allied to *Placonotus* and *Parandrita*, with possible affinities also with the African *Mariolaemus* Lefkovitch.

Biology. Except for the observations reported below nothing is known about the biology of the members of this genus.

Distribution. The type species, *P. immersus*, is known only from a single specimen collected in Panama at Volcán de Chiriquí. Three species occur in the United States; one is restricted to Florida, one in the Gulf States, and one in Arizona. Other species, which appear

to be related to either *P. immersus* or *P. chamaeropsis*, occur throughout the Neotropics.

***Phloeolaemus chamaeropsis* (Schwarz)
new combination
(fig. 83, map 38)**

Laemophloeus chamaeropsis Schwarz, 1878:127

Diagnosis. Length 1.7mm - 2.0mm. The relatively broad body; bright orange head and pronotum and pale elytra; and mandible with a lateroventral tooth in the male (fig. 83) distinguish this species.

Taxonomic notes. It is one of many laemophloeines that were described as members of *Laemophloeus* (*sens. lat.*) (many of which are still assigned to that genus because of the lack of taxonomic interest in this group in the New World). I have examined the type specimen of *Phloeolaemus immersus* (Sharp), and consider that *chamaeropsis* is more closely related to that species than to any species of *Laemophloeus* (*sens. str.*). There appear to be two major groups of species that would be encompassed by including *chamaeropsis* in the same genus as *immersus*: a group of species with narrow-bodied adults having unmodified mandibles in the male, but highly complex genital claspers, as in *immersus*, and a group of species with relatively broad-bodied adults having modified mandibles in the male

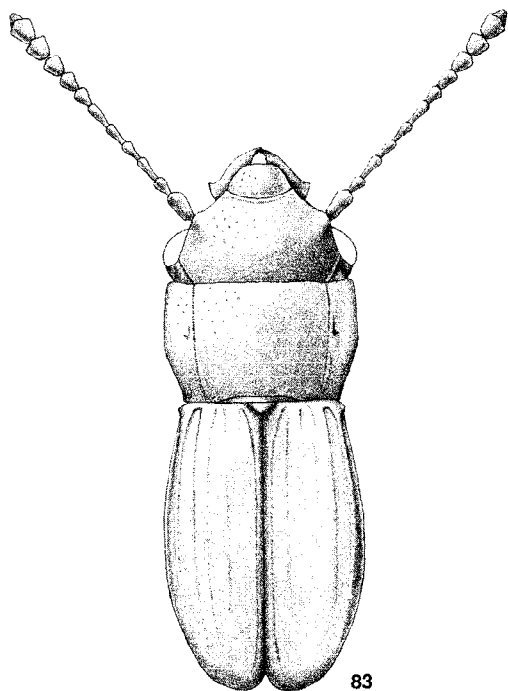
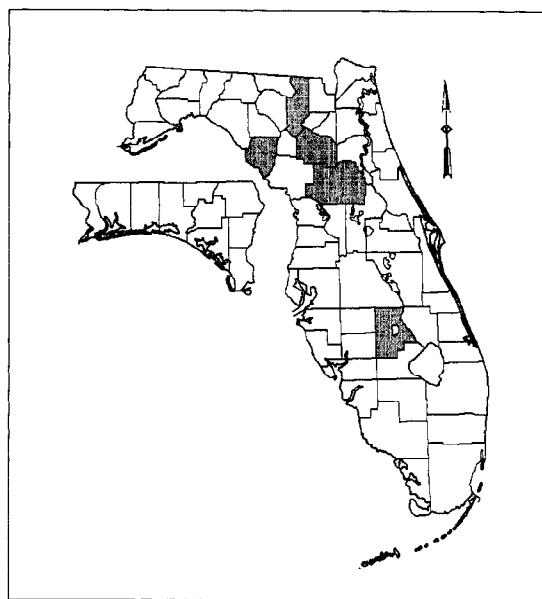


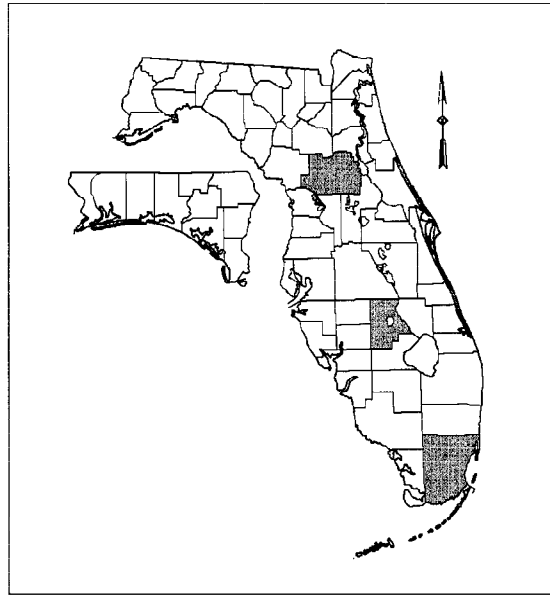
Figure 83. *Phloeolaemus chamaeropsis* (Schwarz), habitus.



Map 38. Florida distribution of *Phloeolaemus chamaeropsis* (Schwarz).

and sternum VIII not modified as genital claspers in the male, as in *chamaeropsis*. Further study may prove that this latter group is deserving of generic rank.

Biology. Nothing has been recorded on the biology of this species and the reason for the specific epithet is unknown; I know of no association of it with palmettos. I have collected adults and larvae of this species most commonly on sweet gum (*Liquidambar styraciflua* L.), especially on freshly downed wood where the sap was still fermenting. I have also collected it on freshly cut oaks (*Quercus* spp.) which had a strong odor of fermentation about them, and on which the outer surface of the sapwood had not yet turned dark. Adults are occasionally collected in ultraviolet light traps. The function of the laterally expanded mandibles in the male is unknown.



Map 39. Florida distribution of *Phloeolaemus quinquearticulatus* (Grouvelle).

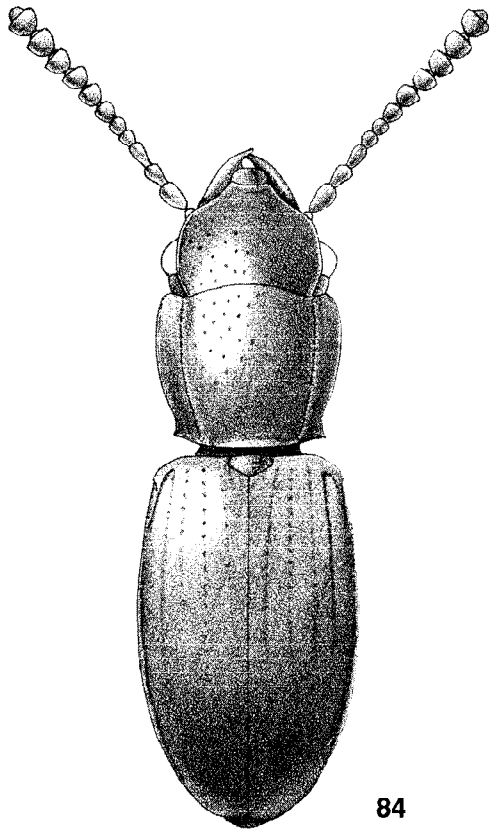
Distribution. No locality was given in the description (Schwarz 1878:359), but it was recorded from Enterprise (Volusia Co.) later in the same paper (Schwarz 1878:446). Casey (1884) recorded it from the "Southern States." I have seen specimens from Florida, Alabama, Louisiana, North Carolina, and Texas. In Florida specimens have been collected from Highlands County in the south to Columbia County in the north; it is likely that it occurs throughout the state.

Specimens examined. Thirty-three, of which 28 were from Florida, representing 18 collection records (for complete data, see Appendix).

Phloeolaemus quinquearticulatus
(Grouvelle)
new combination
(fig. 84, map 39)

Laemophloeus quinquearticulatus, Grouvelle 1896:201

Diagnosis. Length, 1.5mm - 1.9mm. The following combination of character states distinguishes this species from *chamaeropsis*: antennomeres VII-XI broad, forming a distinct, apparently five-segmented club (fig. 84); color dark reddish to piceous, elytra often darker apically; male without tooth-like dorsoventral structure on mandibles.



84

Figure 84. *Phloeolaemus quinquearticulatus* (Grouvelle), habitus.

Taxonomic notes. Nothing has been published on this species since the original description (Grouvelle 1896) except for a report on its occurrence in Florida (Thomas and Peck 1991). Like *chamaeropsis*, this species may not be strictly congeneric with *immersus* but it is certainly closer to *immersus* than to any members of *Laemophloeus* (*sens. str.*). The specific identity of the Florida specimens is open to some doubt also, since the type(s) of *Laemophloeus quinquearticulatus* could not be located in the MNHN (N. Berti, pers. comm.). However, the Florida specimens agree well with the original description and illustration (Grouvelle 1896).

Biology. Nothing has been reported on the biology of this species. Florida specimens have been collected at blacklight, in flight intercept traps, bred from burned oak, and beaten from burned trees, along with *Lathropus* spp. and the colydiid, *Acolobicus erichsoni*. The

very dark coloration of *P. quinquearticulatus* may be an adaptation to that particular habitat. I have also collected it from under the bark of a recently dead *Quercus laevis*.

Distribution. Described from "Blumenau, Brésil (province de Rio de Janeiro) [now in the state of Santa Catarina]". In Florida, it has been collected from Dade County north to Wakulla County. I have seen a single specimen in the Mississippi Entomological Museum with the following data: "ALA. Baldwin Co. Bon Secour N. W. Refuge T9S,R3E, sec. 19 7 Sept. 1988 L. Corpus,T. Schieffer"/"Blacklight trap".

Specimens examined. Eighteen, all but one from Florida, representing 13 collection records (for complete data of Florida specimens, see Appendix).

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APPENDIX

Silvanidae

Uleiotinae

Cryptamorpha desjardinsii (Guérin)

1	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	12-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
4	Dade	Camp Mahachie nr Matheson Hammock	1-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Coral Gables	6-III-1959	C.F. Dowling Jr.	<i>Bambusa vulgaris</i>	FSCA
2	Dade	Gouids	18-IV-1983	M.C. Thomas & J.H. Frank		FSCA
4	Dade	Miami	29-III-1978	P. Chobrdá	<i>Saccharum officinarum</i>	FSCA
1	Dade	Miami	15-VII-1983	L. Chang	orchid	FSCA
1	Palm Beach	Delray Beach	2-III-1977	K. Stolley	<i>Dracaena marginata</i>	FSCA
5	Volusia	Plymouth	12-VII-1983	D. Phelps	<i>Spathiphyllum</i>	FSCA

Silvaninae

Silvanus muticus Sharp

2	Alachua	Archer	5-VI-1982	M.C. Thomas	under bark of dead <i>Quercus</i> sp.	FSCA
2	Alachua	Pierce's Homestead, W. of Gvl.	13-III-1977	W.M. Pierce	blacklight trap	FSCA
3	Columbia	O'Leno State Park	1-IV-1984	M.C. Thomas		FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dixie	3.5mi. N. Old Town Rt. 349	13-I-1980	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town Rt. 349	3-V-1979	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town Rt. 349	5-V-1979	M.C. Thomas		FSCA
11	Dixie	Pine Landing	23-VII-1978	M.C. Thomas		FSCA
2	Highlands	Highlands Hammock st. Pk.	16-IV-1983	M.C. Thomas		FSCA
1	Highlands	Highlands Hammock st. Pk.	20-IV-1983	M.C. Thomas		FSCA
1	Jackson		4-VIII-1954	F.W. Mead	at light	FSCA
1	Levy	Manatee Springs State Park	22-V-1983	M.C. Thomas		FSCA
1	Liberty	Torrey State Park	4-VII-1965	H.V. Weems Jr.	blacklight trap	FSCA
4	Liberty	Torrey State Park	4-IX-1983	M.C. Thomas		FSCA
1	Marion	Juniper Springs	2-X-1977	M.C. Thomas	under bark of hardwood log	FSCA
2	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	28-XI-1976	M.C. Thomas		FSCA

Silvanus planatus Germar

14	Alachua		26-I-1958	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
1	Alachua	Gainesville	5-V-1964	R.E. White		FSCA
2	Clay	Camp Crystal	31-III-IV-1982	M.C. Thomas		FSCA
12	Columbia		16-II-1960	H.V. Weems Jr.	under bark of dead <i>Quercus laevis</i>	FSCA
1	Columbia	O'Leno State Park	1-IV-1984	M.C. Thomas		FSCA
7	Dixie	3.5mi. N. Old Town Rt. 349	13-I-1980	M.C. Thomas		FSCA
5	Dixie	3.5mi. N. Old Town Rt. 349	27-IV-1979	M.C. Thomas		FSCA
8	Dixie	3.5mi. N. Old Town Rt. 349	5-IV-1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragosó	blacklight trap	FSCA
4	Dixie	3.5mi. N. Old Town Rt. 349	24-V-1979	M.C. Thomas		FSCA
6	Duval		7-I-1956	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
1	Marion	Ocala	27-X-1977	M.C. Thomas	under bark of turkey oak	FSCA
1	Marion	Ocala	11-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	8-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA
1	Marion	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas		FSCA
9	Putnam		6-I-1960	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA

Cathartosilvanus imbellis (LeConte)

12	Alachua	Levy Co. line at SR 24	19-II-1983	M.C. Thomas	under bark of <i>Quercus</i> sp.	FSCA
2	Columbia	O'Leno State Park	10-V-1981	M.C. Thomas		FSCA
1	Dixie	Pine Landing	23-VII-1978	M.C. Thomas		FSCA
1	Highlands	Archbold Biol. Sta., Lake Placid	10-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	5-II-1986	M. Deyrup	window trap trails 1 & 2 SSO	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	7-II-1986	M. Deyrup	window trap burn area	ABSC
1	Liberty	Torrey State Park	4-IX-1983	M.C. Thomas		FSCA
2	Marion	Ocala	6-I-1977	M.C. Thomas		FSCA
1	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Village of Rainbow Springs	13-XI-1982	M.C. Thomas		FSCA
19	Marion	Village of Rainbow Springs	20-XII-1981	M.C. Thomas		FSCA
2	Marion	Village of Rainbow Springs	24-XII-1983	M.C. Thomas		FSCA
14	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA

Cathartosilvanus imbellis (LeConte) (continued)

1	Manon	Village of Rainbow Springs	31-V-1982	M.C. Thomas		FSCA
1	Manon	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas		FSCA
3	Okaloosa	4.5mi N Holt, Blackwater R. St. For	15-16-VI-1978	L. Stange		FSCA

Silvanoprus scuticollis (Walker)

1	Alachua	Gainesville	12-V-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	16-VII-1978	M.C. Thomas		FSCA
1	Alachua	Gainesville	30-VII-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	26-VIII-1978	M.C. Thomas	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
4	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	12-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
10	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	15-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	14-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Matheson Hammock	14-VI-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Dade	Perrine	24-VII-1976	M.C. Thomas	blacklight trap	FSCA
1	Dade	Redlands Fruit & Spice Park	26-I-1978	R. Clark	blacklight trap	FSCA
1	Highlands	Archbold Biol. Sta., Lake Placid	14-II-1986	M. Deyrup	window trap burn area	ADSC
1	Indian River	South of Vero Beach	28-VIII-1975	J.H. Frank	blacklight trap	FSCA
2	Manon	Ocala	26-VIII-1977	M.C. Thomas	blacklight trap	FSCA
2	Manon	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Manon	Ocala	7-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Manon	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas	blacklight trap	FSCA

Ahasverus advena (Waltl)

1	Alachua	Gainesville	30-VII-1978	M.C. Thomas	blacklight trap	FSCA
4	Dade	Miami	12-VI-1968	S.E. Simpson	in lumber warehouse	FSCA
2	Dade	Miami (intercepted ex Bahamas)	22-VI-1957	R.A. Buchanan	in straw jackets	FSCA
3	Manon	Ocala	24-X-1966	W.O. Robertson	in hay	FSCA
1	Manon	Ocala	20-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Manon	Village of Rainbow Springs	13-XI-1982	M.C. Thomas		FSCA
1	Manon	Village of Rainbow Springs	5-V-1982	M.C. Thomas		FSCA
1	Manon	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas		FSCA
1	Monroe	Stock Is.	29-IV-1968	J. Stibbick	under debris	FSCA
1	Pinellas	Dunedin	27-III-1913	W.S. Blatchley		FSCA

Ahasverus rectus (LeConte)

1	Alachua		21-VII-1954	H.V. Weems Jr.	at light	FSCA
2	Alachua		15-VIII-1955	H.V. Weems Jr.	at light	FSCA
1	Alachua		27-VIII-1954	H.V. Weems Jr.	at light	FSCA
1	Alachua		6-VIII-1955	H.V. Weems Jr.	at light	FSCA
3	Alachua		25-IX-1955	F.W. Mead	at light	FSCA
5	Alachua	Gainesville	25-I-1972	R.E. Woodruff & P.M. Choate	pig dung traps	FSCA
1	Alachua	Gainesville	4-I-1927	A.N.T.	Berlese/wire grass	FSCA
3	Alachua	Gainesville	16-II-1979	M.C. Thomas		FSCA
1	Alachua	Gainesville	15-IV-1939	G.B. Merrill		FSCA
1	Alachua	Gainesville	11-V-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	13-V-1968	R.E. Woodruff	blacklight trap	FSCA
3	Alachua	Gainesville	19-V-1960	K.A. Noegel	at light	FSCA
1	Alachua	Gainesville	8-V-1939	G.B. Merrill		FSCA
2	Alachua	Gainesville	23-25-VI-1978	F. Mead	blacklight trap	FSCA
4	Alachua	Gainesville	30-VI-1978	M.C. Thomas		FSCA
12	Alachua	Gainesville	30-VI-1978	M.C. Thomas		FSCA
2	Alachua	Gainesville	4-VI-1959	H.V. Weems Jr.	at light	FSCA
2	Alachua	Gainesville	5-VI-1959	H.V. Weems Jr.	at light	FSCA
27	Alachua	Gainesville	16-VII-1978	M.C. Thomas		FSCA
1	Alachua	Gainesville	26-VIII-1978	M.C. Thomas	blacklight trap	FSCA
2	Alachua	San Felasco Hammock	29-III-1983	M.C. Thomas		FSCA
3	Brevard	Indialantic	25-XII-1977	M.C. Thomas		FSCA
1	Collier	Collier-Seminole State Park	4-IV-1964	R.H. Arnett Jr. & E.R. VanTassel		FSCA
2	Dade		V-1949			FSCA
4	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
12	Dade	Camp Mahachie nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
5	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	16-VIII-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	23-VIII-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	14-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
6	Dade	Castellow Hammock	17-IV-1972	R.M. Baranowski	blacklight trap	FSCA
8	Dade	Everglades N.P., Long Pine Key	31-VII-9-XI-	S. & J. Peck	pineland forest, malaise-FIT	SBPC
1	Dade	Florida City	26-IV-1982	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Dade	Long Pine Key	16-III-1977	D. Platt & E. Riley	blacklight trap	FSCA
1	Dade	Matheson Hammock	14-VI-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
3	Dade	Miami	25-V-1960	P.E. Briggs	blacklight trap	FSCA
12	Dade	Miami	VI-1957	C.F. Dowling Jr.		FSCA

Ahasverus rectus (LeConte) (continued)

6	Dade	Miami	3-VIII-1972	R.E. Woodruff		FSCA
1	Dade	USDA Subtropical Res. Sta.	9-VI-1974	J.B. Heppner	blacklight trap	FSCA
17	Dixie	3.5mi. N. Old Town Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
3	Gadsden	Quincy	23-VIII-1971	T.M. Neal	pitfall trap	FSCA
1	Highlands	Archbold Biol. Sta.	14-V-1974	J.E. Carrel et al.	blacklight trap	FSCA
1	Highlands	Archbold Biol. Sta., Lake Placid	12-III-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	24-III-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Lake Placid	2-15-II-1970	V. Roth		FSCA
2	Highlands	Lake Placid	19-III-1963	M.H. Muma		FSCA
2	Highlands	Lake Placid	7-VI-1963	M.H. Muma		FSCA
1	Indian River	South of Vero Beach	19-II-1975	J.H. Frank	blacklight trap	FSCA
1	Indian River	South of Vero Beach	15-VII-1976	M.C. Thomas	blacklight trap	FSCA
1	Indian River	Vero Beach	7-I-1976	M.C. Thomas	at light	FSCA
1	Indian River	Vero Beach	31-XII-1974	M.C. Thomas	at light	FSCA
1	Indian River	Vero Beach	25-V-1964	W.L. Bidlmayer		FSCA
1	Indian River	Vero Beach	8-V-1975	M.C. Thomas	at light	FSCA
2	Indian River	Vero Beach	8-V-1975	M.C. Thomas	at light	FSCA
4	Lee	Ft. Myers	25-VII-1975	V.W. Yingst	in light bowl	FSCA
1	Leon	Tall Timbers Res. Sta.	27-XI-1968	W. Baker		FSCA
4	Leon	Tall Timbers Res. Sta.	1-IX-V-1972	D. Harns	pitfall	FSCA
2	Leon	Tall Timbers Res. Sta.	9-15-V-1972	D. Harns	pitfall	FSCA
2	Liberty	Torrey State Park	4-VII-1965	H.V. Weems Jr.	blacklight trap	FSCA
1	Liberty	Torrey State Park	3-IX-1963	M.C. Thomas		FSCA
3	Liberty	Torrey State Park	4-IX-1963	M.C. Thomas		FSCA
1	Marion	Juniper Springs	25-VII-1960	H.A. Denmark	debris under <i>Pinus clausa</i>	FSCA
1	Marion	Ocala	12-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	13-VI-1977	M.C. Thomas	blacklight trap	FSCA
3	Marion	Ocala	20-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	25-VIII-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Ocala	26-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	4-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	15-IX-1977	M.C. Thomas	blacklight trap	FSCA
9	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas	blacklight trap	FSCA
3	Marion	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas		FSCA
1	Monroe	Dania Honda State Park	1-IV-VII-1973	R.E. Woodruff	blacklight trap	FSCA
6	Monroe	Dry Tortugas (Garden Key)	10-VII-1963	H.A. Denmark	Casuarina sp.	FSCA
3	Monroe	Fat Deer Key	28-16-XI-1985	S. & J. Peck	hardwood hammock malaise-FIT	SBPC
8	Monroe	Key Largo, Pennekamp St. Pk.	16 XI 24-II-8586	S. & J. Peck	hammock for-FIT	SBPC
11	Monroe	Key Largo, Pennekamp State Park	2-VI-26-VIII-1986	S. & J. Peck	hammock for, malaiseFIT-86-8	SBPC
1	Monroe	Stock Island	25-IV-1963	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Stock Island	30-IV-1964	F.A. Buchanan	blacklight trap	FSCA
2	Monroe	Stock Island	11-VI-1964	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Stock Island	8-VII-1964	F.A. Buchanan	blacklight trap	FSCA
4	Monroe	Sugarloaf Key	5-VIII-19-XI-1985	S. & J. Peck	hardwood hammock malaise-FIT	SBPC
1	Monroe	Upper Key Largo	31-III-1976	M.C. Thomas	blacklight trap	FSCA
1	Monroe	Upper Key Largo	1-IV-1976	M.C. Thomas	blacklight trap	FSCA
12	Monroe	Upper Key Largo	23-VII-1976	M.C. Thomas	berlese/forest floor litter	FSCA
1	Monroe	Vacas Key, Marathon	6-XI-1984	S. & J. Peck	hammock litter	SBPC
1	Orange	Winter Park	11-VI-1938		in house	FSCA
2	Polk	Lake Alfred	7-14-III-1963	M.H. Muma		FSCA
7	Polk	Winter Haven	5-VIII-1960	J. Hayward	blacklight trap	FSCA
1	Santa Rosa	Blackwater R. St. For., Lake Carr	16-VIII-1971	H.V. Weems Jr.	at light	FSCA
1	Sarasota	Myakka Riv. State Park	23-VI-1965	C.W. O'Brien	blacklight trap	FSCA

Cathartus quadricollis (Guérin)

12	Alachua		1-XI-1954	H.A. Denmark	on <i>Carya ilinoensis</i>	FSCA
1	Alachua		12-IV-1954	H.V. Weems Jr.	at light	FSCA
3	Alachua		27-VIII-1954	H.V. Weems Jr.	at light	FSCA
1	Alachua		3-VIII-1954	H.M. Van Peit	on <i>Zea mays</i>	FSCA
1	Alachua	Gainesville	27-I-1979	G.B. Edwards	fallen hickory nut	FSCA
2	Alachua	Gainesville	1-X-1958	R.E. Woodruff	at light	FSCA
11	Alachua	Gainesville	6-X-1947	W.E. Stokes		FSCA
30	Alachua	Gainesville	5-XII-1917	Berger	corn	FSCA
2	Alachua	Gainesville	30-IV-1964	J.W. Perry	blacklight trap	FSCA
1	Alachua	Gainesville	19-V-1960	K.A. Noegel	at light	FSCA
1	Alachua	Gainesville	25-V-1948	H.V. Weems Jr.	feeding on squash	FSCA
1	Alachua	Gainesville	1-VI-1964	J.W. Perry	blacklight trap	FSCA
1	Alachua	Gainesville	10-VI-1964	J.W. Perry	blacklight trap	FSCA
1	Alachua	Gainesville	13-VII-1948	L.C. Kurtert	at light	FSCA
3	Alachua	Gainesville	20-VII-1964	J.W. Perry	blacklight trap	FSCA
1	Alachua	Gainesville	23-VII-1958	R.E. Woodruff	at light	FSCA
2	Alachua	Gainesville	28-VII-1964	J.W. Perry	blacklight trap	FSCA
9	Dade	Homestead, AREC	18-IV-1963	M.C. Thomas & J.H. Frank		FSCA
2	Dade	Naranja	19-VIII-1964	J.H. Knowles	ex <i>Cattleya mahlor</i>	FSCA
1	Dixie	3.5mi. N. Old Town Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
1	Liberty	Torrey State Park	4-VII-1965	H.V. Weems Jr.	blacklight trap	FSCA
1	Marion	Ocala	17-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	15-IX-1977	M.C. Thomas	blacklight trap	FSCA

Cathartus quadricollis (Guérin) (continued)

1	Marion	Ocala	24-IX-1977	M.C. Thomas	blacklight trap	FSCA
4	Manon	Ocala	7-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Osceola	St. Cloud	14-XII-1918	Mrs. Kloos	citrus	FSCA
2	Polk	Lakeland	29-V-1977	M.C. Thomas & R. Raymond		FSCA
3	Washington	5mi E. Chipley	31-VIII-1960	W.C. Rhoades	blacklight trap	FSCA

Passandridae

Catogenus rufus (Fabricius)

1	Alachua		-X-1966	L.A. Hetrick		FSCA
1	Alachua		30-IV-1947			FSCA
1	Alachua	Gainesville	11-V-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	2-VI-1978	M.C. Thomas		FSCA
1	Alachua	Gainesville	23-25-VI-1978	F. Mead	blacklight trap	FSCA
1	Alachua	Gainesville	28-VIII-1972	J.B. Heppner	blacklight	FSCA
1	Collier		1-XII-1955	H.V. Weems Jr.	under bark of <i>Pinus</i>	FSCA
1	Dade		V-1955	D.R. Paulson		FSCA
1	Dade	2 mi. SW of Hallandale	19-VI-1962	H.V. Weems Jr.	under bark of dead <i>Quercus virgin</i>	FSCA
1	Dade	Coral Gables	14-IV-1948			FSCA
1	Dade	Everglades NP, 1.5km W Royal Palm	28-VII-15-XI-1985	S. & J. Peck	hardwood hammock for. malaise-FIT	SBPC
1	Dade	Everglades NP, Long Pine Key, pinelands	8-VI-28-VIII-1986	S. & J. Peck	malaise FIT	SBPC
3	Dade	Everglades NP, Long Pine Key, pinelands	8-VI-28-VIII-1986	S. & J. Peck	malaise FIT	SBPC
2	Dade	Perrine	8-IX-V-1977	Don Urban	blacklight trap	FSCA
2	Dade	Perrine	2-VI-1976	M.C. Thomas	blacklight trap	FSCA
1	Dade	Richmond	3-XI-1950			FSCA
2	Dade	Richmond	10-IV-1948			FSCA
2	Dade	Richmond	V-1948			FSCA
2	Dade	Subtropical Exp. Sta.	19-VI-1962	H.V. Weems Jr.	dead avocado stump	FSCA
1	Highlands		10-XI-1952	D.R. Paulson		FSCA
1	Highlands	Archbold Biol. Sta.	19-III-1968	C.E. White		FSCA
1	Highlands	Archbold Biol. Sta.	13-17-IV-1981	N.M. Downie		FSCA
1	Highlands	Highlands Hammock State Park	12-I-1958	H.V. Weems Jr.	under bark of <i>Pinus</i>	FSCA
1	Highlands	Highlands Hammock State Park	15-XII-1957	H.V. Weems Jr.	under bark of <i>Pinus</i>	FSCA
1	Indian River	South of Vero Beach	4-XI-1974	M.C. Thomas		FSCA
2	Indian River	South of Vero Beach	6-II-1977	M.C. Thomas & J.H. Frank	under bark of <i>Pinus ciliotti</i>	FSCA
1	Indian River	South of Vero Beach	12-IX-1974	M.C. Thomas		FSCA
1	Marion	Ocala	1-I-1978	M.C. Thomas		FSCA
2	Marion	Ocala	11-XI-1977	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	22-III-1977	M.C. Thomas		FSCA
1	Monroe	Big Pine Key	2-V-1963	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Big Pine Key, Watson's Hammock	3-V-3-VIII-1985	S. & J. Peck	malaise FIT, hardwood hammock	SBPC
1	Monroe	Big Pine Key	1-31-v-1985	S. & J. Peck	mangrove-hardwood transition, malaise	SBPC
1	Monroe	Key Largo	1-I-1967	H.V. Weems Jr.	under bark of dead tree	FSCA
1	Monroe	Key Largo	14-I-1962	B.K. Dozier	dead <i>Lysitoma</i>	FSCA
32	Monroe	Key Largo	26-III-1957	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Key Largo	7-VI-1960	H.V. Weems Jr.		FSCA
1	Monroe	Key Largo, Pennekamp St. Pk.	16-XI-24-II-85-86	S. & J. Peck	hammock for FIT	SBPC
1	Monroe	Key Largo, Pennekamp St. Pk.	22-II-2-VI-1986	S. & J. Peck	hammock for malaiseFIT-86-7	SBPC
1	Monroe	Little Torch Key	7-V-1961	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Plantation Key	9-IV-1968	H.V. Weems Jr.	blacklight trap	FSCA
1	Monroe	Stock Island	11-V-1961	R.E. Woodruff		FSCA
2	Monroe	Upper Key Largo	30-V-1976	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Monroe	Upper Key Largo	23-VII-1976	M.C. Thomas	blacklight trap	FSCA
2	St. Lucie	Ft. Pierce, N. A1A beachside	1-III-1983	K. Hibbard	<i>Casuarina</i> sp.	FSCA

Taphrosclidia linearis (LeConte)

1	Alachua	Gainesville	2-III-1978	R.E. Woodruff	at light	FSCA
1	Dade	Perrine	5-VI-V-1977	Don Urban	blacklight trap	FSCA
2	Manon	Ocala	28-III-1977	M.C. Thomas	blacklight trap	FSCA
2	Manon	Ocala	29-III-1977	M.C. Thomas	blacklight trap	FSCA
3	Marion	Ocala	29-III-1977	M.C. Thomas	blacklight trap	FSCA
5	Marion	Ocala	31-III-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	2-IV-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	4-IV-1977	M.C. Thomas	blacklight trap	FSCA
3	Marion	Ocala	4-IV-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	20-VII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	28-VII-1977	M.C. Thomas	blacklight trap	FSCA

Laemophloeinae

Lathropus pictus Schwarz

1	Dade	S. Miami, Deering Estate Park	1-VI-25-VIII-1986	S. & J. Peck	forest, young hammock, malaise-FIT	SBPC
4	Dade	Camp Mahachie nr Matheson Hammock	--	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachie nr Matheson Hammock	27-iv-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
8	Dade	Camp Mahachie nr Matheson Hammock	12-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA

Lathropus pictus Schwarz (continued)

5	Dade	Camp Mahachie nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
11	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	15-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	14-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	6-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Highlands	Highlands Ham. State Park	5-VII-1975	Thomas & Frank	under bark of dying citrus	FSCA
5	Palm Beach	Jupiter	26-V-1982	D. Harp	in dead <i>Acacia auriculiformis</i>	FSCA

Lathropus vernalis Casey

2	Highlands	Archbold Biol. Sta., Lake Placid	31-I-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
4	Highlands	Archbold Biol. Sta., Lake Placid	14-II-1986	M. Deyrup	emerged from fire-killed <i>Quercus chapmani</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	26-II-1987	M. Deyrup	emerged indoors from twig of <i>Pinus elliotii</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	3-II-1986	M. Deyrup	window trap near laurel oak main grounds	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	4-II-1986	M. Deyrup	window trap laurel oak area E of main building	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	12-III-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	14-V-1986	M. Deyrup	on fire killed oak	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	24-VIII-1986	W. Suter	at light	ABSC
2	Marion	Game Commission Camp, Ocala Nat. For.	7-21-1986	M. Deyrup	emerged indoors from twig of <i>Pinus elliotii</i>	ABSC
2	Alachua	Gainesville	17-III-1984	M.C. Thomas	<i>Pinus</i>	FSCA
3	Dade	Camp Mahachie nr Matheson Hammock		M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	6-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dixie	3.5mi N. Old Town, Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
1	Highlands	Highlands Ham. State Park	23-IV-1982	M.C. Thomas		FSCA
1	Indian River	Fellsmere	4-VII-1976	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	2-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	26-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	27-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	21-VII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	17-VIII-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Village of Rainbow Springs	31-V-1982	M.C. Thomas	blacklight trap	FSCA
6	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas	blacklight trap	FSCA
1	Monroe	Plantation Key	8-IV-1966	F.W. Mead	blacklight trap	FSCA
3	Monroe	Upper Key Largo	1-IV-1976	M.C. Thomas	blacklight trap	FSCA
1	Monroe	Upper Key Largo	3-IV-1976	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Putnam	2mi. SW Interlachen	5-VI-X-1971	M. Graham & R.E. Woodruff	blacklight trap	FSCA

Cryptolestes punctatus (LeConte)

3	Alachua		30-I-1954	H.V. Weems Jr.	under bark of <i>Pinus</i>	FSCA
5	Alachua	Levy Co. line at SR 24	19-II-1983	M.C. Thomas	under bark of <i>Quercus</i> sp.	FSCA
10	Alachua	San Felasco Hammock	20-II-1983	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
2	Alachua	San Felasco Hammock	4-II-1983	M.C. Thomas		FSCA
21	Alachua	San Felasco Hammock	25-IX-1983	M.C. Thomas		FSCA
3	Clay	Camp Crystal	31-III-1-IV-1982	M.C. Thomas		FSCA
1	Columbia	O'Leno State Park	1-IV-1984	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town	23-VII-1978	M.C. Thomas		FSCA
13	Dixie	3.5mi. N. Old Town Rt. 349	13-I-1980	M.C. Thomas		FSCA
4	Duval		7-I-1956	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
5	Marion	Ocala	1-I-1978	M.C. Thomas		FSCA
1	Marion	Ocala	1-X-1977	M.C. Thomas		FSCA
3	Marion	Ocala	15-X-1977	M.C. Thomas		FSCA
6	Marion	Ocala	9-X-1977	M.C. Thomas		FSCA
1	Marion	Ocala	11 XII-1976	M.C. Thomas		FSCA
1	Marion	Ocala	21-VII-1977	M.C. Thomas	blacklight trap	FSCA
6	Marion	Ocala	10-IX-1977	M.C. Thomas	under bark of hardwood log	FSCA
1	Marion	Ocala	25-IX-1977	M.C. Thomas		FSCA
18	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA
2	Marion	Village of Rainbow Springs	4-VII-1982	M.C. Thomas		FSCA
1	Marion	Village of Rainbow Springs	20-VIII-1983	M.C. Thomas		FSCA
25	Putnam	Lake Como	22-X-1977	M.C. Thomas		FSCA
1	Putnam	Lake Como	24-X-1977	M.C. Thomas		FSCA

Cryptolestes unicolornis (Reitter)

1	Alachua		17-XI-1956	H.V. Weems Jr.	under bark	FSCA
1	Alachua	San Felasco Hammock	14-III-1982	M.C. Thomas		FSCA
1	Clay	Camp Crystal	31-III-1-IV-1982	M.C. Thomas		FSCA
2	Columbia		18-II-1960	H.V. Weems Jr.	under bark of dead <i>Quercus laevis</i>	FSCA
2	Columbia	O'Leno State Park	10-V-1981	M.C. Thomas		FSCA
3	Dixie	3.5mi. N. Old Town Rt. 349	13-I-1980	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town Rt. 349	5-IV-1980	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
1	Dixie	3.5mi. N. Old Town Rt. 349	24-V-1979	M.C. Thomas		FSCA

Cryptolestes unicoloris (Reitter) (continued)

24	Dixie	3.5mi. N. Old Town Rt. 349	24-V-1979	M.C. Thomas		FSCA
1	Highlands	Archbold Biol. Sta., Lake Placid	28-II-1987	M. Deyrup	window trap trails 1 & 2	ABSC
2	Liberty	Torreya State Park	13-X-1979	M.C. Thomas		FSCA
1	Marion	Ocala	11-XI-1977	M.C. Thomas		FSCA
1	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	15-VII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA

Laemophloeus biguttatus Say

1	Alachua		26-I-1959	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
1	Alachua		21-VI-1959	H.A. Denmark	at light	FSCA
1	Alachua	Gainesville	3-XII-1978	M.C. Thomas	blacklight trap	FSCA
2	Alachua	Gainesville	20-II-1982	M.C. Thomas		FSCA
1	Alachua	Gainesville	21-III-1979	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	28-III-1939	G.B. Merrill		FSCA
1	Alachua	Gainesville	29-III-1939	G.B. Merrill		FSCA
1	Alachua	Gainesville	30-III-1979	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	31-III-1960	R.E. Woodruff	at light	FSCA
1	Alachua	Gainesville	10-IV-1963	E.M. Collins Jr.	blacklight trap	FSCA
1	Alachua	Gainesville	15-IV-1939	G.B. Merrill		FSCA
1	Alachua	Gainesville	23-IV-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	3-IV-1939	G.B. Merrill		FSCA
1	Alachua	Gainesville	4-IV-1979	M.C. Thomas	blacklight trap	FSCA
5	Alachua	Gainesville	13-V-1968	R.E. Woodruff	blacklight trap	FSCA
2	Alachua	Gainesville	23-V-1960	R.E. Woodruff	at light	FSCA
1	Alachua	Gainesville	5-VI-1959	H.V. Weems Jr.	at light	FSCA
1	Alachua	Gainesville	2-VII-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	20-VIII-1964	J.W. Perry	blacklight trap	FSCA
1	Alachua	Gainesville	15-17-IX-1972	F.W. Mead	blacklight trap	FSCA
3	Alachua	San Felasco Hammock	30-I-1983	M.C. Thomas		FSCA
2	Alachua	San Felasco Hammock	4-II-1983	M.C. Thomas		FSCA
2	Alachua	San Felasco Hammock	6-II-1983	M.C. Thomas		FSCA
2	Columbia	O'Leno State Park	10-V-1982	M.C. Thomas		FSCA
97	Dixie	3.5mi. N. Old Town Rt. 349	13-I-1980	M.C. Thomas		FSCA
17	Dixie	3.5mi. N. Old Town Rt. 349	27-IV-1979	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town Rt. 349	5-IV-1980	M.C. Thomas		FSCA
24	Dixie	3.5mi. N. Old Town Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
5	Dixie	3.5mi. N. Old Town Rt. 349	24-V-1979	M.C. Thomas		FSCA
1	Duval	Jacksonville	8-15-VIII-1958	D.W. Ribble		FSCA
1	Hernando	Brooksville	23-I-1940			CASC
2	Hernando	Brooksville	27-I-1940			CASC
2	Highlands	Archbold Biol. Sta., Lake Placid	22-I-1986	M. Deyrup	on <i>Quercus chapmanii</i> killed by fire	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	11-II-1986	M. Deyrup	window trap burn area	ABSC
4	Highlands	Archbold Biol. Sta., Lake Placid	14-II-1986	M. Deyrup	emerged from fire killed <i>Quercus chapmanii</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	19-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	3-II-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Indian River	Oslo area	9-VI-1964	W.L. Bidlingmayer	truck trap	FSCA
1	Indian River	South of Vero Beach	25-VI-1975	J.H. Frank	blacklight trap	FSCA
1	Lee	Ft. Myers	25-VII-1975	V.W. Yingst	in light bowl	FSCA
3	Levy	Manatee Springs State Park	22-V-1983	M.C. Thomas		FSCA
1	Liberty	Torreya State Park	13-X-1979	M.C. Thomas		FSCA
9	Liberty	Torreya State Park	6-V-1979	M.C. Thomas		FSCA
1	Liberty	Torreya State Park	4-VII-1965	H.V. Weems Jr.	blacklight trap	FSCA
1	Liberty	Torreya State Park	4-IX-1983	M.C. Thomas		FSCA
1	Marion	Ocala	6-I-1978	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	6-X-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	14-XII-1977	M.C. Thomas	blacklight trap	FSCA
14	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	28-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	29-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
2	Marion	Ocala	25-III-1978	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	26-VI-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	24-IX-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA
5	Marion	Village of Rainbow Springs	31-V-1982	M.C. Thomas		FSCA
7	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas		FSCA
2	Marion	Village of Rainbow Springs	3-VII-7-1982	M.C. Thomas		FSCA
2	Okaloosa	4.5mi. N. Holt, Blackwater R. St.F.	15-16-VI-1978	L. Stange		FSCA
1	Polk	Winter Haven	5-VIII-1960	J. Hayward	blacklight trap	FSCA
1	Polk	Winter Haven, Stone Bridge	20-V-1982	H.G. Schmidt		FSCA
1	Putnam		6-I-1960	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
7	Putnam		2-III-1960	H.V. Weems Jr.	under bark of dead <i>Quercus laevis</i>	FSCA
1	Putnam		18-VI-1960	H.V. Weems Jr.	under bark of dead <i>Quercus laevis</i>	FSCA
1	Volusia		25-VII-1959	H.A. Denmark	at light	FSCA

Laemophloeus fasciatus Melsheimer

1	Alachua		22-IV-1955	R.A. Morse		FSCA
1	Alachua	Gainesville	14-XII-1983	M.C. Thomas		FSCA

Laemophloeus fasciatus Melsheimer (continued)

1	Alachua	Gainesville	20-III-1979	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	22-III-1979	M.C. Thomas	blacklight trap	FSCA
2	Alachua	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Dade	Miami	2-IV-1961	P.E. Briggs	blacklight trap	FSCA
1	Highlands	Highlands Hammock State Park	5-VII-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Indian River	SR 512, 5mi. W. I 95	16-20-V-1976	W.L. Bidlingmayer	suction trap	FSCA
1	Indian River	South of Vero Beach	23-X-1975	J.H. Frank	blacklight trap	FSCA
2	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
2	Marion	Ocala	28-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Ocala	4.5mi N Hull, Blackwater R. St. For	15-16-VI-1978	L. Stange		FSCA
2	Sarasota	Englewood	11-III-1975	N.M. Downie		FSCA
1	Suwannee	Suwannee River at Rt. 249	5-VII-1981	P.M. Choate Jr.		FSCA

Laemophloeus lecontei Grouvelle

1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachoo nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	1-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Matheson Hammock	25-V-1975	M.C. Thomas	under bark of gumbo limbo log	FSCA
1	Monroe	Key Largo	15-V-1977	R. Turnbow	blacklight trap	TURN
1	Monroe	Upper Key Largo	31-III-1976	M.C. Thomas	blacklight trap	FSCA
10	Monroe	Upper Key Largo	3-IV-1976	M.C. Thomas & J.H. Frank	under bark of gumbo-limbo log	FSCA
2	Monroe	Upper Key Largo	14-V-1977	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
3	Monroe	Upper Key Largo	30-V-1976	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
3	Monroe	Upper Key Largo	5-V-1973	T.M. Neal	blacklight trap	FSCA
1	Monroe	Upper Key Largo	3-VI-1976	M.C. Thomas	blacklight trap	FSCA
1	Monroe	Upper Key Largo	23-VII-1976	M.C. Thomas	blacklight trap	FSCA

Laemophloeus megacephalus Grouvelle

1	Alachua		2-III-1955	R.A. Morse	at light	FSCA
1	Alachua	Gainesville	4-VII-1947	H.V. Weems Jr.	at light	FSCA
1	Alachua	Gainesville	18-IX-1972	F.W. Mead	blacklight trap	FSCA
4	Columbia	O'Leno State Park	10-V-1981	M.C. Thomas		FSCA
5	Dade	Camp Mahachie nr Matheson Hammock		M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
9	Dade	Camp Mahachie nr Matheson Hammock	12-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachoo nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
24	Dade	Camp Mahachie nr Matheson Hammock	1-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachie nr Matheson Hammock	23-VIII-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
6	Dade	Camp Mahachie nr Matheson Hammock	14-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
9	Dade	Camp Mahachie nr Matheson Hammock	6-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie, nr Matheson Hammock	20-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
22	Dade	Camp Mahachie, nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
3	Dade	Camp Mahachie, nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
24	Dade	Camp Mahachie, nr Matheson Hammock	15-VI-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
12	Dade	Camp Mahachie, nr Matheson Hammock	16-VIII-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
14	Dade	Camp Mahachie, nr Matheson Hammock	23-VIII-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Castellog Hammock	17-IV-1972	R.M. Baranowski	blacklight trap	FSCA
3	Dade	Castellog Hammock	17-IV-1972	R.M. Baranowski	blacklight trap	FSCA
1	Dade	Homestead	19-XII-1954	D.O. Wolfenbarger	blacklight trap	FSCA
1	Dade	Homestead	30-XII-1954	D.O. Wolfenbarger	blacklight trap	FSCA
1	Dade	Miami	9-VIII-1964	P.E. Briggs	blacklight trap	FSCA
13	Dixie	3.5mi. N. Old Town, Rt. 349	13-I-1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragosio	blacklight trap	FSCA
1	Duval	Jacksonville	18-24-IV-1958	D.W. Ribble	at light	FSCA
1	Hernando	Brooksville	24-I-1940			CASC
1	Highlands	Archbold Biol. Sta., Lake Placid	31-I-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	23-III-1988	M. Deyrup	window trap w. H2O	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	7-IV-1986	M. Deyrup	window trap burn area	ABSC
2	Highlands	Highlands Hammock State Park	16-IV-1983	M.C. Thomas		FSCA
2	Highlands	Highlands Hammock State Park	20-IV-1983	M.C. Thomas		FSCA
2	Highlands	Highlands Hammock State Park	4-VII-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Indian River	Oslo area	9-VI-1964	W.L. Bidlingmayer	truck trap	FSCA
20	Levy	Manatee Springs State Park	22-V-1983	M.C. Thomas		FSCA
7	Liberty	Torreya State Park	6-V-1980	M.C. Thomas		FSCA
1	Marion	Ocala	6-I-1978	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	24-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	14-XII-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
4	Marion	Ocala	28-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	29-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	18-V-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	22-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	25-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	15-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	24-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	29-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	4-IX-1977	M.C. Thomas	blacklight trap	FSCA

Placonotus modestus (Say)

1	Marion	Ocala	7-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Orange	Apopka	13-IV-1980	B. Saunders		FSCA
2	Alachua	Gainesville	14-XII-1983	M.C. Thomas		FSCA
1	Alachua	Gainesville	10-IV-1963	E.M. Collins Jr.	blacklight trap	FSCA
1	Alachua	Gainesville	3-IV-1939	G.B. Merrill		FSCA
2	Alachua	Gainesville	11-V-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	5-V-1978	M.C. Thomas	blacklight trap	FSCA
1	Alachua	Gainesville	2-VI-1981	M.C. Thomas		FSCA
21	Alachua	Levy Co. line at SR 24	19-II-1983	M.C. Thomas	under bark of <i>Quercus</i> sp.	FSCA
5	Alachua	San Felasco Hammock	1-II-1981	M.C. Thomas		FSCA
1	Alachua	San Felasco Hammock	4-II-1983	M.C. Thomas		FSCA
1	Alachua	San Felasco Hammock	14-III-1982	M.C. Thomas		FSCA
3	Clay	Camp Crystal	31-III-IV-1982	M.C. Thomas		FSCA
6	Columbia	O'Leno State Park	1-IV-1984	M.C. Thomas		FSCA
1	Columbia	O'Leno State Park	10-V-1981	M.C. Thomas		FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker		FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker		FSCA
4	Dade	Castellow Hammock	17-IV-1983	M.C. Thomas & J.H. Frank		FSCA
1	Dade	Everglades N.P., Long Pine Key	8-VI-28-VIII-1986	S. & J. Peck	pinelands, malaise FIT	SBPC
1	Dade	Everglades N.P., Long Pine Key	26-V-VIII-1986	S. & J. Peck	pinelands, malaise FIT-s	SBPC
9	Dade	Gouids	16-IV-1983	M.C. Thomas & J.H. Frank		FSCA
2	Dade	Miami Springs	14-VI-1962	R.E. Woodruff	under bark of Australian pine	FSCA
2	Dade	South Miami, USDA Subtrop. Res. Sta.	18-IV-1983	M.C. Thomas		FSCA
10	Dixie	3.5mi. N. Old Town, Rt. 349	13-I-1980	M.C. Thomas		FSCA
35	Dixie	3.5mi. N. Old Town, Rt. 349	21-V-1978	R.E. Woodruff & S.A. Fragoso	blacklight trap	FSCA
7	Dixie	3.5mi. N. Old Town, Rt. 349	24-V-1979	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	5-V-1979	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	23-VII-1978	M.C. Thomas		FSCA
1	Dixie	Pine Landing	23-VII-1978	M.C. Thomas		FSCA
16	Duval		7-I-1956	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
2	Highlands	Archbold Biol. Sta., Lake Placid	10-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	21-II-1983	M. Deyrup	under bark of dead <i>Quercus laevis</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	21-II-1983	M. Deyrup	under bark of dead <i>Quercus laevis</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	3-III-1986	M. Deyrup	window trap trail 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	5-II-1986	M. Deyrup	window trap laurel oak area W. of main building	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	7-II-1986	M. Deyrup	window trap burn area	ABSC
2	Highlands	Archbold Biol. Sta., Lake Placid	14-VII-1983	M. Deyrup	from bark of <i>Pinus elliotii</i>	ABSC
3	Indian River	South of Vero Beach	1-I-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
4	Marion	Ocala	15-X-1977	M.C. Thomas		FSCA
8	Marion	Ocala	11-XI-1977	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
3	Marion	Ocala	10-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	11-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
3	Marion	Ocala	18-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
2	Marion	Ocala	8-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	9-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
2	Marion	Ocala	25-III-1978	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	18-V-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	20-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	22-VI-1977	M.C. Thomas	blacklight trap	FSCA
5	Marion	Ocala	21-VII-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Ocala	12-VIII-1977	M.C. Thomas	blacklight trap	FSCA
5	Marion	Ocala	14-VIII-1977	M.C. Thomas	blacklight trap	FSCA
4	Marion	Ocala	25-VIII-1977	M.C. Thomas	blacklight trap	FSCA
5	Marion	Ocala	26-VIII-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	4-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	6-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	9-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
3	Marion	Ocala	11-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	18-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	24-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	25-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	9-IX-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Village of Rainbow Springs	23-24-I-1982	M.C. Thomas		FSCA
11	Marion	Village of Rainbow Springs	24-XII-1983	M.C. Thomas		FSCA
59	Marion	Village of Rainbow Springs	14-II-1982	M.C. Thomas		FSCA
17	Marion	Village of Rainbow Springs	1-V-1982	M.C. Thomas		FSCA
2	Marion	Village of Rainbow Springs	31-V-1982	M.C. Thomas		FSCA
3	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas		FSCA
5	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas		FSCA
1	Marion	Village of Rainbow Springs	20-VII-1983	M.C. Thomas		FSCA
4	Marion	Village of Rainbow Springs	20-VIII-1983	M.C. Thomas		FSCA
4	Putnam	Lake Como	22-X-1977	M.C. Thomas		FSCA
2	St. Lucie	Indrio	19-I-1984	K. Hibbard	hickory	FSCA
1	Taylor	Blue Sprgs. Lake	6-VI-1972	R. Turnbow	blacklight trap	TURN
2	Volusia	Enterprise	IV-20			CASC
1	Volusia	Ormond Rch.				CASC

Placonotus politissimus (Wollaston)

1	Dade	Camp Mahachie nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	27-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA

Placonotus politissimus (Wollaston) (continued)

1	Dade	Camp Mahachie nr Matheson Hammock	6-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Everglades N.P., Long Pine Key	8-VI-28-VIII-1986	S. & J. Peck	pinelands, malaise FIT	SBPC
1	Dade	Everglades N.P., Long Pine Key	28-VIII-V-IX-1986	S. & J. Peck	pinelands, malaise FIT	SBPC
2	Dade	Everglades N.P., Long Pine Key	31-VII-IX-XII-1986	S. & J. Peck	pinelands, malaise FIT	SBPC
3	Dade	Goulds	18-IV-1983	M.C. Thomas & J.H. Frank		FSCA
1	Dade	Homestead	9-XII-1954	D.O. Wolfenbarger	blacklight trap	FSCA
1	Dade	Matheson Hammock	14-VI-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
3	Dade	Miami, USDA Plant Intro. Gardens	17-II-1977	R. Clark	blacklight trap	FSCA
1	Dade	Reglads Fruit & Spice Farm	26-I-1978	R. Clark	blacklight trap	FSCA
2	Highlands	Archbold Biol. Sta.	2-V-IV-1979	L.L. Lampert	blacklight trap	FSCA
1	Highlands	Archbold Biol. Sta., Lake Placid	20-XI-1985	M. Deyrup	on newly killed <i>Pinus clausa</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	4-XII-1985	M. Deyrup	on recently killed <i>Pinus clausa</i>	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	10-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	17-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	19-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	26-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Highlands Hammock State Park	4-VII-1975	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Indian River	Fellsmere	4-IX-1975	M.C. Thomas	at light	FSCA
1	Indian River	South of Vero Beach	28-VIII-1975	J.H. Frank	blacklight trap	FSCA
1	Indian River	Vero Beach	7-I-1976	M.C. Thomas	at light	FSCA
1	Marion	Ocala	21-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	9-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	12-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	14-VIII-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	25-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	26-VIII-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Ocala	15-IX-1977	M.C. Thomas	blacklight trap	FSCA
2	Marion	Village of Rainbow Springs	31-V-1982	M.C. Thomas		FSCA
2	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas		FSCA
4	Monroe	Stock Island	18-IV-1962	F.A. Buchanan	blacklight trap	FSCA
2	Monroe	Stock Island	25-IV-1963	F.A. Buchanan	blacklight trap	FSCA
3	Monroe	Stock Island	3-IV-1963	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Stock Island	23-IX-1962	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Upper Key Largo	3-IV-1976	M.C. Thomas & J.H. Frank	blacklight trap	FSCA
1	Polk	Wreter Haven	5-VIII-1960	J. Hayward	blacklight trap	FSCA

Placonotus zimmermanni (LeConte)

8	Alachua		26-I-1958	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
1	Alachua	San Felasco Hammock	30-I-1983	M.C. Thomas		FSCA
6	Alachua	San Felasco Hammock	4-II-1983	M.C. Thomas		FSCA
1	Alachua	San Felasco Hammock	6-II-1983	M.C. Thomas		FSCA
1	Clay	Camp Crystal	31-III-IV-1982	M.C. Thomas		FSCA
3	Dixie	3.5mi. N. Old Town, Rt. 349	13-I-1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	5-IV-1980	M.C. Thomas		FSCA
1	Duval		7-I-1956	H.V. Weems Jr.	under bark of <i>Quercus</i>	FSCA
2	Marion	Ocala	11-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	18-XII-1976	M.C. Thomas		FSCA
1	Marion	Ocala	28-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	13-IX-1977	M.C. Thomas	blacklight trap	FSCA

Charaphloeus bituberculatus (Reitter)

1	Highlands	Archbold Biol. Sta., Lake Placid	11-XI-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	4-II-1986	M. Deyrup	window trap control	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	19-III-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	21-IV-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	2-V-1986	M. Deyrup	window trap on mango	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	5-V-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Monroe	Plantation Key	1-I-1967	H.V. Weems Jr.	blacklight trap	FSCA
2	Monroe	Plantation Key	8-IV-1966	F.W. Mead	blacklight trap	FSCA
6	Monroe	Plantation Key	8-IV-1966	F.W. Mead	blacklight trap	FSCA
1	Monroe	Stock Island	22-V-1963	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Stock Island	22-V-1963	F.A. Buchanan	blacklight trap	FSCA

Parandrita permixtus (Grouvelle)

1	Collier	Collier-Seminole State Park	12-IX-1986	M. Deyrup	in morning glory	ABSC
2	Dade	Camp Mahachie nr Matheson Hammock	12-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie nr Matheson Hammock	14-IX-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	Camp Mahachie, nr Matheson Hammock	27-IV-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
2	Dade	Camp Mahachie, nr Matheson Hammock	5-V-1983	M.C. Thomas & L. Parker	blacklight trap	FSCA
1	Dade	South Miami, Old Cutler Hammock	15-XII-1985	S. Peck	hammock litter	SBPC
1	Monroe	Big Pine Key, Cactus Hammock	30-VII-17-11-1985	S. & J. Peck	for. malaise-FIT	SBPC
2	Monroe	Big Pine Key, Cactus Hammock	17-XII-25-II-85-86	S. & J. Peck	for. malaise-FIT	SBPC
1	Monroe	Big Pine Key, Watson's Hammock	28-VIII-13-XII-1986	S. & J. Peck	forest malaise-FIT 86-76	SBPC
1	Monroe	Big Pine Key, Cactus Hammock	30-VII-17-XI-1985	S. & J. Peck	for. Malaise-FIT	FSCA
1	Monroe	Big Torch Key	1-IX-15-XII-1986	S. & J. Peck, 86-92	hammock-malaise FIT	FSCA
3	Monroe	Big Torch Key	19-XI-26-II-85-86	S. & J. Peck	hammock for. malaise-FIT	SBPC
1	Monroe	Big Torch Key	19-XI-26-II-85-86	S. & J. Peck	hammock for. malaise-FIT	FSCA

Parandrita permixtus (Grouvelle) (continued)

1	Monroe	Big Torch Key	25-II-V-VI-1986	S. & J. Peck	for. hammock malaise-FIT 86-25	SBPC
2	Monroe	Cudjoe Key	21-XI-26-II-85-86	S. & J. Peck	hammock for. malaise-FIT	SBPC
1	Monroe	Cudjoe Key	29-VIII-14-XII-1986	S. & J. Peck	hammock malaise-FIT 86-79	SBPC
1	Monroe	Fal Deer Key	24-II-4-VI-1986	S. & J. Peck, 86-23	hammock-malaise FIT	SBPC
1	Monroe	Fal Deer Key	24-III-4-VI-1986	S. & J. Peck, 86-23	hammockmalaise-FIT	FSCA
1	Monroe	Fal Deer Key	31-VIII-15-XII-86	S. & J. Peck, 86-88	hammock-malaise FIT	SBPC
1	Monroe	Fal Deer Key	4-VI-28-VIII-1986	S. & J. Peck, 86-24	hammock-malaise FIT	SBPC
8	Monroe	No Name Key	19-XI-25-II-85-86	S. & J. Peck	hammock for. malaise-FIT	SBPC
1	Monroe	No Name Key	3-VI-27-VIII-1986	S. & J. Peck	hammock malaise-FIT 86-14	SBPC
1	Monroe	NoNameKey	19-XI-25-II-85-86	S. & J. Peck	hammock for. malaise-FIT	FSCA
1	Monroe	Stock Is.	25-IV-1963	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Stock Is.	3-VI-1964	F.A. Buchanan	blacklight trap	FSCA
1	Monroe	Sugarloaf Key, Kitchings	4 XI-3-III-84-85	S. & J. Peck, 86-23	FIT malaise	FSCA
1	Monroe	Sugarloaf Key	6-VI-29-VIII-1986	S. & J. Peck, 86-32	for. hammock malaise -FIT	FSCA
6	Monroe	Sugarloaf Key, Kitching's	4-XI-3-III-84-85	S. & J. Peck	86-81FIT malaise	SBPC
5	Monroe	Sugarloaf Key	6-VI-29-VIII-86	S. & J. Peck, 86-32	for. hammock, malaise-FIT	SBPC
1	Monroe	Sugarloaf Key	26-II-6-VI-1986	S. & J. Peck, 86-31	for. hammock, malaise-FIT	SBPC
3	Monroe	Sugarloaf Key	29-VIII-14-XII-86	S. & J. Peck, 86-81	hammock malaise-FIT	SBPC
1	Monroe	Sugarloaf Key	5-VIII-19-XI-1985	S. & J. Peck	hardwood hammock malaise-FIT	SBPC
1	Monroe	Vaca Key, Marathon	31-VIII-15-XII-1986	S. & J. Peck	hammock malaise-FIT 86-89	SBPC
1	Palm Beach	J.D. MacArthur Beach State Park	30-VIII-1986	M. Deyrup	emerged from gumbo limbo	ABSC
1	Palm Beach	J.D. MacArthur Beach State Park	12-IX-1986	M. Deyrup	emerged from gumbo limbo	ABSC
2	Palm Beach	Jupiter	1-IX-1988	K. Nickolson	in mature seedpods of <i>Moringa pterygosperma</i>	FSCA
1	Palm Beach	Jupiter	28-IX-1988	K. Nickolson	<i>Moringa pterygosperma</i> seed pods	FSCA
4	Putnam	Welaka	8-X-1988	M.C. Thomas	in old inflorescence of <i>Sabal palmetto</i>	FSCA

Phloeolaemus chamaeropsis (Schwarz)

1	Alachua	Archer	5-VI-1982	M.C. Thomas	under bark of dead <i>Quercus</i> sp.	FSCA
4	Alachua	Gainesville	2-4-1984	M.C. Thomas		FSCA
2	Alachua	Gainesville	2-X-1983	M.C. Thomas		FSCA
1	Alachua	Gainesville	13-V-1968	R.E. Woodruff	blacklight trap	FSCA
1	Alachua	Gainesville	25-V-1980	M.C. Thomas		FSCA
3	Columbia	O'Leno State Park	1-IV-1984	M.C. Thomas		FSCA
1	Dixie	2mi. N. Old Town	13-4-1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	24-V-1979	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town, Rt. 349	3-V-1979	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town, Rt. 349	5-V-1979	M.C. Thomas		FSCA
1	Dixie	5mi. W. Shamrock, U.S. 17-92	8-VI-1980	M.C. Thomas		FSCA
2	Highlands	Highlands Hammock State Park	16-IV-1983	M.C. Thomas		FSCA
1	Marion	Ocala	9-XI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	10-XII-1976	M.C. Thomas	under bark of <i>Quercus</i> sp. log	FSCA
1	Marion	Ocala	11-XII-1976	M.C. Thomas		FSCA
1	Marion	Ocala	26-VI-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Ocala	26-VIII-1977	M.C. Thomas	blacklight trap	FSCA
1	Marion	Village of Rainbow Springs	5-V-1982	M.C. Thomas	blacklight trap	FSCA

Phloeolaemus quinquearticulatus (Grouvelle)

1	Dade	S. Miami, Deering Estate Park	29-30-V-1986	S. & J. Peck	hammock for. eve. car net	SBPC
1	Dade	S. Miami, Deering Estate Park	26-VIII-1986	S. & J. Peck	forest uv light	SBPC
1	Highlands	Archbold Biol. Sta., Lake Placid	31-I-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	31-I-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	10-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	14-II-1986	M. Deyrup	window trap burn area	ABSC
4	Highlands	Archbold Biol. Sta., Lake Placid	14-II-1986	M. Deyrup	emerged from fire-killed <i>Quercus chapmanii</i>	ABSC
2	Highlands	Archbold Biol. Sta., Lake Placid	21-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	24-II-1986	M. Deyrup	window trap burn area	ABSC
1	Highlands	Archbold Biol. Sta., Lake Placid	5-II-1986	M. Deyrup	window trap trails 1 & 2 SSo	ABSC
1	Marion	Ocala	9-VIII-1977	M.C. Thomas	u.v. light trap	FSCA
2	Wakulla	Panacea	5-II-1992	M.C. Thomas	under bark of <i>Quercus laevis</i>	FSCA