TWO NEW GENERA OF NEOTROPICAL LAEMOPHLOEINAE (COLEOPTERA: CUCUJIDAE)

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ABSTRACT

Two new genera of Neotropical laemophloeine Cucujidae are described, illustrated, and their affinities discussed. Odontophloeus Thomas, New Genus, includes O. crybetes Thomas, New Species. Other included species are: O. quadridentatus (Champion), New Combination (type-species), O. kesseli (Hetschko), New Combination, and O. dives (Sharp), New Combination. Lepidophloeus Thomas, New Genus, includes L. exquisitus (Grouvelle), New Combination (type species), and L. minusculus (Grouvelle), New Combination. Described species previously were assigned to Laemophloeus Dejean. Affinities of the new genera are with Lathropus Erichson, Microlaemus Lefkovitch, Rhabdophloeus Sharp, and Carinophloeus Lefkovitch.

RESUMEN

Dos nuevos géneros Neotropicales de laemophloeine Cucujidae son descritos, ilustrados, y sus afinidades discutidas. El nuevo género Odontophloeus Thomas, incluye la nueva especie O. crybetes Thomas. Las otras especies incluidas son: O. quadridentatus (Champion), nueva combinación (tipo-especies), O. kesseli (Hetschko), nueva combinación, y O. dives (Sharp), nueva combinación. Las especies descritas estaban previamente asignadas a Laemophloeus Dejean. Las afinidades del nuevo género son con Lathropus Erickson, Microlaemus Lefkovitch, Rhabdophloeus Sharp, y Carinophloeus Lefkovitch.

Although several workers recently have dealt with Old World components of the Laemophloeinae, taxonomic studies of the subfamily have been neglected in the New World since Kessel's (1926) attempt to construct a key to the species of the world. Many New World species are still assigned to *Laemophloeus* Dejean (sens. lat.) and much alpha-level taxonomy is necessary. This paper is part of an effort to bring better order to the classification of the New World members of this subfamily.

Odontophloeus Thomas, New Genus Fig. 1-11

Type-Species: Laemophloeus quadridentatus Champion, 1914: 84 (by present designation).

DIAGNOSIS: Adults of this genus can be recognized by their distinctive facies, resembling adults of *Rhabdophloeus* Sharp but distinguished by the evenly curved sublateral carinae of the pronotum, possession of 3 rounded teeth laterally between the anterior and posterior pronotal angles, and the bluntly pointed intercoxal process of sternum III. Adults of *Rhabdophloeus* have irregularly curved pronotal carinae, the process of sternum III is acutely pointed, and most have more than 3 lateral teeth.

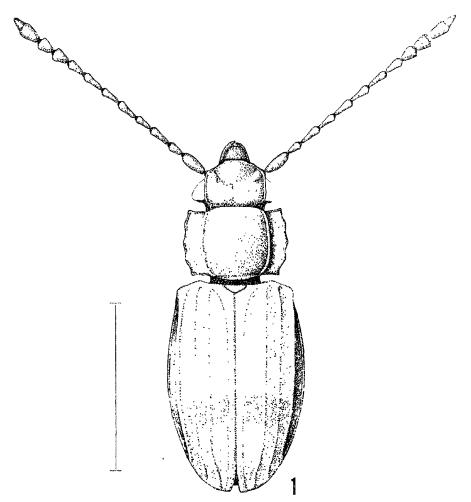


Fig. 1. Odontophloeus dives (Sharp), lectotype 3, Panama. Line = 1.0mm.

DESCRIPTION: Form oblong-ovate to ovate, dorso-ventrally compressed; dorsal surface granulate-punctate and densely pubescent; elytra fasciate.

HEAD: Transverse, eyes large and coarsely faceted; basal constriction pronounced; clypeal area impressed but transverse groove absent; longitudinal suture impressed; lateral line represented by a weak ridge without an associated groove, ridge forming dorsal margin of eye; labrum rounded anteriorly; mandibles rather slender for subfamily; palpi with terminal segment longest (Fig. 6); gular sutures impressed, slightly converging, almost meeting the longitudinal grooves extending posteriorly from maxillae.

THORAX: Pronotum transverse, laterally explanate with 3 rounded teeth between anterior and posterior angles (Fig. 1, 10-11); sublateral line carinate, evenly rounded; anterior coxal cavities wide open behind, intercoxal process moderately wide and with its apex truncate and barely expanded laterally (Fig. 3); mesepimeron but not mesepisternum contributing to closure of mesocoxal cavity; meso-metasternal suture slightly angled

posteriorly (Fig. 3); longitudinal suture of metasternum entire; elytra with cells entire, exterior margin of 3rd cell coinciding with lateral carina, secondary intervals (see Lefkovitch 1962b: 169-70 for terminology) costate; laterally explanate and completely covering abdomen. Tarsi 5-5-5 in both sexes, or 5-5-4 in males (O. dives only).

ABDOMEN: Intercoxal process of sternum III bluntly pointed apically (Fig. 4-5); sternum III about twice as long as IV at midpoint, IV through VII about equal; male genitalia as in Fig. 2, 7-9.

The genus name is derived from the Greek "odontos", meaning tooth, and "phloios", meaning bark, a traditional root in the Laemophloeinae.

KEY TO THE ADULTS OF Odontophloeus Thomas

- 1'. Antennae short, barely attaining base of elytra, strongly clubbed; epistome emarginate over labrum (Fig. 11) _______ 2
- 2(1). Pronotal impressions deep and well-marked (Fig. 10); male genitalia as in Fig. 7 quadridentatus (Champion)
- 2'. Pronotal impressions almost obsolete (Fig. 11)
- 3(2). Tegmen with parameres acute at apex (Fig. 8) kesseli (Hetschko)

Odontophloeus dives (Sharp), NEW COMBINATION Fig. 1-4

Laemophloeus dives Sharp, 1899: 530, Pl. 17, Fig. 3.

DIAGNOSIS: In general facies (Fig. 1), individuals of this species are very similar to those of *Rhabdophloeus* Sharp and are quite distinct from the other species assigned to this genus. From individuals of *Rhabdophloeus* they can be distinguished by the generic characters of *Odontophloeus*, especially the broadly rounded versus narrowly rounded intercoxal process of sternum III. The elongate, feebly clubbed antennae and 4-jointed hind tarsi in the males distinguish *dives* from the other species of *Odontophloeus*. The male genitalia (Fig. 2) also are distinctive.

DISTRIBUTION: Costa Rica to Panamá.

TYPES: Lectotype 3, (BMNH), here designated (see discussion below): PANAMÁ: Chiriquí: Volcán de Chiriquí, 4000-6000 ft. (Champion).

MATERIAL EXAMINED: PANAMA—Chiriquí: W. of Finca Palo Santo nr. Nueva California ("Berlese: #9-433; flood litter damp ravine at 4900 ft.") (1, FMNH); Costa Rica—Puntarenas: Monteverde area (1, USNM).

DISCUSSION: Sharp (1899: 530) described this species from 2 specimens. I have seen one of the types, a male in the BMNH, with the following data: "§ Laemophloeus dives Type D.S. Chiriqui, [on mount card]/"SYN-TYPE" [blue edged disc]/"Sp. figured"/"V. de Chiriqui, 4000-6000 ft. Champion."/"B.C.A., Col. II (1). Laemophloeus". I here select this specimen as lectotype.

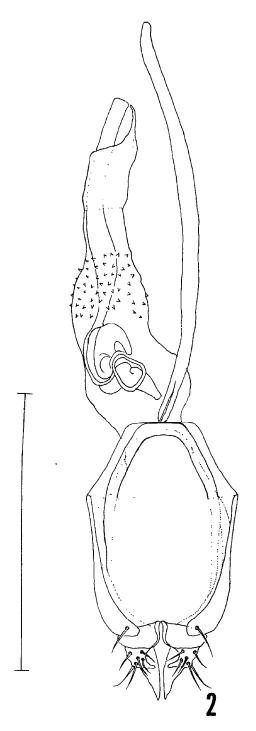


Fig. 2. $Odontophloeus\ dives\ (Sharp)$, aedeagus, ventral view. Line = 0.25mm.

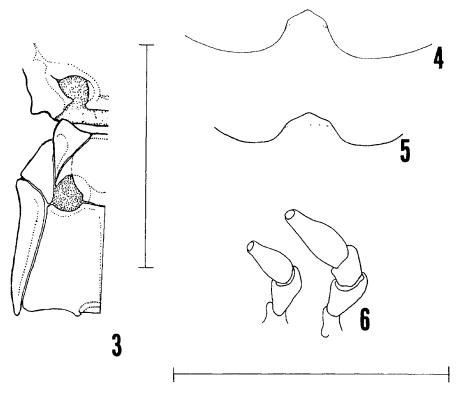


Fig. 3-6. Odontophloeus. 3) O. dives (Sharp), thorax, ventral view; 4) O. dives, intercoxal process of sternum III; 5) O. crybetes, same; 6) O. crybetes, palpi. Line = 1.0mm for Fig. 3-5, 0.25mm for Fig. 6.

Laemophloeus quadridentatus Champion, 1914: 84, Pl. 3, Fig. 7.

DIAGNOSIS: Of the species of *Odontophloeus* with short antennae, only individuals of *O. quadridentatus* can be distinguished on the basis of external characters. In individuals of this species the medial groove bordering the sublateral carina of the pronotum is strongly impressed and a pair of circular impressions connected by a transverse impression is present basally (Fig. 10). The individuals which I have examined also were darker than those of the other species, the lateral margin of the pronotum less curved in outline, and the teeth and basal angles more pronounced (Fig. 10). All of these differences, however, are slight and may be found to vary when additional material is examined. The male genitalia (Fig. 7) are distinctive.

DISTRIBUTION: Guatemala; Costa Rica to Colombia.

TYPES: Lectotype Q (USNM), here designated (see discussion below): GUATEMALA—Izabal: Livingston, Barber & Schwarz. Paralectotypes: same data, 2 Q (USNM).

MATERIAL EXAMINED: PANAMA—Colón: Portobello (1, USNM), COSTA RICA—Cartago: Turrialba (1, FSCA); Limón: Reventazón, Hamburg Farm ("on dry bark of Castilla") (6, FMNH). COLOMBIA—Antioquia: 24 km S. & 21 km W. of Zaragoza (above Rio Anori) (1, FSCA).

DISCUSSION: Champion (1914: 84) described this species from 5 specimens from "Guatemala, Livingston and Trece Aguas". He mentioned 2 varieties,

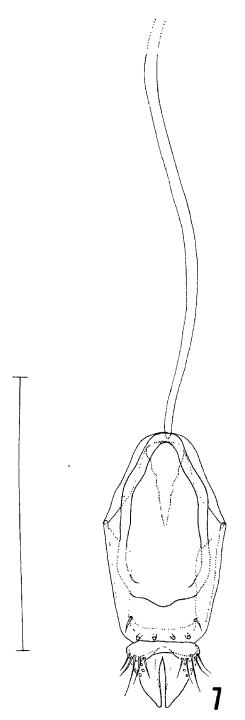


Fig. 7. $Odontophloeus\ quadridentatus\ (Champion)$, aedeagus\ (internal sac omitted), ventral view. Line =0.25mm.

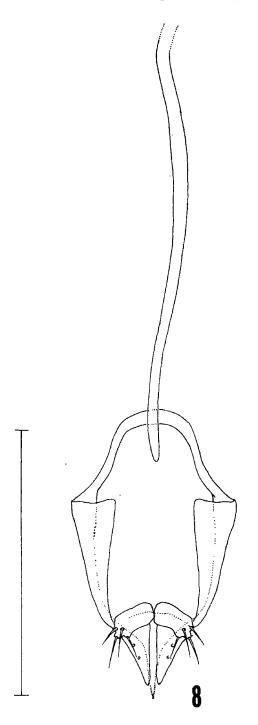


Fig. 8. $Odontophloeus\ kesseli$ (Hetschko), aedeagus (internal sac omitted), ventral view. Line = 0.25mm.

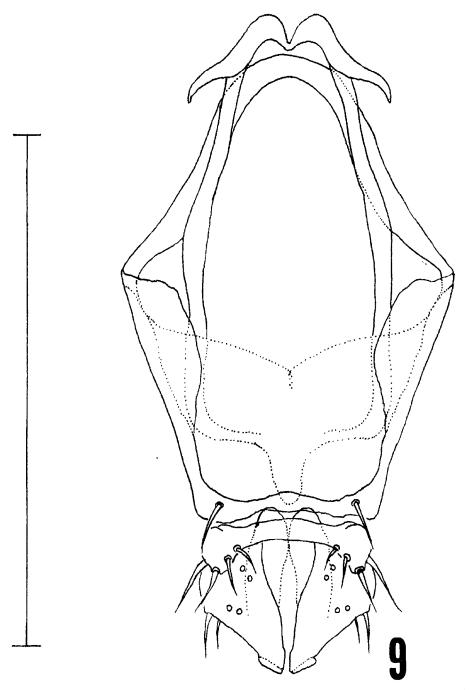


Fig. 9. $Odontophloeus\ crybetes$ Thomas, aedeagus, ventral view (basal strut omitted). Line = 0.25mm.

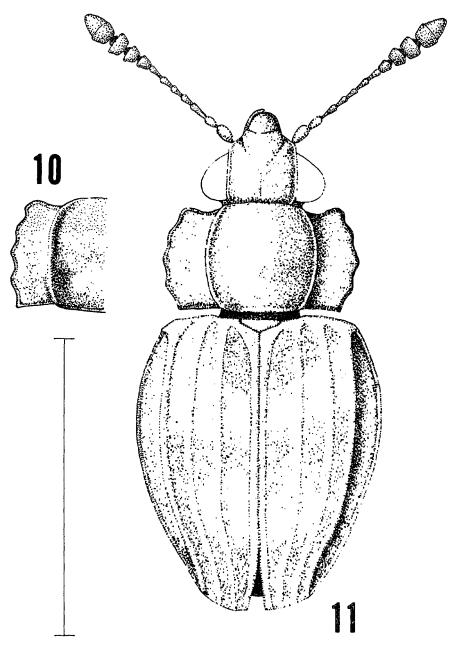


Fig. 10-11. Odontophloeus. 10) Odontophloeus quadridentatus (Champion), left half of pronotum; 11) O. crybetes, holotype 3, Trinidad. Line = 1.0mm.

a dark form and a pale form. I have examined the 3 specimens of the type series in the USNM with the following data: 1 $\,^\circ$, "Livingston Guat 7.5"/
"HS Barber Collector"/"Type No. 21520 U.S.N.M."/"Laemophloeus 4-dentatus type"; 1 $\,^\circ$, same data except "Paratype 21520 U.S.N.M."; and "Laemophloeus 4-dentatus var."; 1 $\,^\circ$, "19.4 Cacoo Trece Aguas"/"Alta V. Paz Guatemala"/"Schwarz & Barber Coll"/"Paratype 21520 U.S.N.M.". Champion did not designate a type specimen and the type labels have no validity since the designations were never published. I here select the first mentioned specimen as lectotype; it is an example of the dark form mentioned by Champion (1914: 84) and is not conspecific with the other members of the type series, which apparently belong to O. kesseli (see discussion under that species). Champion recognized the distinctiveness of his species and suggested it represented an undescribed genus.

Odontophloeus kesseli (Hetschko), New Combination Fig. 8

Laemophloeus ambiguus Kessel, 1926: 66 (not Grouvelle, 1923: 261). Laemophloeus kesseli Hetschko. 1928: 142.

DIAGNOSIS: Individuals of this species and of the new species described below differ from those of *quadridentatus* in that the disc of the pronotum is barely or not at all impressed, whereas it is strongly impressed in *quadridentatus*. From the new species, *kesseli* can be distinguished by the structure of the male genitalia (Fig. 8).

DISTRIBUTION: Guatemala; Panamá; Brazil.

Types: Lost? (see discussion below): [BRAZIL: Santa Catarina: Badenfurt].

MATERIAL EXAMINED: BRAZIL—[Santa Catarina: Badenfurt], Kessel (5, PAS). GUATEMALA—Izabel: Livingston (1, USNM); Alta Verapaz: Trece Aguas (1, USNM). PANAMA—Paraíso (3, USNM).

DISCUSSION: Kessel (1926: 66) described O. ambiguus from "Badenfurt, Sta. Catharina. 4 exemplares na minha collecção." Hetschko (1928: 142) pointed out that the name proposed by Kessel was a junior homonym of Laemophloeus ambiguus Grouvelle (1923: 261) and proposed L. kesseli as a replacement name. I have been unable to find a labelled type specimen in the Kessel collection now housed in the Polish Academy of Sciences, but there are 5 specimens in the collection agreeing with the original description. It is on these 5 specimens that I have based my concept of this species. The specimens from Central America may not be conspecific with the Brazilian examples, but are provisionally assigned to this species. There appear to be slight differences in the structure of the male genitalia between the 2 populations but the material at hand is not sufficient to assess the range of variation in either population.

Odontophloeus crybetes Thomas, NEW SPECIES Fig. 5-6, 9, 11

DIAGNOSIS: Adults of this species can be distinguished from those of *O. quadridentatus* by their lack of distinct grooves and impressions on the pronotum and by the form of the male genitalia and from those of *O. kesseli* by the form of the male genitalia.

DESCRIPTION: FORM: Length, 1.60mm. Broadly ovate; testaceous, elytra darker with obscure testaceous markings as follows: a transverse, V-shaped post-scutellar mark extending posteriorly to midpoint of elytra and laterally to humeral carinae, and a medial amorphous mark near apical third.

HEAD: Transverse (1: 1.6) across eyes; epistome emarginate medially; frontoclypeal area depressed, a short groove extending posteriorly from each side of clypeus, becoming indistinct and converging slightly at frons; lateral lines represented by strong carinae; punctures much smaller than diameter of an eye facet, separated mostly by about 1 diameter, each subtending a short, stout, recumbent seta; eyes large, occupying most of lateral margin of head; diameter of eye equal to about 6 facets; antennae short, extending posteriorly to about base of elytra; scape short, robust; pedicel also robust, but less so than scape and slightly shorter; antennomere III slender, subequal in length to pedicel; IV shorter than III, IV-VIII subequal, VIII noticeably broader than immediately preceding antennomeres; IX-XI abruptly enlarged to form massive club; IX-X shorter than scape, transverse, XI elongate, almost twice length of scape.

PRONOTUM: Transverse (1: 1.8); puncturation and pubescence as head; disc slightly, evenly convex; a vague transverse impression present at about basal third; pronotum broadly explanate laterad to sublateral line; anterior angle obtuse, produced, rounded; posterior angle obtuse.

ELYTRA: Elongate-ovate (1.26: 1); broadest at about basal third; lateral margins broadly explanate, especially basally; puncturation and pubescence as head.

Male genitalia as in Fig. 9.

VARIATION: There is no obvious variation other than length among the specimens in the type series, nor is there any evident sexual dimorphism. Length varies in type series from 1.56 mm to 1.83 mm.

DISTRIBUTION: México; Costa Rica; Trinidad.

TYPES: Holotype & (FSCA), "TRINIDAD Simla, Arima-Blanchisseuse Rd., 27-VII-75, J. Price, blacklight trap".

PARATYPES: (15, FSCA), as follows: 1, same data as holotype; 5 (1 slide-mounted), same data except 1-VIII-75; 2, same data except 25-VII-75; 1, same data except 13-VII-75; 1, same data except 17-VII-75; 1 (slide-mounted), same data except 23-VII-75; 1, same data except 12-VIII-75; 1, same data except VII-75; 2, same data except 8-VIII-75.

MATERIAL EXAMINED: MÉXICO—Veracruz: Lake Catemaco, "Cóyame" (3, FSCA). Costa Rica—Limón Reventazón, Hamburg Farm (27 with label "on dry bark of Castilla.") (46, FMNH).

DISCUSSION: The derivation of the trivial epithet is from the Greek "krybetes." a masculine noun meaning "one hidden," used in apposition.

Lepidophloeus Thomas, New Genus Fig. 12-19

Types-Species: Laemophloeus exquisitus Grouvelle, 1908: 54 (by present designation).

DIAGNOSIS: The species assigned to this genus can be confused with no other described species in the New World. The coarsely granulate surface sculpture, scale-like setae, extremely elongate antennae, and general facies permit the identification of members of this genus.

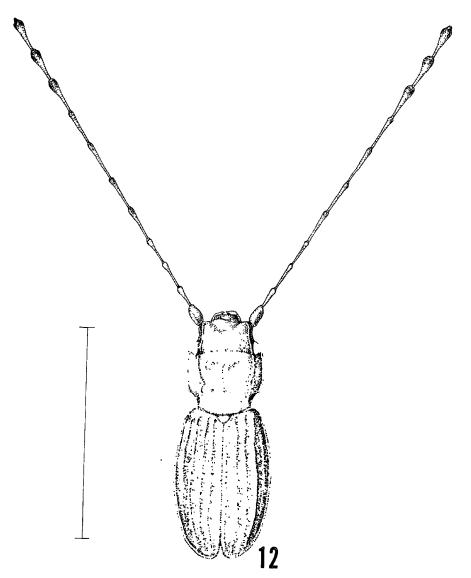


Fig. 12. $Lepidophloeus\ exquisitus$ (Grouvelle), lectotype 3. Guadeloupe. Line = 1.0mm.

DESCRIPTION: Form elongate-oblong, slender; dorso-ventrally compressed; microsculpture coarsely granulate; vestiture composed of short, stout, slightly curved recumbent setae which resemble scales.

HEAD: Transverse, eyes large, hemispherical almost 1/2 length of head, situated posteriorly; clypeal area depressed below general level of frons, but groove or suture separating clypeus from frons is absent; epistome with single emargination over labrum, which is broadly rounded anteriorly; mandibles robust, abruptly bent medially at about midlength; palpi with terminal segment longest (Fig. 16); lateral line by a ridge; median longitudinal suture impressed; genal processes well developed, visible in dorsal

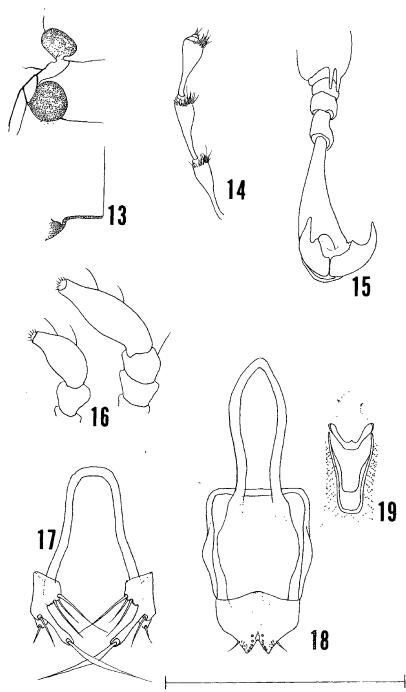


Fig. 13-19. Lepidophloeus exquisitus (Grouvelle). 13) thorax, ventral view; 14) apical antennomeres, female; 15) hind tarsus, female; 16) palpi; 17) sternum VIII, ventral view, male; 18) aedeagus, ventral view; 19) sclerotization of internal sac. Line = 0.50mm for Fig. 13-14; 0.125mm for Fig. 15-16; 0.25mm for Fig. 17-19.

view; antennae inserted at anterior corners of head, elongate, slender, exceeding body length in both sexes; scape stout, 2/3 length of head; pedicel slender, equal in length to scape; antennomeres III-VII gradually increasing in length, VII nearly twice length of pedicel; VIII slightly shorter than VII and subequal to IX-XI, each of which is slightly bent basally (Fig. 14) and gradually expanded distally to form a loose, inconspicuous club; apices of 3 terminal antennomeres each armed with tuft of setae ventrally.

THORAX: Pronotum transverse, abruptly constricted basally; anterior angles produced, acute; posterior angles oblique; sublateral line by irregular ridge; laterally explanate; lateral margin conspicuous, minutely denticulate; disc with paired impressions anteriorly and posteriorly; scutellum excavate medially; elytra elongate-ovate, transversely impressed at basal 3rd; secondary intervals carinate, cells entire; within each cell is a conspicuous row of setae; laterally explanate; an accessory carina present between lateral carina and lateral margin; epipleura broad and complete to apices, which are individually rounded; coxae all widely separated (Fig. 13); anterior coxal cavities open behind; prosternal process broad, slightly emarginate; mesepimeron but not mesepisternum contributing substantially to external closure of mesocoxal cavity, meso-metasternal suture nearly straight; longitudinal suture of metasternum not attaining anterior edge of sclerite. Tarsi 5-5-5 in female (Fig. 15), that of male could not be determined.

ABDOMEN: Intercoxal process of sternum III straight anteriorly (Fig. 13); male genitalia with sternum VIII modified to form claspers, each armed with a long, sabre-shaped seta (Fig. 17).

The genus name is derived from the Greek "lepidos", meaning scale, and "phloios", meaning bark, a traditional root in the Laemophloeinae.

Lepidophloeus exquisitus (Grouvelle), NEW COMBINATION Fig. 12-19

Laemophloeus exquisitus Grouvelle, 1908: 54.

DIAGNOSIS: Adults of this species can be distinguished by their very distinct pronotal impressions from those of the only other known species of this genus, *L. minusculus* (Grouvelle), in which the pronotal impressions are obsolescent.

DISTRIBUTION: Known only from Guadeloupe, French West Indies.

Types: Lectotype & (MNHN), here designated (see discussion below): Guadeloupe, 300-700m. Paralectotype \(\varphi \): same data (MNHN).

Discussion: Grouvelle (1908: 54) described this species from an unstated number of specimens from Guadeloupe, noting they were taken "En battant et en broussant un tronc d'arbre, entre 300 à 700 mètres d'altitude." I have examined 2 specimens (3, 2) on the same card mount with the following data: "Guadeloup (e) Dufau" [purple mss. on blue]/"Type."/"W."/"W."/"775"/"Museum Paris Coll. A. Grouvelle 1917"/"L. exquisitus Grouv ty." [purple mss.]/"Type" [black on red]. I accept these specimens as at least part of the type series and here select the male as lectotype, female as paralectotype.

Lepidophloeus minusculus (Grouvelle), NEW COMBINATION

Laemophloeus minusculus Grouvelle, 1876: 502, Pl. 9, Fig. 22.

DIAGNOSIS: Characters to distinguish adults of this species from those of *L. exquisitus* are given under the latter species.

DISTRIBUTION: México and Costa Rica.

Types: Holotype & (MNHN): "Teapa [Tabasco] Deyr"/"Museum Paris Collection Grouvelle"/Type/"Laemophloeus minusculus Grouv." [modern label].

MATERIAL EXAMINED: COSTA RICA: Limón: Reventazón, Hamburg Farm ("on dry bark of Castilla"), (1, FMNM).

DISCUSSION: This species and *L. exquisitus* are extremely similar morphologically and may prove to be synonyms. The male genitalia exhibit no obvious differences and the only external difference between adults of the two species is the depth of the pronotal impressions. However, given the paucity of material and the large geographical separation between the two species, I prefer to retain both at present.

PHYLOGENETIC CONSIDERATIONS

Both Odontophloeus and Lepidophloeus appear to have affinities with a group of genera that includes Lathropus Erichson, Microlaemus Lefkovitch, Rhabdophloeus Sharp, and Carinophloeus Lefkovitch. Among the character states shared by this group of genera is an irregular, often undulating, lateral pronotal margin, paired anterior and posterior impressions on the pronotal disc, and a granulate surface sculpture. Based on their distribution within the Laemophloeinae and related subfamilies, I consider all these character states to be derived.

Within this group, determining affinities is difficult. Lathropus, with numerous New World and 1 Palaearctic species, appears to occupy an isolated position in the group. Its closed mesocoxal cavities, absence of lateral carina on the head, and absence of elytral cells are considered to be derived character states. The African Carinophloeus also possesses closed mesocoxal cavities, a character state apparently unique to these 2 genera within the Laemophloeinae, and it may represent the sister group of Lathropus. Some species of Lathropus also exhibit a decidedly produced epistome reminiscent of that in Carinophloeus, and the form of antennae in both genera is similar. Slipinski (1981) was mistaken in reporting antennae composed of 10 antennomeres in both species of Carinophloeus; C. raffrayi (Grouvelle) possesses 11-segmented antennae. Lefkovitch (1962a) argued that Carinophloeus is not truly a cucujid, while Crowson (1967) and Crowson & Sen Gupta (1969) maintained that it is. The character states with which Lefkovitch (1962a) compared Carinophloeus are those of the Cucujinae and not of the Laemophloeinae, with which Carinophloeus should properly be compared.

Lefkovitch (1962a) maintained that: "All attempts to extend the definition of these and other families to include C. raffrayi have resulted in the fusion of many families otherwise distinct." If, however, the Laemophloeinae are considered a distinct family, allied to the Passandridae, Phalacridae and Propalticidae, as I have suggested (Thomas 1984), the problem of family limits is alleviated.

At least as good a case can be made for considering *Microlaemus*, with several African and 1 undescribed Neotropical species, to be the sister group of *Lathropus*. The 2 genera are very similar in facies and share the following character states: anterior coxal cavities closed; prosternal process broad, and 5-5-5 tarsi in both sexes (at least in the 1 species of *Microlaemus* examined). The intercoxal process of sternum III is broadly rounded in *Lathropus*; narrowly rounded in *Microlaemus* and *Carinophloeus*.

Lepidophloeus probably also belongs in the above series of genera, but its exact position is difficult to ascertain.

The relationship between *Rhabdophloeus* and *Odontophloeus*, both exclusively Neotropical, seems the surest of all and *O. dives* could easily be mistaken for a species of *Rhabdophloeus*. However, except for the strongly crenulate lateral pronotal margins it is difficult to identify any other obvious uniquely shared derived character states in these 2 genera.

Lefkovitch (1962b) pointed out the close resemblance of adults of *Microlaemus* to those of some species of *Cryptolestes* Ganglbauer. *Cryptolestes* and related genera, such as *Microbrontes* Reitter, *Dysmerus* Casey, *Leptophloeus* Casey and *Narthecius* LeConte, may be the sister group to the group of genera discussed here.

The difficulty in arriving at a suprageneric classification in the Laemophloeinae has been pointed out previously (Lefkovitch 1962b, Thomas 1982). Such a classification should be based on phylogenetic considerations, but such a phylogeny must await a much more comprehensive understanding of character state distribution within the subfamily.

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A NEW XYSTODESMID MILLIPED GENUS AND FIVE NEW SPECIES FROM THE COASTAL PLAIN OF ALABAMA (POLYDESMIDA)

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ABSTRACT

The new milliped genus Gonoessa (Xystodesmidae: Rhysodesmini) is proposed for 5 new species—clavata, aciculata, cingulata, dentata, and furcata—in the Coastal Plain of Alabama. It is characterized by a variably elongate prefemoral process, which may also be absent, and a long, slender telopodite, which overlaps 2 pregonopodal segments. Specific differences involve the distal configuration of the acropodite and the length of the prefemoral process if present. Like Caralinda, Gonoessa appears to be cold

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