A Revision of the New World Species of *Cryptolestes* Ganglbauer (Coleoptera: Cucujidae: Laemophloeinae)

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Abstract

The New World species of *Cryptolestes* Ganglbauer are revised and keys, diagnoses, descriptions, and illustrations are provided for the 13 non-economic species. Six stored products species of the genus are also keyed and illustrated. Two species, *Laemophloeus pubescens* Casey and *L. bicolor* Chevrolat, are reassigned to *Cryptolestes*. Eight new species are described: *C. dissimulatus* (southwestern United States); *C. dybasi* (Florida); *C. mexicanus* (Mexico and Guatemala); *C. capillulus* (Brazil); *C. spatulifer* (Argentina); *C. trinidadensis* (Trinidad); *C. ampiyacus* (Peru); and *C. calabozus* (Venezuela). *Cryptolestes uncicornis* (Reitter) is revived from synonymy under *C. punctatus* (LeConte), *C. schwarzi* (Casey) is revived from synonymy under *C. weisei* (Reitter), and four specific names are synonymized: *C. quadratus* (Casey) [=*C. uncicornis* (Reitter)]; *C. extricatus* (Casey) and *C. adumbratus* Casey [=*C. punctatus* (LeConte)]; and *Laemophloeus concavus* (Reitter) [=*C. bicolor* (Chevrolat)]. *Cryptolestes horni* (Casey) and *C. disseptus* Casey are removed from *Cryptolestes* and reassigned to *Rhabdophloeus* Sharp. Lectotypes are designated for *Laemophloeus geminatus* LeConte, *Cryptolestes adumbratus* Casey, and *Laemophloeus quadratus* Casey.

Introduction

Because of the economic importance as stored products pests of several species, this is perhaps the taxonomically best-known genus of the family. However, taxonomic problems remain to be solved, especially in determining the generic limits of *Cryptolestes* and similar genera. Of the genera most closely allied to *Cryptolestes*, *Planolestes* Lefkovitch seems to be adequately defined and distinct (Lefkovitch 1957), but *Microbrontes* Reitter, *Leptophloeus* Casey, and *Dysmerus* Casey pose some problems.

According to Lefkovitch (1958b), *Microbrontes* is "... well differentiated from *Cryptolestes* and from other Laemophloeinae..." Yet, my examination of the type species of *Microbrontes*, *M. laemophloeoides* Reitter, has failed to reveal any differences of apparent generic importance between it and *Cryptolestes uncicornis* (Reitter) or *C. punctatus* (LeConte). *C. uncicornis* was described as a *Microbrontes* but Lefkovitch (1958b) assigned it to *Cryptolestes*, noting that it "... possesses the distinguishing features of *Cryptolestes*..." Neither *Microbrontes laemophloeoides* nor *Cryptolestes uncicornis* or *C. punctatus* possess the accessory genital sclerites that occur in males of all species of *Cryptolestes* for which the genitalia have been illustrated. However, a species described below from Argentina (and clearly related to *uncicornis* and *punctatus*) possesses a single genital sclerite, while several other Neotropical species described here also lack genital sclerites. Several of these species also have narrowly open anterior coxal cavities and a broadly rounded intercoxal process and may not be congeneric with *C. ferrugineus*, the type species of *Cryptolestes*, which has closed anterior coxal cavities and a shallowly emarginate intercoxal process (Fig. 1). However, both of these character states are also present in *C. uncicornis* and *C. punctatus* (Fig. 2), and I am assigning these species to *Cryptolestes* pending a worldwide study of *Cryptolestes*

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and related genera.

Other genera which seem to be weakly distinguished from *Cryptolestes* (as presently understood) are *Leptophloeus* Casey, the type of which is *Laemophloeus angustulus* LeConte, and *Dysmerus* Casey, the type of which is *D. basalis* Casey. Lefkovitch (1959a) distinguished adults of *Leptophloeus* from those of *Cryptolestes* by their subcylindrical body and 5-5-5 male tarsal formula. Lefkovitch (1962) described several African species that possessed 5-5-4 tarsi and placed them in a species group separate from the bulk of *Leptophloeus* species. However, the male of *Leptophloeus angustulus* has 5-5-4 tarsi and possesses genital sclerotizations similar to those of some species of *Cryptolestes*. And some species of *Cryptolestes* possess a 5-5-5 male tarsal formula, so that the only major distinguishing characters separating adults of *Leptophloeus* from those of *Cryptolestes* appear to be the subcylindrical body and concomitant narrowing of the intercoxal process of sternum III. Additionally, I have seen specimens of an undescribed species from the western United States that strongly resembles *C. ferrugineus* in general habitus, even to the laterally expanded mandibles in the male, but would be assigned currently to *Leptophloeus* because of its subcylindrical body and narrow intercoxal process of sternum III. It may be that some of these character states, e.g., laterally expanded mandibles and possession of genitalic sclerotizations in both males and females, are ancestral for all or most of these genera and are subject to secondary loss. Adults of *Dysmerus* are distinguished from those of *Cryptolestes* by their subcylindrical bodies, bizarrely modified male antennal scapes, and the lateral attachment of the pedicel to the scape in both sexes (Lefkovitch 1958).

Clearly much more work needs to be done in *Cryptolestes* and related genera to adequately delineate the characters that define the generic groupings. It is certainly premature to begin splitting up *Cryptolestes* into subgenera, as Iablokoff- Khnzorian (1977) has done, when the limits of the genus as a whole are still unclear. Lefkovitch arranged the economic species in groups based on patterns of sexual dimorphism and humidity requirements (Lefkovitch 1965b) and their predilection towards predation, cocoon characteristics, and resistance to methyl bromide fumigation (Lefkovitch 1965a).

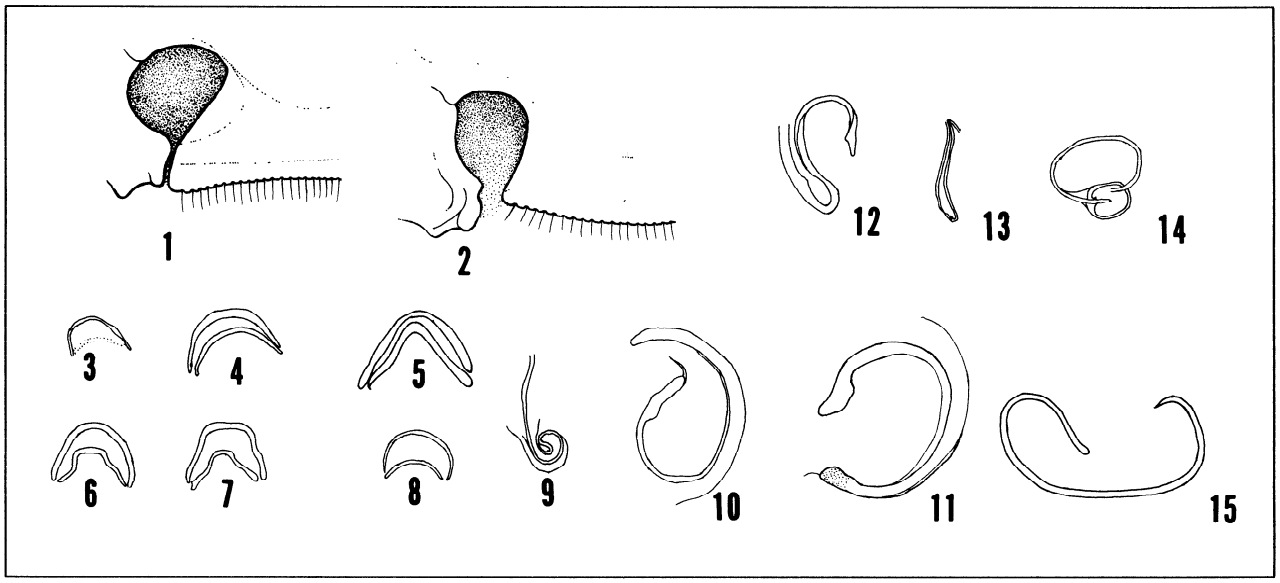
The taxonomy and identification of the stored products species of *Cryptolestes* have been the subjects of numerous papers, among which are: Banks (1979); Biege & Partida (1976); Green (1979); Iablokoff-Khnzorian (1978); Lefkovitch (1959a, 1962g); Reid (1942a). Six cosmopolitan species that have been recorded from, or which are likely to occur in, stored products in the New World are illustrated and included in the key to species, but are not dealt with further here. Both Banks (1979) and Reid (1942a) incorrectly labelled the sclerotizations of the internal sac of various *Cryptolestes* species as the aedeagus and parameres, which have less value in distinguishing species than do the structures of the internal sac.

As with their taxonomy, the biology of the stored products species of *Cryptolestes* has been intensively investigated and is among the best-known of the Coleoptera. For further details on the biology and ecology of those species, see Ashby (1961); Barker & Johnson (1968); Barnes & Kaloostian (1940); Bishop (1959); Borden et al. (1979); Corbett et al. (1937); Currie (1967); Davies (1949); Dolinski & Loschiavo (1973); Dyte (1961, 1966); Finlayson (1950a, 1950b); Freeman (1952, 1962); Gupta & Sinha (1960); Howe (1943); Lefkovitch & Currie (1967); Lefkovitch & Milne (1963); Lefkovitch (1959b, 1962d, 1962e, 1962f); Loschiavo & Sinha (1966); Lucas & Oxley (1946); Payne (1946); Rilett (1949); Sinha (1961, 1965); Sinha et al. (1962); Smith (1962, 1965, 1966, 1972); Surtees (1963, 1964, 1965); Tuff & Telford (1964); Watters (1969); Williams (1954); Wojcik (1969).

The biology of the non-economic species of *Cryptolestes* is almost completely unknown, except that, like most laemophloeines, they occur under bark of hardwood logs and are apparently fungivorous. However, Lefkovitch [1965a] reported that *C. capensis* and *C. ferrugineus* are "... actively though not exclusively predatory..." Individuals of one of the new species described below have been reported to feed on scale insects, and at least some members of *Leptophloeus* and *Dysmerus* have been recorded as predators of bark beetles.

In some species of *Cryptolestes* the last larval instar spins a silken cocoon in which to pupate (Roberts & Rilett 1953). They are apparently unique among Coleoptera because the silk is produced from epidermal glands on the prosternum.

Four species of *Cryptolestes*, *ferrugineus* (Stephens), *turcicus* (Grouvelle), *pusillus* (Schonherr), and *pusilloides* (Steel and Howe), are important stored products pests of nearly worldwide distribution (Howe & Lefkovitch 1957). Three others, *capensis* (Waltl), *ugandae* Steel and Howe, and *klapperichi* Lefkovitch, are also known from stored products but are of more limited distribution. *Cryptolestes capensis* occurs in the countries bordering the Mediterranean (Howe and Lefkovitch 1957). *Laemophloeus rotundicollis* Casey, described from South Carolina, was synonymized with *capensis* by Lefkovitch (1967); I have not seen any North American specimens of *capensis* during this study. *Cryptolestes ugandae* is restricted to Central Africa (Lefkovitch 1962c). *Cryptolestes klapperichi* was described in 1962 from Afghanistan (Lefkovitch 1962a) and shortly thereafter was recorded from



Figures 1-15. *Cryptolestes* spp. Anterior coxal cavities: 1) *C. ferrugineus* (Stephens); 2) *C. uncicornis* (Reitter); armature of internal sac: 3) *C. pusillus* (Schonherr); 5) *C. dissimulatus* Thomas, n.sp.; 6) *C. klapperichi* Lefkovitch; 7) *C. turcicus* (Grouvelle); 8) *C. pusilloides* (Steel & Howe); sclerotization of bursa copulatrix: 9) *C. pusillus* (Schonherr); 10) *C. ferrugineus* (Stephens); 11) *C. dissimulatus* Thomas, n.sp.; 12) *C. klapperichi* (Lefkovitch); 13) *C. turcicus* (Grouvelle); 14) *C. pusilloides* (Steel & Howe); 15) C. dybasi Thomas, n.sp.

Arabia (Lefkovitch 1965b). Less than 15 years later, Green (1979) recorded *klapperichi* in stored products from Sri Lanka and Malaysia. I have seen a long series of specimens of this species collected by M.A. Ivie from the ascomycete fungus *Daldinia concentrica* (Bolton ex Fr.) Ces. & de Not. on a dead citrus tree in the Virgin Islands. This is the first record of *klapperichi* from the New World.

In addition to the economically important species mentioned above, there are six species recorded from Europe (Lefkovitch 1959a); eight from Africa (Lefkovitch 1962g); two from Mauritius and Reunion (Lefkovitch 1964a); two from Arabia (Lefkovitch 1965b); and 13 are recorded here from the New World. I have seen specimens of unidentified and probably undescribed species from Hawaii, Australia, and the New Guinea area.

Where label data are given in descriptions of new species, they are listed verbatim in double quotes, with data from different labels separated by slashes. Abbreviations for North American collections are those given by Arnett and Samuelson (1969).

Genus *Cryptolestes* Ganglbauer

Leptus Thomson 1863:92 (not Latreille, 1896; 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; antennomere II longer and more robust than III; sublateral lines of pronotum carinulate; metasternal suture not attaining anterior edge of sclerite; intercoxal process of sternum III broadly rounded anteriorly; anterior tibial spurs subequal in length; elytra with three complete cells; body dorsoventrally compressed.

Key: New World Species of *Cryptolestes*, Adults

1. Pronotum with a secondary line between sublateral line and lateral margin (Fig. 29, 31, 33, 36, 41,) 2
1'. Pronotum without a secondary line between sublateral line and lateral margin 8

2(1). Punctures of pronotal disc elongate 3
2'. Punctures of pronotal disc circular 5

3(2). Secondary sublateral line attaining neither posterior nor anterior angle (Fig. 29); male antennal scape elongate, with scoop shaped process on

mesal face; male genitalia as in Fig. 30 (Argentina) ..... *spatulifer* Thomas, n.sp.

3'. Secondary sublateral line attaining either basal or anterior margin of pronotum; male antennal scape either elongate and unmodified or elongate with hook shaped process on mesal face; male genitalia not as in Fig. 29 4

4(3'). Secondary sublateral line diverging posteriorly from sublateral line and attaining basal angle (Fig. 31); male antennal scape without apical process (Fig. 31); male genitalia as in Fig. 32 (eastern United States) ... *punctatus* (LeConte)

4'. Secondary sublateral line paralleling sublateral line and becoming obsolete at about midpoint of pronotum (Fig. 33); antennal scape of major males with hook shaped apical process (Fig. 33); male genitalia as in Fig. 34 (Neotropics and southern United States) ... *uncicornis* (Reitter)

5(2'). Dorsal surface almost glabrous and impunctate; male with or without modified antennal scape 6

5'. Dorsal surface distinctly punctate and pubescent; male antennal scape elongate but otherwise unmodified (Fig. 26); male genitalia as in Fig. 27-28 (southwestern United States) ..... *pubescens* Casey

6(5). Male with antennal scape acutely toothed on both inner and outer surfaces (Fig. 35); body form elongate, narrow (Venezuela) ..... *calabozus* Thomas, n.sp.

6'. Male with antennal scape either unmodified or with tooth only on ventrolateral surface; body form broad 7

7(6'). Sublateral line and secondary line of pronotum close together (Fig. 41) in male, distant in female (Fig. 41 inset); male antennal scape without ventrolateral tooth; male genitalia as in Fig. 43-44 (Peru) ..... *ampiyacus* Thomas, n.sp.

7'. Sublateral line and secondary line of pronotum distant (Fig. 36) in male, female unknown; male antennal scape with ventrolateral tooth; male genitalia as in Fig. 37 (Trinidad) ..... *trinidadensis* Thomas, n.sp.

8(1'). Basal angles of pronotum obsolete (Old World in stored products, but not seen from New World in this study) ..... *capensis* (Waltl)

8'. Basal angles of pronotum present 9

9(8'). First and second elytral cells enclosing four rows of setae (this character is best observed in a slide mounted specimen) 10

9'. First and second elytral cells enclosing three rows of setae 12

10(9). Males with mandibles expanded laterally; pronotum strongly constricted posteriorly in males 11

10'. Males without mandibles expanded laterally; pronotum not strongly constricted posteriorly in males 12

11(10'). Accessory sclerite of internal sac as in Fig. 3; sclerotization of bursa in female as in Fig. 9 (cosmopolitan in stored products) ..... *pusillus* (Schonherr)

11'. Accessory sclerite of internal sac as Fig. 24 (female is unknown) (Brazil) ..... *capillulus* Thomas, n.sp.

12(10). Dorsal surface slightly, but distinctly, convex; accessory sclerite of internal sac as in Fig. 4; sclerotization of bursa as in Fig. 10 (cosmopolitan in stored products) ..... *ferrugineus* (Stephens)

12'. Dorsal surface not convex; accessory sclerite of internal sac as in Fig. 5; sclerotization of bursa as in Fig. 11 (southwestern United States) ..... *dissimulatus* Thomas, n.sp.

13(9'). Mandibles of males expanded laterally; accessory sclerite of internal sac as in Fig. 6; sclerotization of bursa in female as in Fig. 12 (Old World and U.S. Virgin Islands) ..... *klapperichi* Lefkovitch

13'. Mandibles of males not expanded laterally ... .14

14(13'). 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; male genitalia as in Fig. 25 (southeastern United States) ..... *schwarzi* (Casey)

14'. Punctation of dorsal surface of head and prothorax not as above, punctures laterally not almost contiguous nor forming longitudinal furrows; antennae filiform or moniliform ..15

15(14'). Humeral carinae of elytra strongly produced, elytral disc concave (Fig. 19); body often distinctly bicolored; male genitalia as is Fig. 20 (Cuba) ..... *bicolor* (Chevrolat)

15'. Humeral carinae of elytra not strongly produced, elytral disc not concave; body not distinctly bicolored; male genitalia not as in Fig. 20 16

16(15'). Antennal scape conspicuously pubescent adorally (Fig. 21); male genitalia as in Fig. 22, without crescentic accessory sclerites of internal sac; bursa without sclerotizations (Mexico and Guatemala) ..... *mexicanus* Thomas, n.sp.

16'. Antennal scape not conspicuously pubescent adorally; males with crescentic accessory sclerites of internal sac; bursa with sclerotizations 17

17(16'). Accessory sclerites of internal sac as in Fig. 7; sclerotization of bursa in female as in Fig. 13 (Cosmopolitan in stored products) .... *turcicus* (Grouvelle)

17'. Accessory sclerites of internal sac and sclerotization of bursa not as above 18

18(17'). Accessory sclerites of internal sac as in Fig. 8; sclerotization of bursa in female as in Fig. 14 (Cosmopolitan in stored products) ....*pusilloides* (Steel & Howe)

18'. Accessory sclerites of internal sac as in Fig. 18; sclerotization of bursa in female as in Fig. 15 (Florida) ..... *dybasi* Thomas, n.sp.

Cryptolestes dissimulatus Thomas, new species
Figures 5, 11, 16

Diagnosis: Individuals of this species superficially resemble those of *ferrugineus* but can be distinguished by their greater flatness (Fig. 16) and by the structure of the male and female genitalia (Fig. 11, 16).

Types: Holotype male in USNM with following data: "Salt Riv. Valley Ariz. 11.14.'34"/"on decaying date-palm tissue behind the fibre"/"No. 66 FSStickney". Twenty-five paratypes as follows: 13, same data as holotype; 9, "Indio, Cal. XI.9.'33"/"on decaying date-palm tissue"/"No. 117 FSStickney"; 1, "Feeding on Marlatt scale on Palm"/"Mecca, Cal. A.D. Borden Apr. 1920"/"Cryptolestes truncatus Casey ?"/"Cryptolestes ferrugineus (Steph.) Det. L.P. Lefkovitch"; 2, same data except first determination label.

Description: Length, 2.2mm. Testaceous, mouth parts, antennae and legs paler.

Head: Transverse (1:1.75), eyes small, flattened and advanced about once their diameter from base of head; epistome very slightly convex medially; disc relatively flat, frons slightly depressed below level of clypeal area and vertex; punctures about the diameter of an eye facet, separated by one to two diameters; each puncture subtending a pale seta three to four times longer than the diameter of the puncture; surface between punctures distinctly microreticulate; antenna filiform, extending beyond base of pronotum, all antennomeres longer than broad; genae produced ventrolaterally; mandibles with a vertically directed, narrowly rounded process near base.

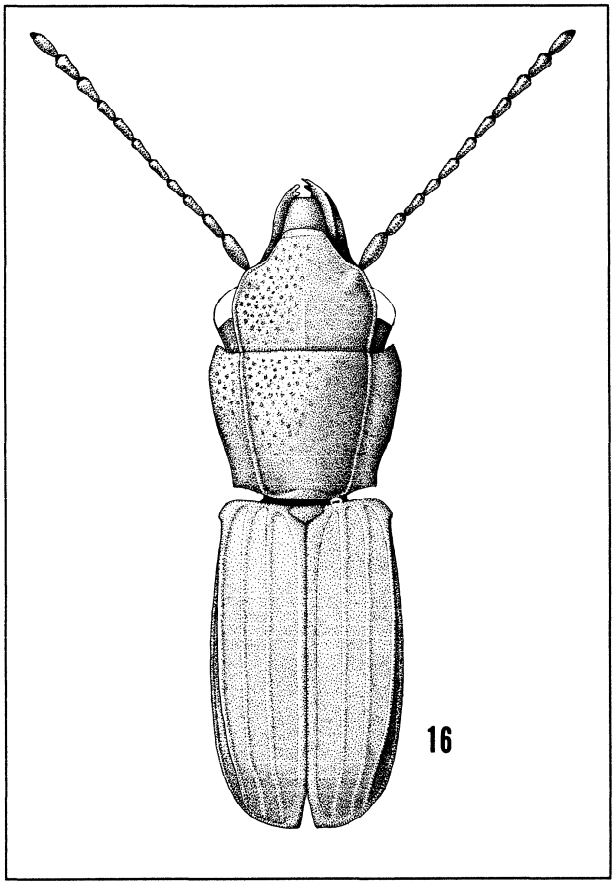


Figure 16. *Cryptolestes dissimulatus* Thomas, n.sp., habitus of male.

Thorax: Transverse (1:1.3), strongly constricted basally; anterior angles acute, posterior angles barely obtuse; surface sculpture and pubescence as on head.

Genital sclerotization of male as in Fig. 5. Sclerotization of bursa as in Fig. 11.

Tarsal formula in both sexes 5-5-5.

Variation: Paratypes range in length from 1.8mm to 2.2mm.

Discussion: This is the species mentioned by Borden (1921:665) as an important predator of the red date-palm scale (*Phoenicoccus marlatti* Cockerell) in California. "Occasionally definite galleries of destroyed scales were

noted where these beetles were working. This beetle was also found feeding on the scales out on the fruit clusters in a commercial garden during the latter part of April" (Borden 1921:665). There are three specimens of this species in the USNM collected by Borden with the notation "Feeding on Marlatt scale on Palm." They were identified as "*Laemophloeus* (*Cryptolestes*) *truncatus* Casey (?)" by E.A. Schwarz and as *Cryptolestes ferrugineus* (Stephens) by L.P. Lefkovitch. With the USNM specimens of *dissimulatus* were five specimens of *ferrugineus* collected by Stickney near Tempe, Arizona "in decaying fallen dates".

All of the specimens I have seen were collected in association with date palms. I suspect that this is not a native New World species, but was introduced into the southwestern United States with the date palms. From Borden's account, it is possible that it is a specialized predator of the red date-palm scale.

It is surprising that such an insect should remain undescribed for so long. It is distinct from anything that Lefkovitch has described from the Old World, but apparently he did not recognize its distinctness from *C. ferrugineus*. I have not seen any specimens collected more recently than 50 years ago and the southwestern U.S. population may no longer exist. A search should be made for this species in the date palm groves of southern California and Arizona so that its potential as a biological control agent can be evaluated.

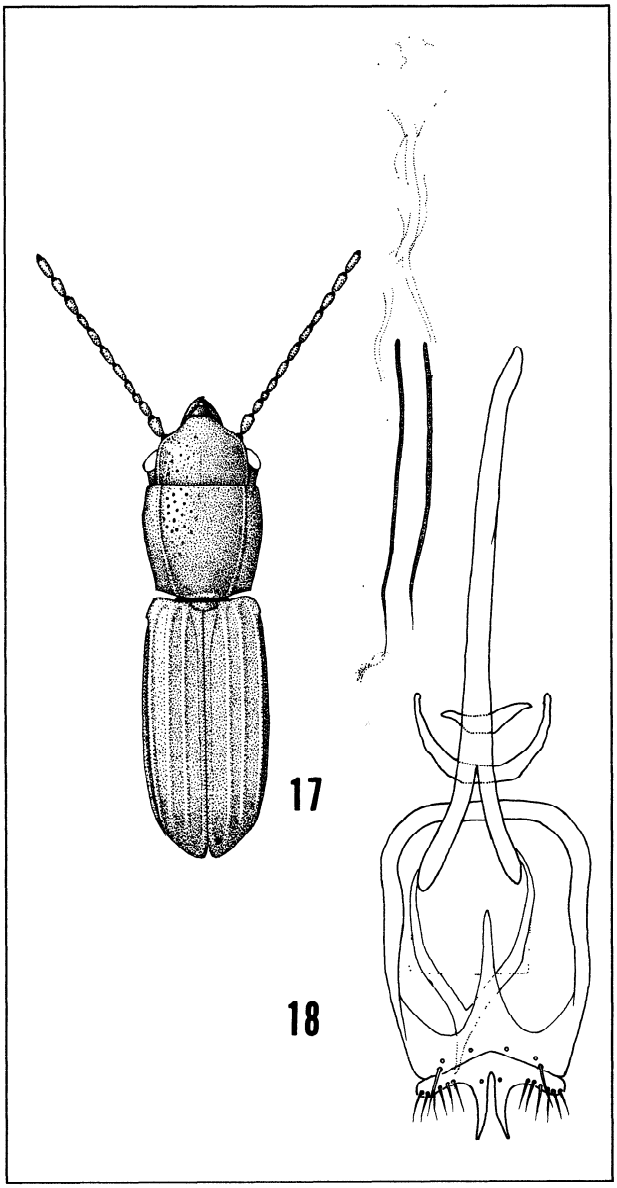
Cryptolestes dybasi Thomas, new species
Figures 15, 17, 18

Diagnosis: The male genitalia (Fig. 18) and sclerotization of the bursa in the female (Fig. 15) are diagnostic.

Types: Holotype male in FSCA with the following data: "FLA: Dixie County, 3.5mi. N. Old Town Rt. 349, 21-V-78 R.E. Woodruff and S.A. Fragoso blacklight trap"; paratypes, 3, with following data: 1, same as holotype; 1, "FLA:Dixie County, 3.5mi. N. Old Town Rt. 349 13-I-1980 M.C. Thomas"; 1, same, except collector is H.S. Dybas. Paratypes are deposited in FSCA and MCTC.

Description: Length 1.5mm. Testaceous, legs paler; body slender and parallel-sided (Fig. 17).

Head: Transverse (1:1.57); epistome produced anteriorly, truncate over labrum; lateral line represented by a slight ridge and associated groove; punctures medially much smaller than an eye facet, separated by three or more times their diameter, each subtending an erect pale seta, laterally punctures about diameter of eye facet, separated by 1-2 diameters; surface between punctures smooth and glossy; antennae short, robust; antennomere III much shorter than II, III-VIII subequal in length; IX-XI forming distinct club.



Figures 17 and 18. *Cryptolestes dybasi* Thomas, n.sp. 17) habitus of male; 18) male genitalia.

Thorax: Pronotum slightly transverse (1:1.09); surface sculpture and punctation as on head; sublateral line represented by a ridge bordered by a slight groove; elytra 1.8 times longer than wide, parallel-sided, apices evenly rounded to suture.

Male genitalia as in Fig. 18; sclerotization of bursa in female as in Fig. 15.

Variation: Paratypes range in length from 1.3mm to 1.4mm. Ratio of length of head to width ranges from 1:1.67 to 1:1.9; that of prothorax is constant in paratypes at 1:1; elytra range from 1.9 times to 2.16 times longer than wide.

Cryptolestes bicolor (Chevrolat), new combination, Fig. 19-20

Laemophloeus bicolor Chevrolat, 1863:612

Laemophloeus concavus Reitter, 1878:192, **new synonym**

Types: Not examined, presumably either in BMNH or MNHN.

Diagnosis: The acute humeral carinae and concave disc of the elytra (Fig. 19), extremely elongate antennae, and bicolored body make individuals of this species among the most easily recognized of New World *Cryptolestes*. The male genitalia (Fig. 20) also are diagnostic.

Taxonomic Notes: Grouvelle (1896:205) suggested that Reitter's species might be based on the female of Chevrolat's species. Although I have not examined the types of these species, Reitter's description leaves little doubt of their conspecificity.

Distribution: Both Chevrolat's and Reitter's species were described from Cuba, without a precise locality. I have seen only four specimens of this species, all collected by E.A. Schwarz at Cayamas, Cuba, in March and February, and in the USNM.

Cryptolestes mexicanus Thomas, new species Fig. 21-22

Diagnosis: The combination of the following character states is diagnostic for this species: the very elongate antennae with the scape conspicuously pubescent; the slender form (Fig. 21) and the male genitalia (Fig. 22).

Types: Holotype male in FSCA with following data: "Mexico; Oax[aca]. Matias Roman July 3 1975 D.S. Chandler leg." Three paratypes, as follows: 1, "MEXICO: State of Veracruz, Lake Catemaco, 'Coyame'"/"R.E. Woodruff 7-9-VII-1963 blacklight trap" (FSCA); 2, "GUATEMALA: Alta Verapaz 57.6 km. N. El Rancho on new Coban Highway 1463 mts. 30 May 1973"/"Erwin & Hevel Central American Expedition, 1973" (USNM).

Description: Length, 1.6mm. Dark testaceous, antennae, mouth parts and legs paler.

Head: Almost quadrate (1:1.1), eyes small, convex, about one diameter in advance of base of head; disc slightly convex, epistome subtruncate medially; punctures greater in diameter than an eye facet, separated mostly by one to three diameters, more widely separated medially, each subtending a fine, pale seta two to three times longer than diameter of puncture; mandibles small, expanded laterally and abruptly bent medially; right mandible with acute process at lateral angle; antennal scape robust, two times longer than broad, with vestiture of long setae on mesal face; pedicel large, broader than antennomere III; antennomeres III-VII gradually increasing in length, VII 2.6 times longer than broad; VIII shorter than VII, IX-XI elongate, XI 3.7 times longer than broad, barely expanded distally; genae produced anteriorly as acute teeth.

Thorax: Transverse (1:1.2), anterior fifth laterally rounded, then doubly sinuate to obtuse posterior angle; surface sculpture and pubescence as on head; intercoxal process convex posteriorly.

Male genitalia as in Fig. 22.

Variation: Length of the paratypes ranges from 1.4mm to 1.8mm. The antennae of the female are relatively shorter, barely attaining the basal third of the elytra.

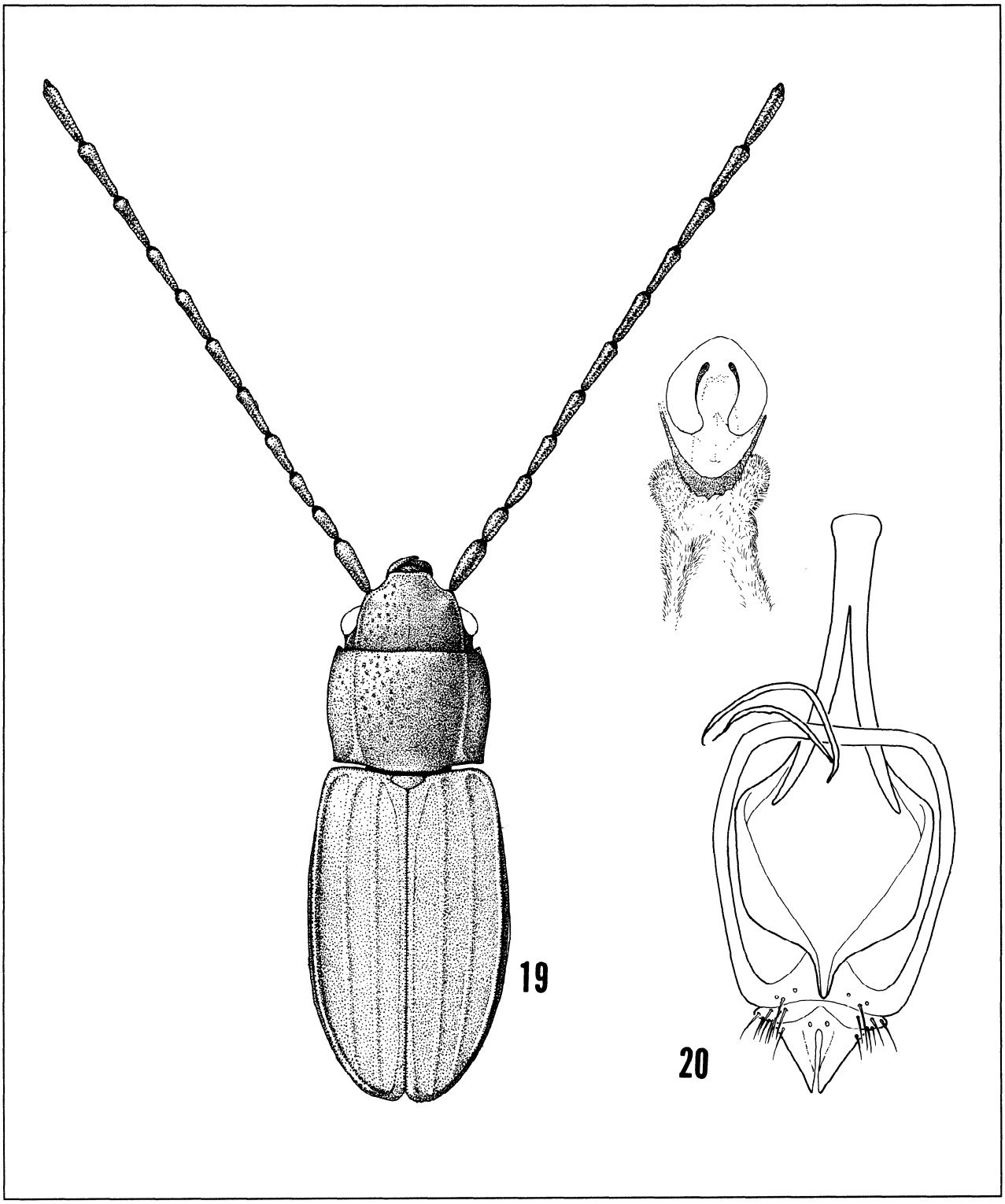
Cryptolestes capillulus Thomas, new species Fig. 23-24

Diagnosis: Males of this species are most similar to those of *C. schwarzi*, but differ in the structure of the genitalia (Fig. 24) and the less coarse punctation of the dorsal surface of the head and prothorax, as well as longer antennae. The female is unknown.

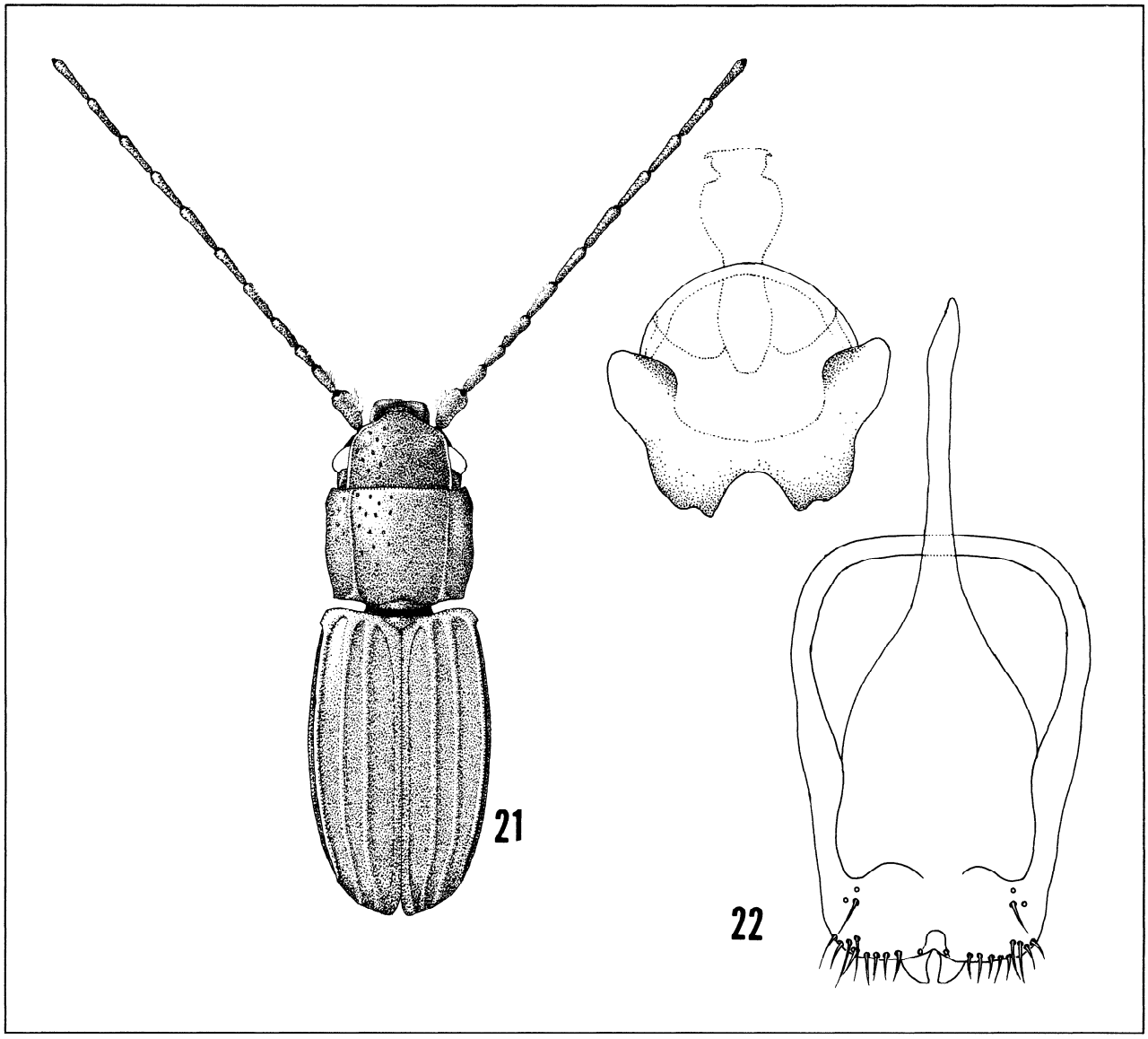
Types: Male holotype in the Polish Academy of Sciences with the following label data: "Rio [Grande] do Sul Sta Catharina Coll. Kessel"/"ex coll. F. Kessel Mus. Zool. Polonicum Warszawa 19/46". Two paratypes in Polish Academy of Sciences with same data.

Description: Length, 1.3mm. Testaceous, legs and mouth parts paler; body elongate, parallel-sided.

Head: Transverse (1:1.7), epistome slightly emarginate, disk of head moderately coarsely punctate; punctures, especially laterally, somewhat longitudinally elongate, diameter of each puncture about equal to that of an eye facet, punctures separated by about their diameter, each subtending a pale seta more than five times a long as a puncture diameter, surface between punctures smooth and glossy; antennae elongate, attaining basal third of elytra; scape large, globose; pro-



Figures 19 and 20. *Cryptolestes bicolor* (Chevrolat). 19) habitus of male; 20) male genitalia.



Figures 21 and 22. *Cryptolestes mexicanus* Thomas, n.sp. 21) habitus of male; 22) male genitalia.

portions of antennomeres 2:1.5:1:1.25:1.5:1.25:1.25:1: 1.5:1.5:2.

Thorax: Pronotum subquadrate (1:1.2), weakly narrowed posteriorly, broadest just behind apex; anterior and posterior angles obtuse; punctation and pubescence laterally on disk as on head, medially punctures smaller and more widely separated; surface between punctures smooth and shining; elytra 1.6 times longer than broad and 1.4 times longer than the combined lengths of head and pronotum.

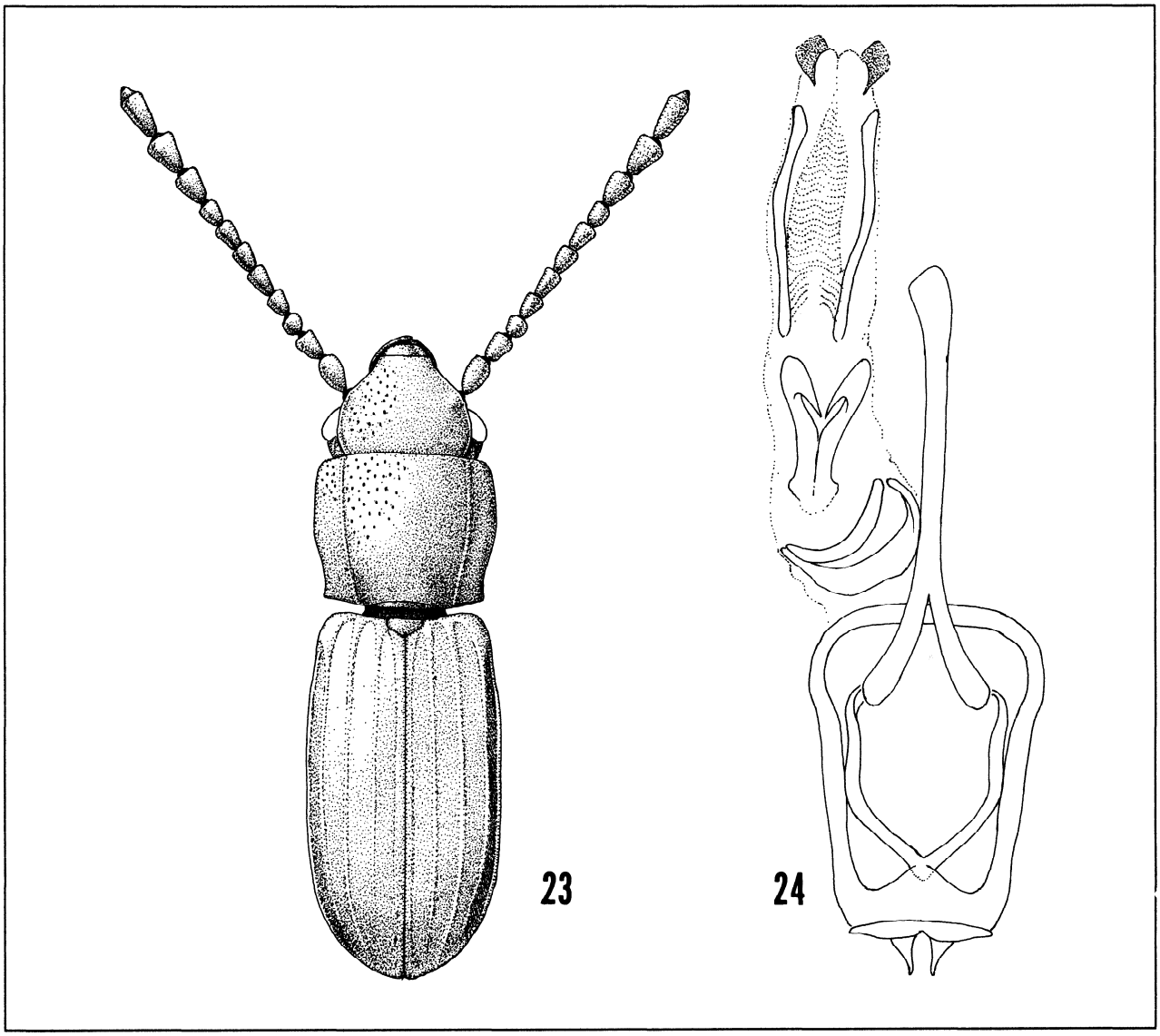
Male genitalia as in Fig. 24. Female unknown.

Variation: The two male paratypes are 1.2mm and 1.3mm in total length and differ from the holotype in somewhat less dense punctation of the dorsal surface of the head and prothorax.

Cryptolestes schwarzi (Casey), new status
Fig. 25

Laemophloeus Schwarzii Casey 1884:91

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



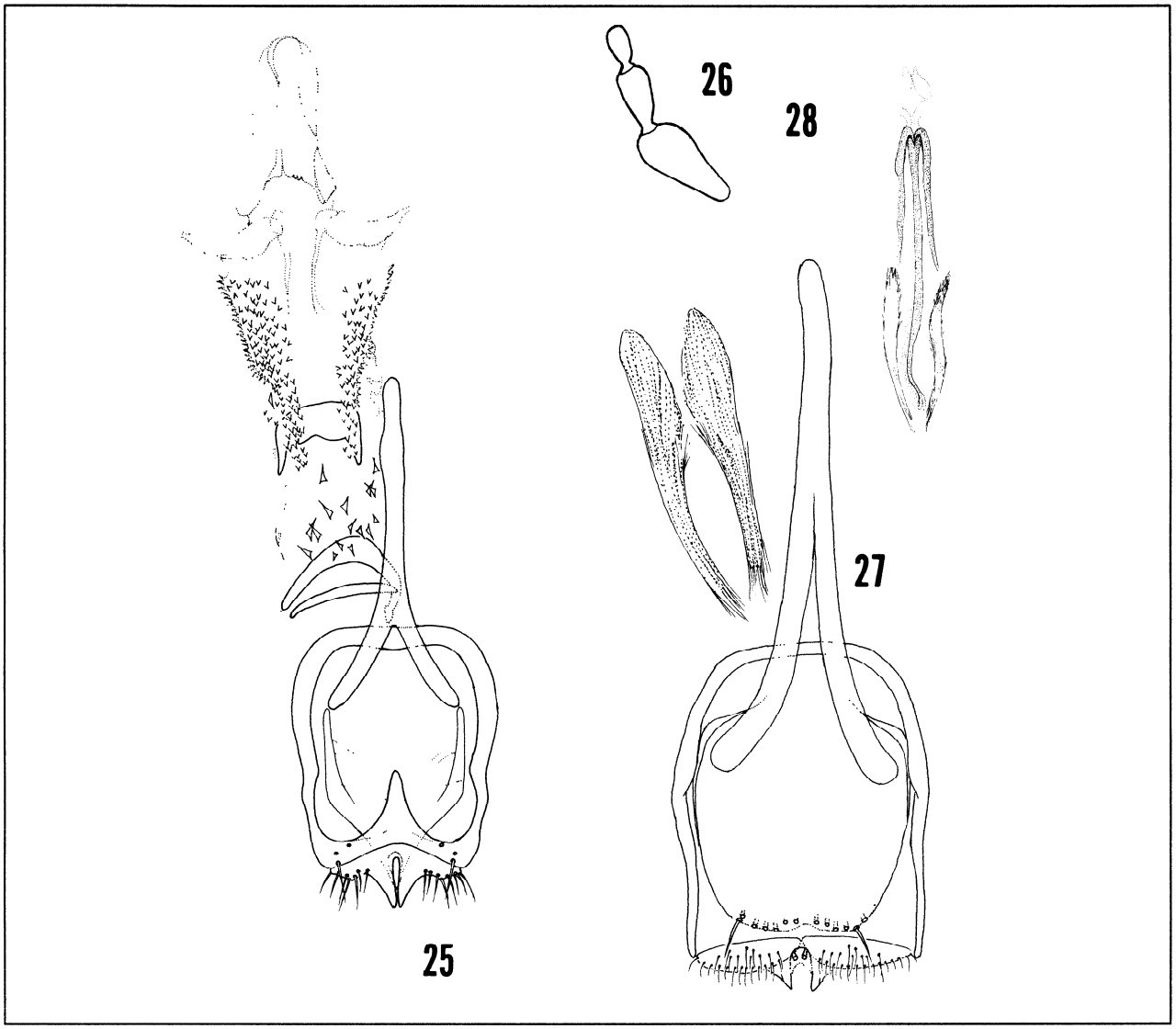
Figures 23 and 24. *Cryptolestes capillulus* Thomas, n.sp. 23) habitus of male; 24) male genitalia.

Diagnosis: The pubescent, coarsely punctate dorsal surface of the head and prothorax are diagnostic for adults of this species. The male genitalia (Fig. 25) are also diagnostic. Because of the confusion surrounding this species, the Florida male is described in some detail below.

Types: Female lectotype (designated by Lefkovitch 1967, see discussion below) in USNM with following label data: "Tampa 12.4 Fla"/"Coll Hubbard & Schwarz"/"Cotype No.4657 U.S.N.M."/"L. Schwarzii Casey"/"Cryptolestes schwazi [*sic*] Casey". I have seen only two other specimens, both males, with the following label data: 1, "FLORIDA: Highlands Co., Highlands Hammock St. Pk. 23-IV-1982 M.C. Thomas" (MCTC); 1, "GA. Clarke Co. Whitehall Forest emerged 20 Feb. 1975 R. Turnbow" (FSCA).

Description: Length 1.4mm. Dark testaceous, legs paler; body slender and parallel-sided.

Head: Transverse (1:1.6); epistome produced anteriorly, excavate, almost foveate, at basal angles; truncate over labrum; lateral line represented by a ridge and associated groove; disc of head coarsely punctate, with coarse, conspicuous, mostly recumbent, pale pubes-



Figures 25-28. *Cryptolestes* spp. 25) *C. schwarzi* (Casey), aedeagus; *C. pubescens* (Casey), 26) antennal scape; 27) median lobe; 28) internal sac.

cence, setae medially on frons suberect; punctures medially about diameter of an eye facet, separated by 1-2 diameters, laterally more than twice the diameter of an eye facet, almost contiguous and tending to form longitudinal furrows; a median longitudinal line from vertex to anterior margin of epistome is conspicuous; antennae short, barely attaining base of prothorax; scape and pedicel robust, antennomeres III-VIII moniliform, antennomeres IX-XI wider and longer than preceding antennomeres.

Thorax: Transverse (1:1.1), broadest just behind rounded anterior angles; moderately constricted posteriorly; posterior angles produced, right; surface sculpture and pubescence as head; elytra 1.75 times longer than broad and 1.53 times combined lengths of head and prothorax; first and second elytral cells enclosing three rows of setae.

Male genitalia as in Fig. 25; female genitalia damaged.

Biology: The Florida specimen was collected by beating a dead branch of a live oak (*Quercus virginiana* L.).

Taxonomic Notes: Although Casey (1884:91) described this species from three specimens collected in

"Fla." and "D.C.", Lefkovitch (1967:246) was able to find in the USNM only a single female, which he designated as lectotype. Lefkovitch (1967:246) synonymized Casey's species under *Cryptolestes weisei* (Reitter), described from Germany. Reitter described *weisei* as being shining and with the pronotum finely punctate, neither of which applies to *schwarzi*. I have seen two specimens of *weisei*, including the specimen from the Grouvelle collection in the MNHN mentioned by Lefkovitch (1959:110). A specimen of *weisei* from Poland was also made available by S.A. Slipinski of the Polish Academy of Sciences. Both of these specimens are very different from the specimens of *schwarzi*; they are larger, paler, more shining, more depressed, less densely punctate, and show no sign of the longitudinal line that is so conspicuous on the anterior part of the head capsule in the specimens of *schwarzi*. For these reasons, I am removing Casey's species from synonymy under *C. weisei* (Reitter).

Cryptolestes pubescens (Casey), new combination
Fig. 26-28

Laemophloeus pubescens Casey, 1884:93

Types: Lectotype, here selected, see discussion below.

Diagnosis: Although this species has an elongate antennal scape in the male (Fig. 26), male genitalia without accessory genital sclerites (Fig. 27-28), and traces of secondary sublateral lines on the pronotum, it differs considerably in facies from the other species having elongate antennal scapes. All specimens examined have dense, circular punctures on the head and pronotum and the dorsal surface covered with conspicuous pubescence in the form of setae about six times longer than the diameter of a puncture. Individuals of the other species with elongate scapes in the male have mostly elongate punctures of the head and pronotum and inconspicuous pubescence about four times the diameter of a puncture.

Taxonomic Notes: This species was described from an unstated number of specimens from California. I have examined the single specimen (male) in the USNM: "(gold disc indicating California)"/"TYPE USNM 49164"/"CASEY bequest 1925"/"pubescens type Csy" (Casey's mss.). I here select this specimen as lectotype. Additionally, I have seen the following specimens: 7, "Wheatfields near Globe, Arizona D.K. Duncan"/"April" (UAIC); 1, "Westmoreland Ind.[rio] Co., Cal. XII-30-1944"/ "ex pecan"/"Anderson Hanson collector"/"Cal. Dept. Agr. No. 45UA35" (CDAE).

Cryptolestes spatulifer Thomas, new species
Fig. 29-30

Diagnosis: The form of the epistome and scape makes the male of this species easily recognized (Fig. 29). The female can be distinguished from females of *punctatus* and *uncicornis* by the weakly indicated secondary sublateral line of the pronotum. The male genitalia (Fig. 30) also are diagnostic.

Types: Holotype male in Museo La Plata, Argentina, with following data: "S[antiago]. del Estero Camp Gallo VI-1933"/"Bosq" (on underside of top label)/"Laemophloeus sp."/"Bruch det." (on underside of second label)/"Museo La Plata". One female paratype with same data mounted below holotype.

Description: Length 1.7mm, brownish, glossy, mouth parts and legs a little paler.

Head: Transverse (1:1.65), roughly triangular in outline, broadest across the eyes; epistome produced anteriorly and slightly deflected downward, medial emargination slight; antennal insertions situated at about midpoint of head; eyes small, about one-fourth the length of the head, advanced less than once their diameter from base of head; punctures of dorsal surface about the diameter of an eye facet, slightly elongate, separated by 1-2 times their diameter and each subtending a pale seta 3-4 times as long as the diameter of the puncture, surface between punctures smooth and glossy; antennal scape elongate, exceeding slightly the length of the head, inside apical surface of scape produced anteriorly as a scoop-shaped process, giving the entire structure the appearance of a straight-handled spoon or ladle (Fig. 27), surface of process with scattered, long setae; pedicel globular, slightly longer than wide; antennomeres III-VIII moniliform, IX- XI elongate, but scarcely broader than preceding antennomeres.

Thorax: Transverse (1:1.33), slightly narrowed posteriorly, punctures and pubescence as on head; an obsolescent longitudinal line paralleling sublateral line; anterior angles acute, posterior angles almost right.

Male genitalia as in Fig. 30.

Variation: Length of the female paratype is 1.6mm, the frons is less produced than in the male, and the antennal scape is globular. Additionally, the head and pronotum are less transverse (1:1.50 and 1:1.27, respectively). There is no sclerotized structure in the walls of the bursa copulatrix.

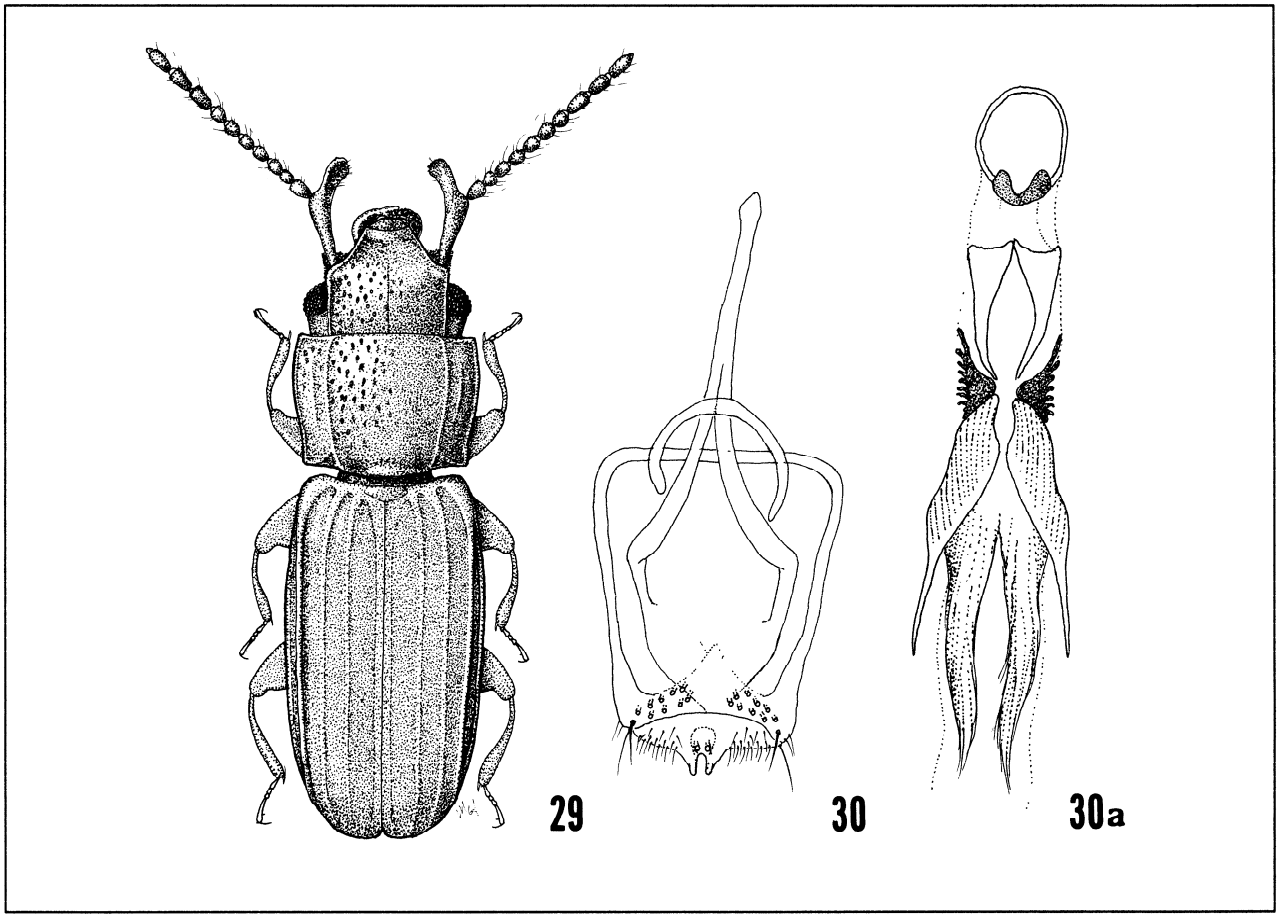


Figure 29 and 30. *Cryptolestes spatulifer* Thomas, n.sp. 29) habitus; 30) aedeagus; 30a) internal sac.

Cryptolestes punctatus (LeConte) Fig. 31-32

Laemophloeus punctatus LeConte 1854:75

Cryptolestes punctatus, Lefkovitch 1958:93

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

Laemophloeus extricatus Casey 1884:92, **new synonym**

Cryptolestes adumbratus Casey 1916:134, **new synonym**

Diagnosis: Length 1.4mm - 1.8mm. It superficially is similar to *uncicornis*; characters useful in distinguishing adults of the two species are given in the diagnosis under that species.

Taxonomic Notes: LeConte (1854:75) described *punctatus* from a single male with the following data: [orange disc, indicating Southern States]/"1248" [pencil on brown paper]/"Type 6791"/"L. punctatus Lec." (MCZC). LeConte (1854:75) described *geminatus* from an unstated number of specimens from "Louisiana and Georgia." I have examined a single female in the MCZC bearing the following data: [orange disc, indicating Southern States]/"Type 6792"/"L. geminatus Lec." I here select this specimen as lectotype. It is conspecific with *punctatus*. There are two specimens of *adumbratus* glued to a single point in the USNM with the following data: "Borden 18.6 Tex"/"CASEY bequest 1925"/"TYPE USNM 49165"/"adumbratus 2 PARATYPE 49165"/"adumbratus Csy." [Casey's mss.]. I here select the specimen on the left as lectotype. Both are conspecific with *punctatus*. Casey (1884:92) described *extricatus* from a single specimen with the following data: "Mo."/"CASEY bequest 1925"/"TYPE USNM 49163"/"extricatus Csy." [Casey's mss.]. It is conspecific with *punctatus*.

Biology: Little is known about the biology of this species. Like *uncicornis* it occurs beneath the bark of hardwoods, especially *Quercus* spp., and is collected in ultraviolet light traps.

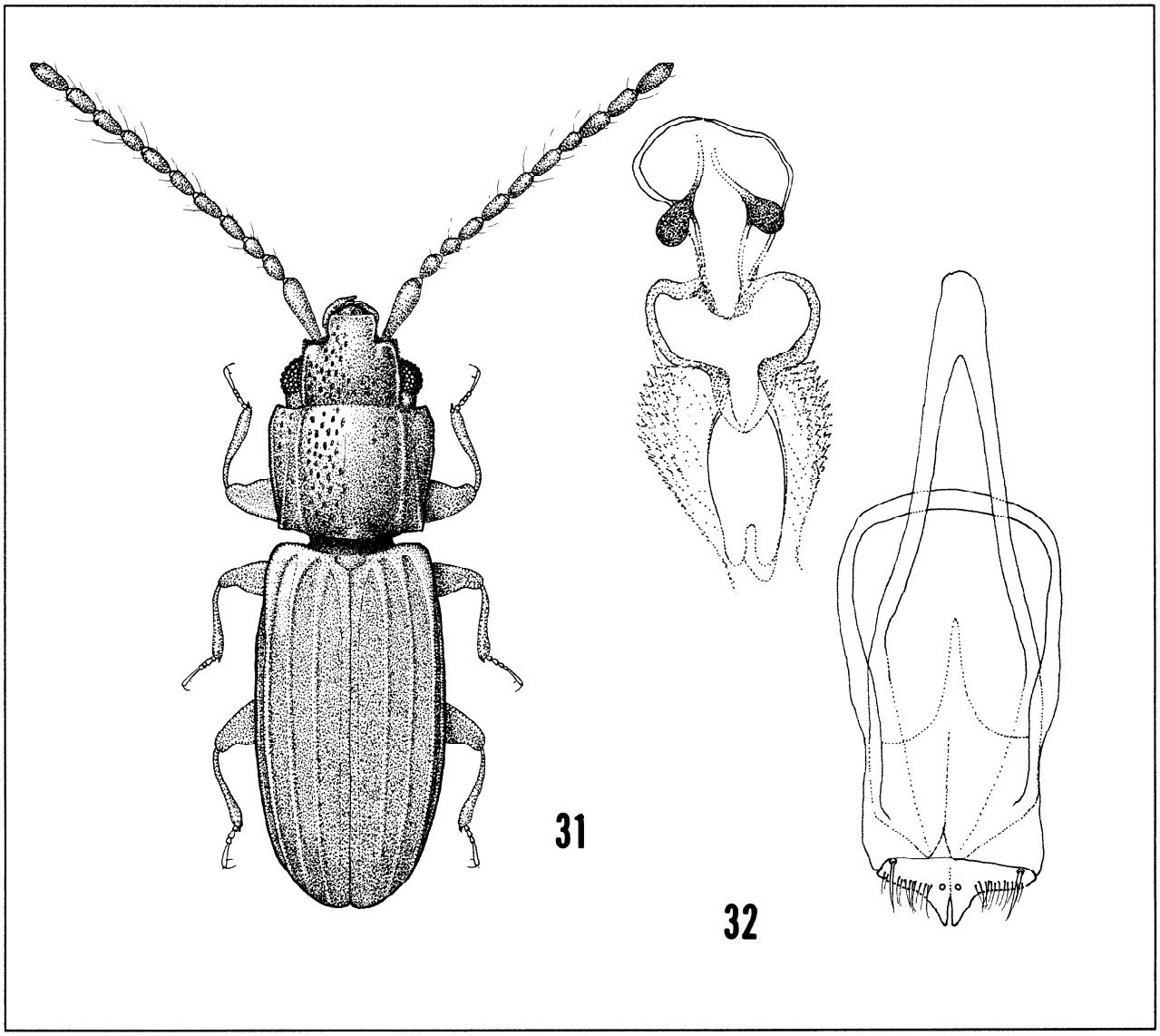


Figure 31 and 32. *Cryptolestes punctatus* (LeConte); 31) habitus of male; 32) male genitalia.

Distribution: It has been recorded from South Carolina, District of Columbia, Georgia, Indiana, and Louisiana (Leng 1920); New York (Leonard 1928); Alabama (Loding 1945); Indiana (Blatchley 1910); Illinois (Park 1929), and South Carolina (Kirk 1969, 1970). The record for the Virgin Islands (Miskimen and Bond 1970) is for *uncicornis* (I have seen the voucher specimen in the USNM upon which this record was based). I have seen more than 150 specimens of *punctatus* from Florida, Delaware, Indiana, Illinois, Iowa, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and Oklahoma.

Cryptolestes uncicornis (Reitter), new status
Fig. 2, 33-34

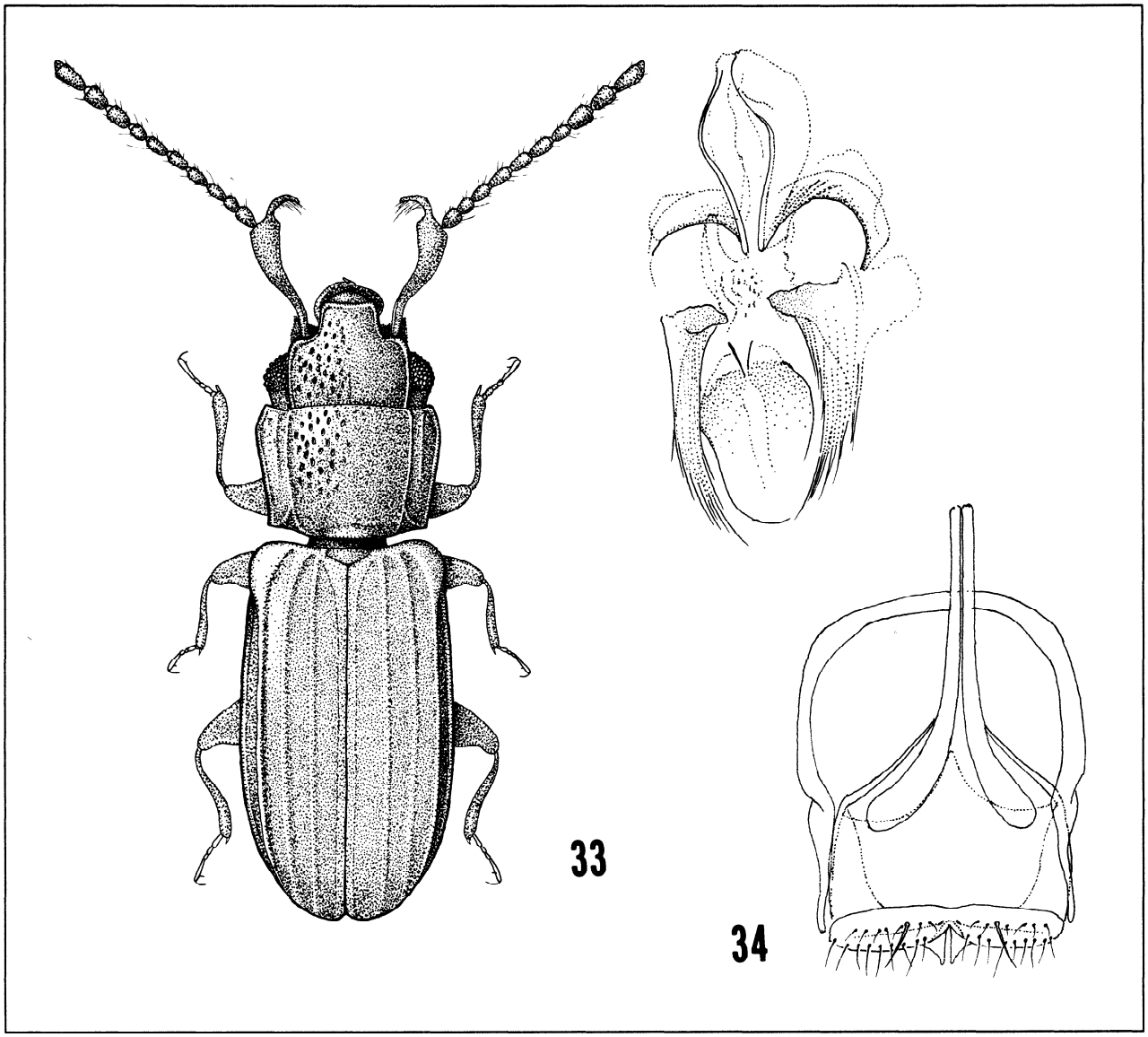
Microbrontes uncicornis Reitter 1876:45

Cryptolestes uncicornis, Lefkovitch 1958b:93

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



Figures 33 and 34. *Cryptolestes uncicornis* (Reitter); 33) habitus of male; 34) genitalia.

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

Laemophloeus quadratus Casey 1884:90, **new synonym**

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

Diagnosis: Length 1.3mm - 1.8mm. Although confused in collections and by Lefkovitch (1958b:93) with *punctatus*, *uncicornis* differs from that species in male antennal characters, male genitalia, and pronotal characters in both sexes. Major males of *uncicornis* (Fig. 33) are easily recognized by the elongate and sinuate antennal scape which bears at its apex a hook-shaped process. The scape of major males of *punctatus* (Fig. 31) is not sinuate and does not bear an apical process. Both the aedeagus and armature of the internal sac (Fig. 34) of *uncicornis* differ considerably from the corresponding structures in *punctatus* (Fig. 32). The secondary sublateral line of the pronotum in *punctatus* attains the anterior pronotal margin, diverges posteriorly from the sublateral line and attains the basal angle. In *uncicornis* the secondary sublateral line attains the anterior margin, parallels the sublateral line to about the midpoint of the prothorax and then becomes obsolete.

Taxonomic Notes: As can be seen from the synonymy above, this is a variable species that has been described a number of times. The sexual dimorphism and allometric development in antennal and head structure has not only led to a number of synonyms but also confusion with *punctatus*, with which *uncicornis* was incorrectly synonymized by Lefkovitch (1958b:93). The type specimens of *uncicornis*, *recticollis*, *iteratus*, and *addendus* were examined by Lefkovitch (1958b:100) and will not be dealt with further here. Since Lefkovitch examined the types of the species described by European authors, I tentatively accept his synonymies. However, he did not examine the type of *punctatus*; had he done so he probably would not have synonymized *uncicornis* under it.

Casey (1884:90) described *quadratus* from an unstated number of specimens from the "Gulf States." In the Casey Collection in the USNM are three specimens standing under the name *quadratus* with the following data: 1, "Crescent City, Fla"/"Coll Hubbard & Schwarz"/"L. quadratus Casey" (mss.)/"Cryptolestes quadratus Cas." (mss.); 1, "Columbus 24-6 Texas"/"Coll Hubbard & Schwarz"; 1, "Selma Ala"/"Coll Hubbard & Schwarz". All are conspecific with *uncicornis*. Although Casey did not state the number of specimens in the type series, the locality given indicates that more than one specimen was present. However, the description mentions no variation in structure or length. The first listed specimen, a female, agrees well with Casey's description and is here selected as lectotype. Whether the other two specimens can be considered syntypes is doubtful.

There are three specimens of *denticornis* in the Casey Collection from Texas, the type locality, but they cannot be considered as representing the types. L.L. Buchanan, in two notes pinned with the specimens, wrote: "*denticornis* was described from 2 Texas (males) coll. by Schwarz. The 3 Casey ex. are labelled Tex = (Houston) & probably coll. by Casey. In the Nat. Museum coll. is a specimen from 'Selma, Ala.' labeled *denticornis* Csy in Casey's handwriting and labeled 'cotype.' The location of the real types is unknown."; and "It is possible that the 2 ex. of *disseptus* Csy are the original set of *denticornis*". One of the specimens now in the Casey Collection bears a label applied by Buchanan (Lindroth 1975) designating it as neotype; the designation has no nomenclatural standing. I have examined one of the specimens of *Cryptolestes disseptus* Casey (1916:133) mentioned by Buchanan (*in litt.*, above); it properly belongs to *Rhabdophloeus* Sharp and is here transferred to that genus. Casey (1916:133) also transferred to *Cryptolestes* his *Laemophloeus horni*, which also is here reassigned to *Rhabdophloeus* Sharp.

Biology: Little is known about the biology of *uncicornis*. I have collected it under the bark of hardwood logs, especially *Quercus* spp., in Florida, and it is often collected in ultraviolet light traps throughout its extensive range.

Distribution: Reitter (1876:45) described *uncicornis* from Surinam and Cuba, and *recticollis* (1876:52) from Colombia. Sharp (1899:528) described *iteratus* from Mexico, British Honduras, Guatemala, and Colombia, and *addendus* (1899:529) from Guatemala. Casey's species were described from the southern United States. This is one of the most commonly collected and widespread species of Laemophloeinae in the New World, ranging from the Gulf of Mexico states of the United States south to Argentina and Paraguay and throughout the Greater and Lesser Antilles. I have examined more than 700 specimens from Florida, Louisiana, Mississippi, and Texas in the United States, as well as from Mexico, Guatemala, El Salvador, Costa Rica, Panama, Cuba, Jamaica, Puerto Rico, U.S. Virgin Islands, Guadeloupe, Trinidad, Colombia, Surinam, Ecuador, Bolivia, Peru, Brazil, Argentina, and Paraguay.

Cryptolestes calabozus Thomas, new species
Fig. 35

Diagnosis: The form of the antennal scape and accessory line of the pronotum (Fig. 35) are diagnostic for males of this species. The female is unknown.

Types: Holotype male in USNM with following data: "VENEZUELA Guar., 12Kms. Calabozo II-6-12-1969 P. & P. Spangler"/"Est. Biologica Los Llanos Black Light".

Description: Length, 1.7mm. Testaceous, elongate, narrow, parallel-sided.

Head: Transverse (1:1.57), epistome emarginate medially, frontoclypeal area depressed; mandibles abruptly bent medially at almost right angles; lateral line composed of ridge bordered by a fine groove; punctures much less than the diameter of an eye facet, separated mostly by 2-4 diameters, each subtending a long pale seta; surface smooth and glossy between punctures; antennae elongate, filiform, attaining basal third of elytra, scape highly modified, with acute laterally and ventromedially directed processes; proportion of antennomeres is 2.6:1.1:1.0:1.3:1.4:1.7:1.6:1.4:1.7:2.0:2.6; genae acutely produced anteriorly.

Thorax: Transverse (1:1.4); broadest at about apical fourth; slightly narrowed basally (1:1.15); anterior angles acute, slightly produced, posterior angles obtuse; punc-

Figure 35. *Cryptolestes calabozus* Thomas, n.sp., habitus of male holotype.

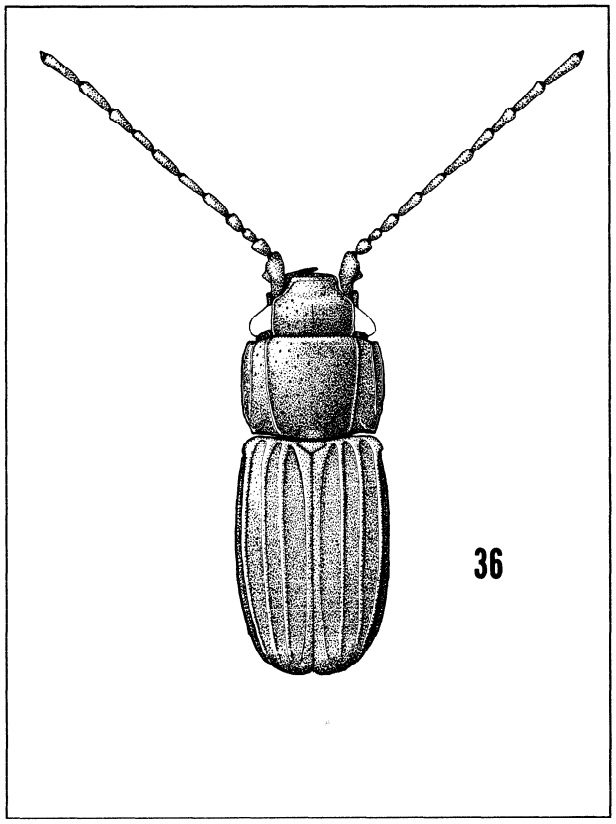


Figure 36. *Cryptolestes trinidadensis* Thomas, n.sp., habitus of male.

tation, pubescence and microsculpture as on head; accessory line situated midway between sublateral line and lateral margin, complete from base to apex. Anterior coxal cavities are narrowly open and the intercoxal process of the prosternum is broadly curved.

Genitalia of type damaged during dissection.

Cryptolestes trinidadensis Thomas, new species
Fig. 36-40

Diagnosis: The habitus of the males of this species is distinctive (Fig. 36), as are the male genitalia (Fig. 37). The female is unknown.

Types: Holotype male in FSCA with the following data: "TRINIDAD: Simla, Arima-Blanchisseuse Rd., 27-VII-75 J. Price blacklight trap". One male paratype with same data except collection date is 25-VII-75 (FSCA).

Description: Length, 1.4mm. Robust, ovate, testaceous, elytra and legs paler.

Head: Transverse (1:2.3), eyes large, occupying more than half length of head, facets large, convex; eye separated from pronotum by diameter of one facet; epistome truncate medially; punctures large, shallow, sparse, less than the diameter of an eye facet in width, separated mostly by about two diameters; surface between punctures on disk smooth and glossy, that of frontoclypeal area distinctly microreticulate; each puncture subtending a short seta which barely emerges from puncture; frontoclypeal area distinctly depressed below level of vertex; a smooth and glossy callosity located above each antennal insertion; scape robust, produced ventrally as a transverse tooth; pedicel robust, larger than antennomere III and about same length as IV; antennomeres V-VII elongate, subequal in length, VIII shorter; IX-XI elongate, slightly expanded distally to form inconspicuous club; antenna about 0.66 times length of body. Palpi as in Fig. 40. Gena pointed anteriorly (Fig. 39).

Thorax: Transverse (1:1.5), broader than head at its broadest; anterior angles acute, not produced; posterior angles obtuse; sublateral line a ridge bordered medially with a shallow, punctate groove; laterad of sublateral line is a second ridge which joins lateral margin at about

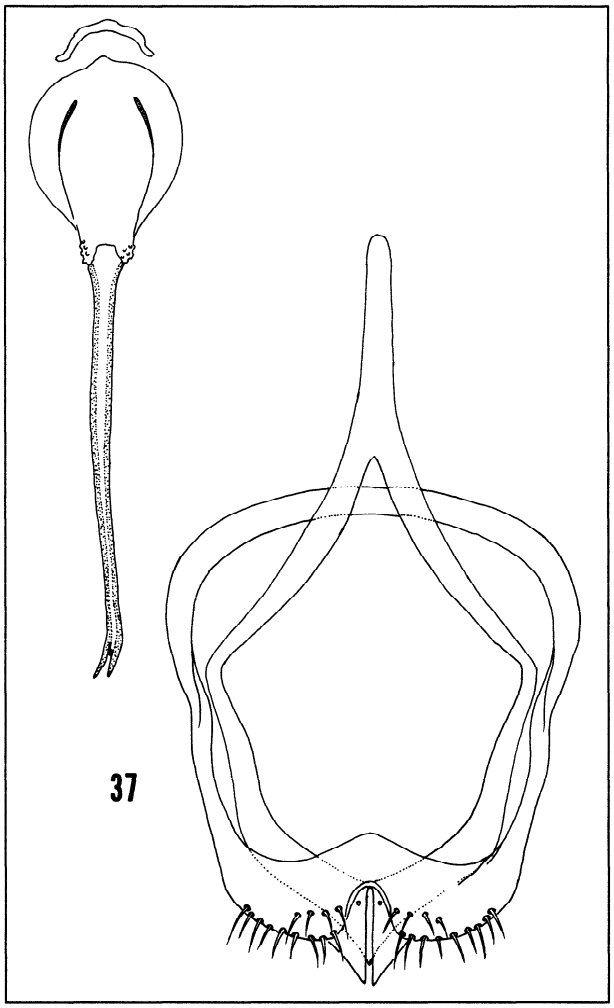
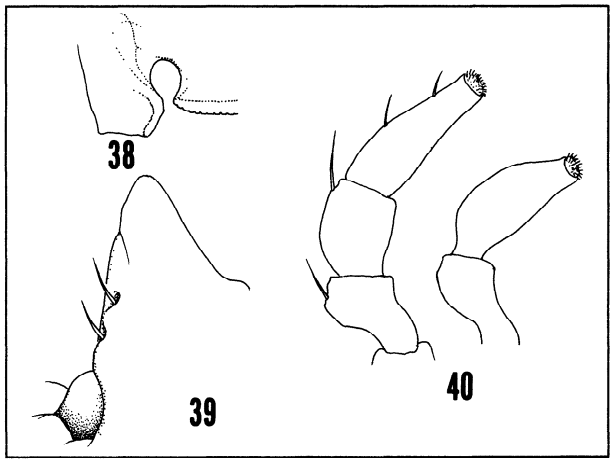


Figure 37. *Cryptolestes trinidadensis* Thomas, n.sp., male genitalia.

basal fourth; surface between sublateral and secondary ridges follows general curvature of pronotal disc; area between secondary ridge and lateral margin abruptly declivous; a short, somewhat crescent-shaped ridge extends anteriorly from posterior angle; punctures of disc smaller than those of head, separated by two to four diameters; surface between punctures weakly microreticulate medially, more strongly so laterally; impunctate laterad of sublateral line; pubescence as on head. Anterior coxal cavities broadly open posteriorly and intercoxal process rounded apically (Fig. 38).

Male genitalia as in Fig. 37. Female unknown.

Variation: The single male paratype does not vary from the holotype to any visibly significant degree.



Figures 38-40. *Cryptolestes trinidadensis* Thomas, n.sp. 38) anterior coxal cavity; 39) gena; 40) palpi.

Cryptolestes ampiyacus Thomas, new species
Fig. 41-47

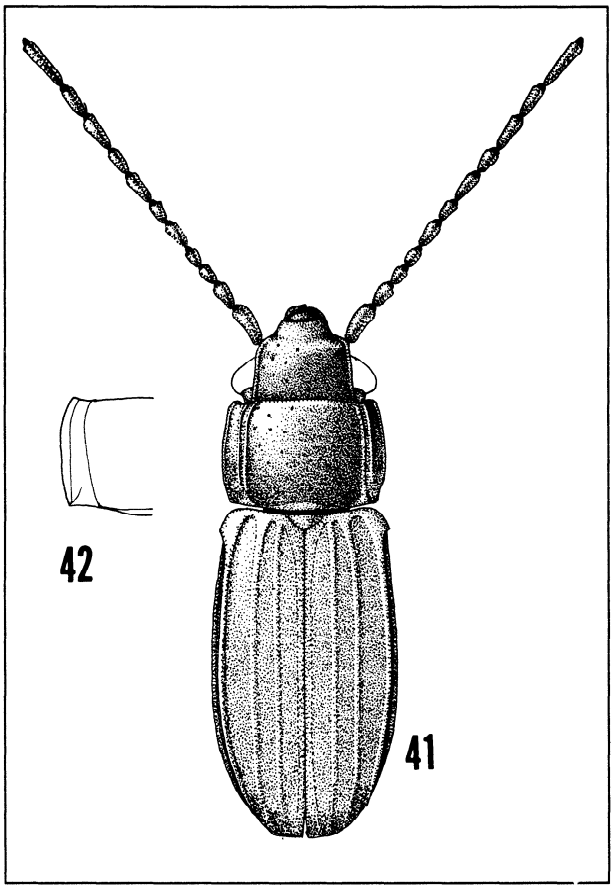
Diagnosis: The combination of the structure of the pronotum (Fig. 41); the almost impunctate dorsal surface of head and pronotum, and the male genitalia makes (Fig. 43-44) males of this species easily recognized among the New World species of *Cryptolestes*.

Types: Holotype male in FMNH with following data: "PERU: Loreto, Estiron, Rio Ampiyacu. XI-13 to XII-9, 1961 B. Malkin leg."/"under bark". Two paratypes (1 male, 1 female) with same data (FMNH).

Description: Length, 1.5mm. Testaceous, legs, mouth parts and elytra paler (Fig. 41)

Head: Transverse (1:1.7), eyes large, length about half that of head, coarsely faceted; epistome emarginate over labrum; frontoclypeal area distinctly impressed; mandibles small, not laterally expanded; lateral lines composed of a strong carina bordered medially by a coarsely punctured groove; punctures much smaller than an eye facet, separated by 6 to 8 diameters laterally, almost impunctate medially, each puncture subtending a suberect, pale seta much longer than diameter of puncture; surface between punctures smooth and glossy; antennae elongate, strongly filiform, attaining midpoint of elytra; proportions of antennomeres 2:1.3:1:1.3:1.6:1.6: 1.6:1.3:1.6:1.6:2.3; palpi as in Fig. 47; gena obliquely truncate (Fig. 46).

Thorax: Pronotum transverse (1:1.4), widest just behind anterior angles; sublateral lines composed of a ridge bordered medially by a groove, secondary line

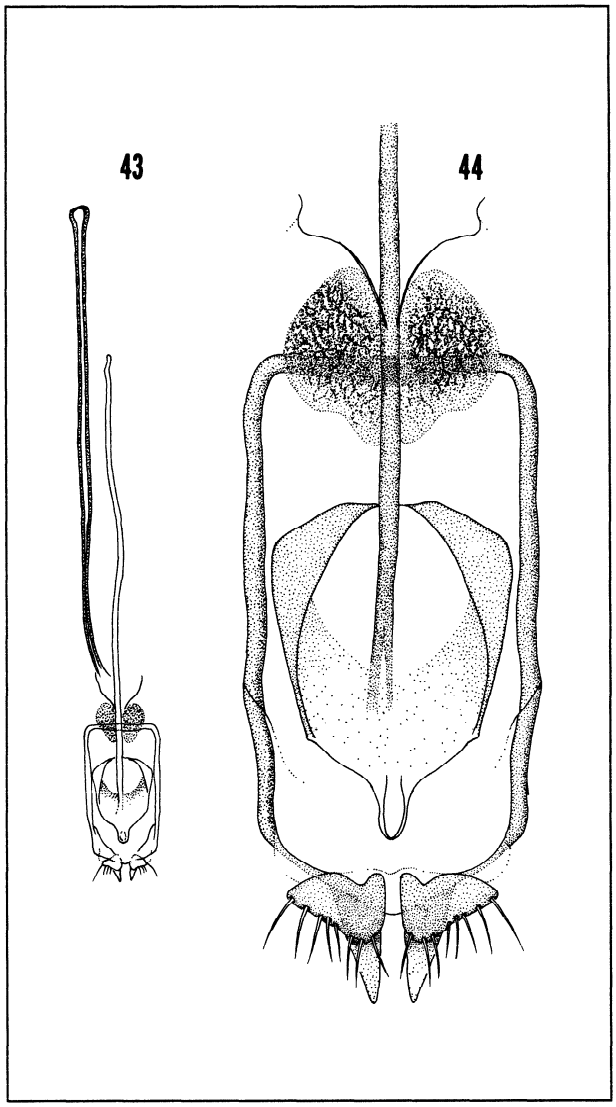


Figures 41 and 42. *Cryptolestes ampiyacus* Thomas, n.sp. 41) habitus of male; 42) pronotum of female.

composed of a ridge that is adjacent to and which parallels sublateral line to about basal third, then diverges from sublateral line to meet lateral angle; pronotum laterad of secondary line strongly declivous, almost vertical; surface sculpture and pubescence as on head; anterior angles right, not produced; posterior angles obtuse; anterior coxal cavities broadly open posteriorly, intercoxal process rounded apically (Fig. 45). Elytral cells and humeral carina as for genus; almost perpendicular laterad to humeral carina; proportion of elytral length to pronotal length 1:2.5.

Male genitalia as in Fig. 43-44.

Variation: The single male paratype is very similar to the holotype and measures 1.4mm in length. The female paratype differs in the structure of the antennae, which are almost moniliform, attain only the base of the pronotum, and the terminal three antennomeres are abruptly enlarged to form a distinct club; the arrangement of the pronotal carinae, which are widely separated throughout and not almost adjacent for two thirds

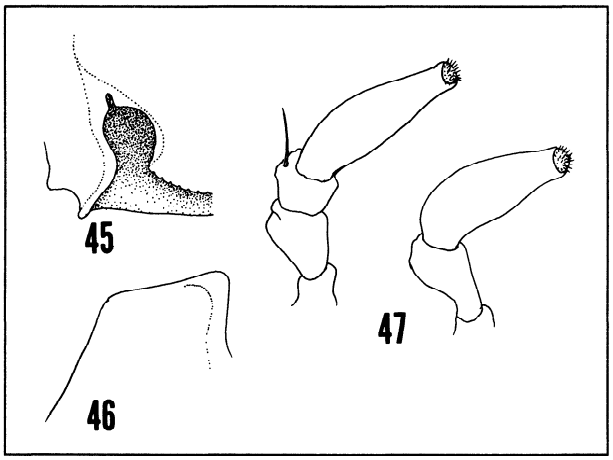


Figures 43 and 44. *Cryptolestes ampiyacus* Thomas, n.sp. 43) male genitalia; 44) enlargement of distal portion of aedeagus.

their length (Fig. 42, inset), and in the non-impressed frontoclypeal area. Length of the female 1.3mm.

Acknowledgements

For the loan of types and other material, and for their patience, I thank the following: R.J.W. Aldridge, British Museum (Natural History), London; T.J. Spilman, U.S. National Museum of Natural History, Washington, D.C.; L. de Santis, Museo La Plata, La Plata, Argentina; A.F. Newton, Museum of Comparative Zoology, Cambridge; S.A. Slipinski, Polish Academy of Sciences, Warsaw; R.E. Woodruff, Florida State Collection of



Figures 45-47. *Cryptolestes ampiyacus* Thomas, n.sp. 45) anterior coxal cavity; 46) gena; 47) palpi.

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