

**REVISION OF WESTERN HEMISPHERE DACODERINAE
WITH A PHYLOGENETIC ANALYSIS OF WORLD TAXA
COLEOPTERA: SALPINGIDAE**

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ROLF L. AALBU, FRED G. ANDREWS AND DARREN A. POLLOCK

Abstract

The salpingid subfamily Dacoderinae is revised for the Western Hemisphere. A key to species and phylogenetic analysis are provided for the world fauna. The genus *Dacoderus* LeConte includes *D. striaticeps* LeConte, *D. acanthomma* Blair, *D. sleeperi* **new species** (Southwest US and Mexico), *D. steineri* **new species** (Texas), *D. werneri* **new species** (Mexico), and *D. rossi* **new species** (Costa Rica and Mexico). A new genus *Myrmecoderus* is described to include species *M. dominicensis* (Horn), *M. laevipennis* (Horn) **new combinations**, and *M. rileyi* **new species** (southern Mexico). The higher classification of the subfamily and genera is discussed. Hypothesized phylogenetic considerations among genera, including the Australian genus *Tretothorax*, and species are examined utilizing cladistic methodology. The distribution and biology of the subfamily and genera are briefly discussed.

The proper systematic placement of *Dacoderus* LeConte and *Tretothorax* Lea historically has been problematic. LeConte (1858:75) described *Dacoderus striaticeps*, a “very rare” new genus and species from Fort Yuma, California which he placed in the family Tenebrionidae, stating that this was: “A remarkable genus, which at first sight is suggestive of *Rhysodes* [Dalman] and seem to have no relation to any genus of Tenebrionidae. . . .” He placed the genus near *Cononotus* [now Pyrochroidae] which both share “the anterior coxae [become] contiguous by the confluence of the acetabula.” Later, LeConte (1862:211) removed *Cononotus* LeConte from the Tenebrionidae to a tribe (Cononotini) within the Pythidae due to open procoxal cavities, but retained *Dacoderus* in the Tenebrionidae, suggesting that unlike any other Tenebrionidae, in *Dacoderus* the “Anterior coxae [are] contiguous, [with] their cavities confluent, though closed behind.” The procoxal cavities are in fact narrowly open behind externally but closed internally as remarked and illustrated by Watt (1967:112).

Horn added additional species to the genus: *Dacoderus dominicensis* from the island of “Santo Domingo” (Dominican Republic) (Horn 1876) and *Dacoderus laevipennis* from Texas (Horn 1893). In the second, paper he also included a key to the species.

Lea (1910) described a new family, the Tretothoracidae, that he based on a single new genus and species from Queensland, Australia, *Tretothorax cleistostoma*. He placed this family “between the Rhysodidae and Cucujidae.” Blair (1918:153) described an additional species, *Dacoderus acanthomma*, from Colombia and discussed the phylogenetic placement of *Dacoderus*, correctly suggesting close relationship with *T. cleistostoma* Lea. However, he assigned both of these genera to the Tenebrionidae, subfamily Dacoderinae due to the “heteromorous tarsi and closed anterior coxal cavities.” Crowson (1955) did not mention *Dacoderus* or *Tretothorax* but placed the “Tretothoracidae” in his cucujoid families *incertae sedis*. Watt (1967, 1974) removed both *Dacoderus* and *Tretothorax* from the Tenebrionidae based on the structure of the procoxae, mesocoxae, and aedeagus, to a new family, the Dacoderidae (having priority over Tretothoracidae), which he placed near the Salpingidae. Abdullah (1974) placed the Dacoderidae (including Tretothoracidae) between the Salpingidae and Othniidae. Without giving any explanation, Crowson (1981) placed the

“Tretothoracinae” in the Zopheridae. Finally, Lawrence (1982) placed the Dacoderinae in the Salpingidae where it remains (Pollock 2002).

Materials and Methods

Specimens were borrowed from the institutions and individuals listed below.

AMNH	American Museum of Natural History, New York, (Lee H. Herman Jr.)
BMNH	Natural History Museum, London, England (Jane Beard)
CASC	California Academy of Sciences, San Francisco, California (Norm Penny)
CDAE	California Department of Food and Agriculture, Sacramento, California (Fred Andrews)
CIDA	Albertson College, Museum of Natural History, Caldwell, Idaho (William H. Clark)
CIDC	College of Idaho, Caldwell, Idaho (William H. Clark)
CISC	University of California, Berkeley, California (John T. Doyen, Cheryl Barr)
CSLB	California State University, Long Beach, California (Elbert L. Sleeper)
DAPC	Darren A. Pollock Collection, Portales, New Mexico
EGRC	Edward G. Riley Collection, College Station, Texas
FSCA	Florida State Collection of Arthropods, Gainesville, Florida (Paul Skelley)
HNHM	Hungarian Natural History Museum, Budapest (Ottó Merkl)
INBC	Instituto Nacional de Biodiversidad, Costa Rica (Angel Solis)
KWBC	Kirby W. Brown Collection, Paradise, California
LACM	Los Angeles County Museum, California (Roy Snelling)
MCZC	Harvard University Museum of Comparative Zoology, Cambridge, Massachusetts (Phil Perkins)
OSUC	Ohio State University, Columbus, Ohio (Charles A. Triplehorn)
RHTC	Robert H. Turnbow, Jr. Collection, Ft Rucker, Alabama
RLAC	Rolf L. Aalbu Collection, Sacramento, California
TAMU	Texas A & M University, College Station, Texas (Ed Riley)
UCDC	Bohart Museum, University of California, Davis, California (Steve Hayden)
USNM	Smithsonian Institution, Washington, D.C. (Ted Spilman, Warren Steiner)
WESC	Warren Steiner Collection, Washington, D.C.

Please note that the California State University, Long Beach, California collection [CSLB] was accessioned by the California Academy of Sciences collection, San Francisco [CASC].

Scanning electron micrographs and stereo pairs were taken using a JEOL JSM-35C and a newer JEOL JSM-6300 Lab₆. Several unconventional morphological terms are used in this study. These are clarified in the section on Character/Character States.

Phylogenetic relationships among species were hypothesized by the presence of shared derived character states (synapomorphies) in the sense of Hennig (1966). Only strictly monophyletic groups were recognized. Polarity hypotheses were based on outgroup comparison in the sense of Watrous and Wheeler (1981). The Wagner parsimony tree method of Farris (1970, 1973) with minimally connected characters in the sense of Slowinski (1993) was utilized throughout.

Three computer-assisted character analysis/cladogram generation programs were employed: (1) Hennig86, Version 1.5. The following string was utilized for character analysis (utilizing file D): SS P D L D.OUT; MHENNIG*; TP; XSTEPS HCML; TASCII; KEEP D.OUT; TSAVE D.OUT (open DOS file D as procedure file, read character data; open dos file D.OUT as new log file; calculate multiple trees using branch breaking; produce tree diagrams; diagnose trees in current tree file listing

possible states for hypothetical ancestors, character fits, best/worst fits and tree lengths; use extended ASCII characters in tree plots; save current tree file as tree file D.OUT and save current tree file as dos file). (2) Nona ver. 1.0. (3) Clados Version 1.2. Results, as well as cladistic relationships, are discussed under “Cladistic Relationships among Genera and Species of Dacoderinae.”

Systematic Treatment

Dacoderinae

(including TRETOTHORACINAE)

Type Species: *Dacoderus striaticiceps* LeConte 1858:75, by monotypy.

Dacoderinae LeConte 1858:74 (description), 1862:216 (tribe diagnosis); Gemminger & Harold 1870:1847 (catalog); Horn, 1870:275 (redescribed), 1876:219 (new species, diagnosis); Casey, 1907:491 (diagnosis of Dacoderini); Gebien, 1910:114 (catalog); Blair, 1918:52 (phylogenetic placement); Gebien, 1937:693 (Dacoderini, Catalog); Watt, 1967:109, 116 (phylogenetic placement); Arnett, 1973:669 (Dacoderini keyed, diagnosis); Watt, 1974:381 (phylogenetic placement); Abdullah, 1974:49–59 (phylogenetic placement, key to family); Lawrence 1982:545, 1107 (phylogenetic placement); Kistner, 1982:130, 132 (biology); Lawrence and Britton, 1991:598 (phylogenetic placement); Lawrence and Britton, 1994:144 (phylogenetic placement); Lawrence and Newton, 1995:900 (phylogenetic placement).

Tretothoracidae Lea 1910:210 (family description); Blair, 1918:152 (phylogenetic placement); Hetschko, 1933:649 (catalog); 1955:173 (phylogenetic placement); Crowson, 1955:173 (phylogenetic placement); Crowson, 1981:538, 540 (biology).

Key to the Genera and Species of Dacoderinae (adults)

1. Head more than twice as long as wide, wings present (Australia) *Tretothorax cleistostoma* Lea
- 1'. Head wider than long or only slightly longer than wide, wings absent (New World) 2
2. Eyes dorsal, placed on plate-like lateral extension of the genae, not visible from below (Figs. 33–40, 94) *Dacoderus* 3
- 2'. Eyes lateral, round, visible from below (Figs. 41–48) *Myrmecoderus* 8
3. Lateral margin of eye plate broadly rounded, not extended, margin parallel to eye (Figs. 33–35) 4
- 3'. Lateral margin of eye plate extended laterally, margin not parallel to eye (Figs. 36, 37, 94) 6
4. Pronotal fossa with mid discal transverse ridge (Fig. 43) *Dacoderus sleeperi* n. sp.
- 4'. Pronotal fossa without mid discal transverse ridge (Figs. 41, 42) 5
5. Lateral pronotal bridges large, lateral margin not visible throughout length from above (Fig. 41) *Dacoderus striaticiceps* LeConte
- 5'. Lateral pronotal bridges not inflated, lateral margin visible throughout length from above (Fig. 42) *Dacoderus werneri* n. sp.
6. Lateral border of eye plate with sharp, antero-laterally pointing tooth (Fig. 94) *Dacoderus acanthomma* Blair
- 6'. Lateral border of eye plate evenly extended (Figs. 36, 37) 7

7. Lateral border of eye plate sharp, clearly wider than width of more than two facets (Fig. 36) *Dacoderus rossi* n. sp.
 7'. Lateral border of eye plate less sharp, not wider than two facets (Fig. 37)
 *Dacoderus steineri* n. sp.
 8. Lateral pronotal bridges small, width of each equal to one-sixth width of pronotum at bridges (Fig. 46) *Myrmecoderus rileyi* n. sp.
 8'. Lateral pronotal bridges medially strongly inflated, width of each equal to one third width of pronotum at bridges (Figs. 47, 48) 9
 9. Pronotum with lateral ridge present on apical 1/3, transverse canal wider than long (Fig. 47) *Myrmecoderus dominicensis* (Horn)
 9'. Pronotum with lateral ridge not present on apical 1/3, transverse canal equally as long as wide (Fig. 48) *Myrmecoderus laevipennis* (Horn)

Dacoderus LeConte

Type Species: *Dacoderus striaticeps* LeConte 1858:75, by monotypy.

Description. Apterous. **Body** slender, elongate, depressed, glabrous, antlike in shape. 3.4 to 4.0 times longer than wide: length 2.90 to 4.90 mm, width 0.70 to 1.30 mm. **Head** large (nearly equal in size to thorax), wider than long (length-to-width ratio equals 0.90), as long as wide or longer than wide: length 0.40 to 0.80 mm; width 0.50 to 0.80 mm, widest at eyes. Eyes composed of 20 to 30 facets, positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated. Frons acutely excavate antero-medially behind clypeus, anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum. Mentum narrowly notched anteriorly, ratio of notch to width of mentum approximately 0.2. Antennae moniliform, not reaching base of thorax, inserted laterally near apex, functionally 10 segmented (11th segment enclosed by 10th), last two segments (9–10) larger, often longer than preceding, 10th less than 1.75 times length of 8th, 9th less than 1.4 times length of 8th. **Thorax** slightly longer than wide (length 0.60 to 1.00 mm; width 0.50 to 0.80 mm), widest at anterior third, lateral ridge present throughout length; medial and transverse canals present, lateral bridges over transverse canals. Shape, attachment of lateral bridges over transverse canals inflated, not forming hooklike lobe, attached slightly lateral to or at midpoint of bridge. Without setal pads at bridges. Shape of visible portion of transverse canal wider than long. Length of metasternum to length of procoxae less than 3. Profemoral presence of dense setal pit in males. **Elytra** 2.3 to 2.6 times longer than wide: length 2.00 mm to 3.10 mm; width 0.70 to 1.20 mm; dorso-lateral margin at midlength sharply declivous; surface at midlength horizontal to strongly depressed between lateral margin and first striae; first interval elevated throughout length. **Abdomen.** Apical sternite without apical marginal groove, sternites without dense setal areas in males.

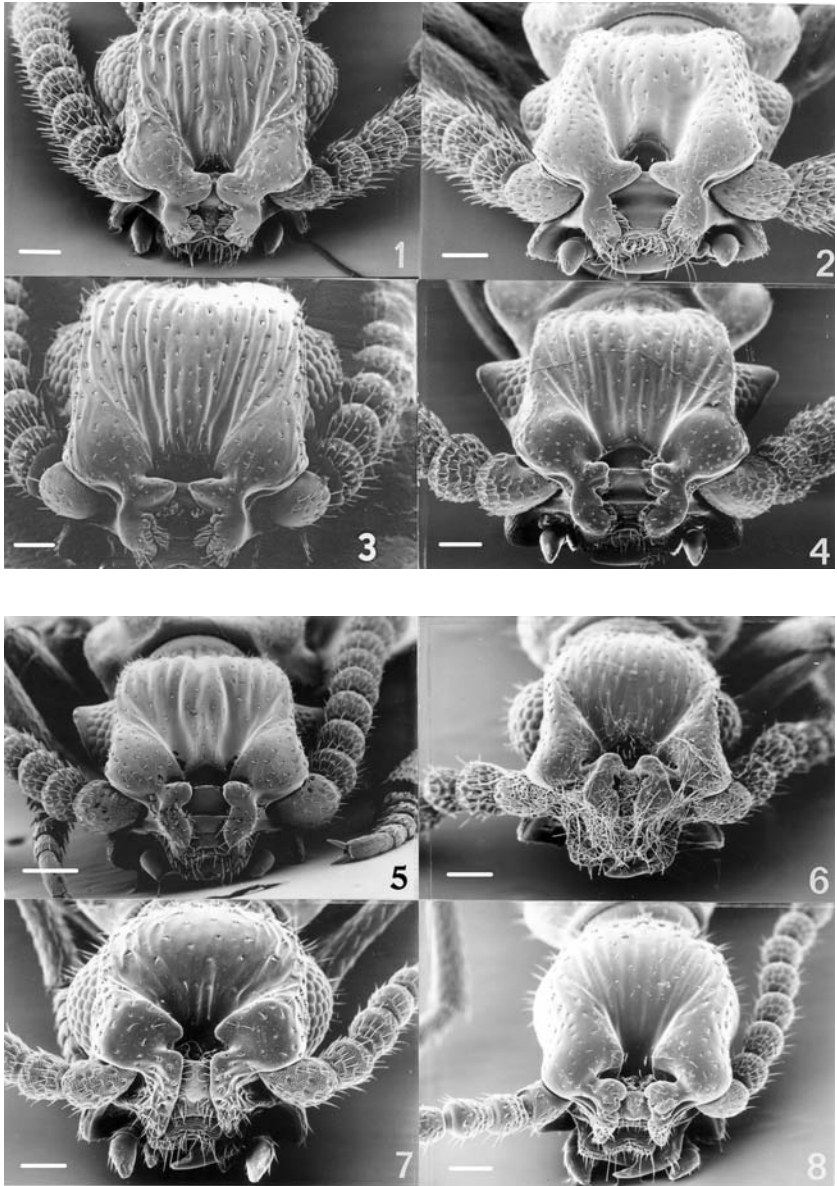
Dacoderus striaticeps LeConte

(Figs. 1, 9, 17, 25, 33, 41, 49, 57, 66, 74, 81, 96)

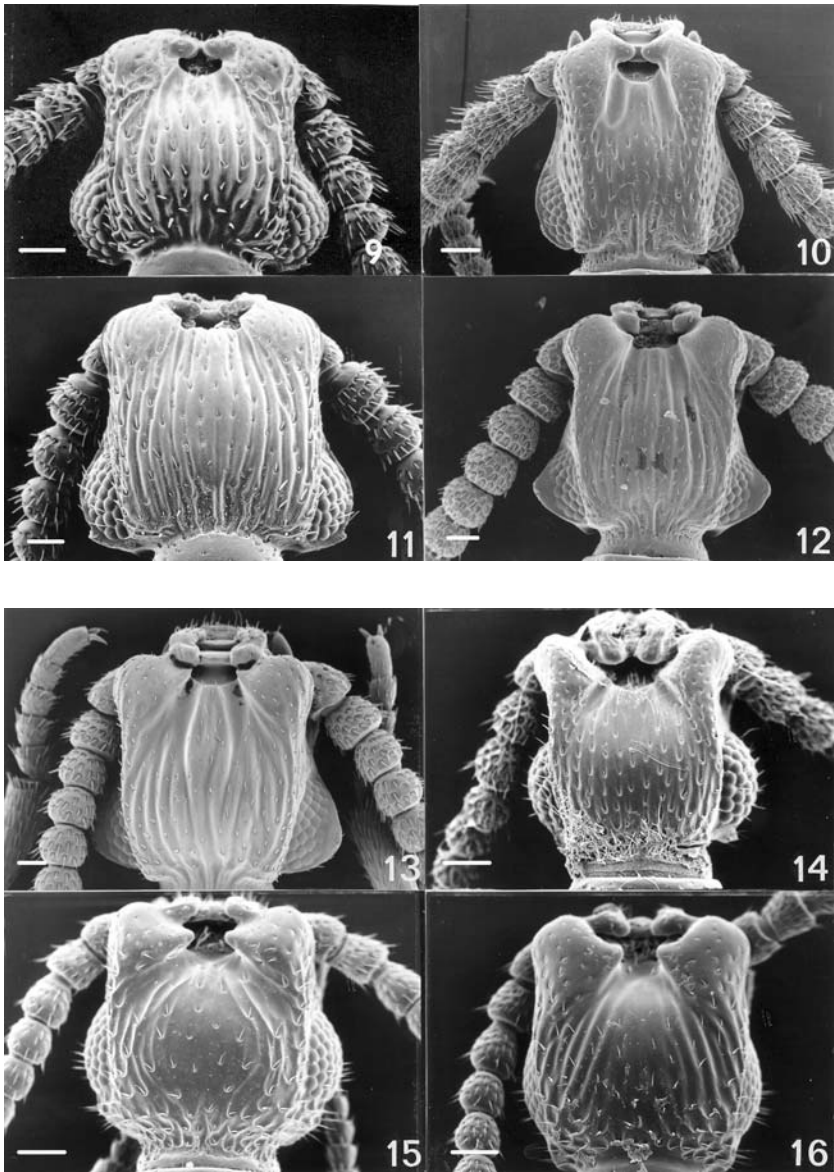
Dacoderus striaticeps LeConte, 1858:75 (description), 1862:216 (placed in tribe); Gemminger & Harold, 1870:1847 (catalog); Horn, 1870:275 (diagnosis), 1876:219 (diagnosis), 1893:139 (keyed); Casey, 1907:494 (diagnosis); Blair, 1918:153 (notes); Gebien, 1910:114 (Catalog), 1937:693 (Catalog); Watt, 1967:116 (phylogenetic placement).

Material Examined. (88 from the following 31 localities).

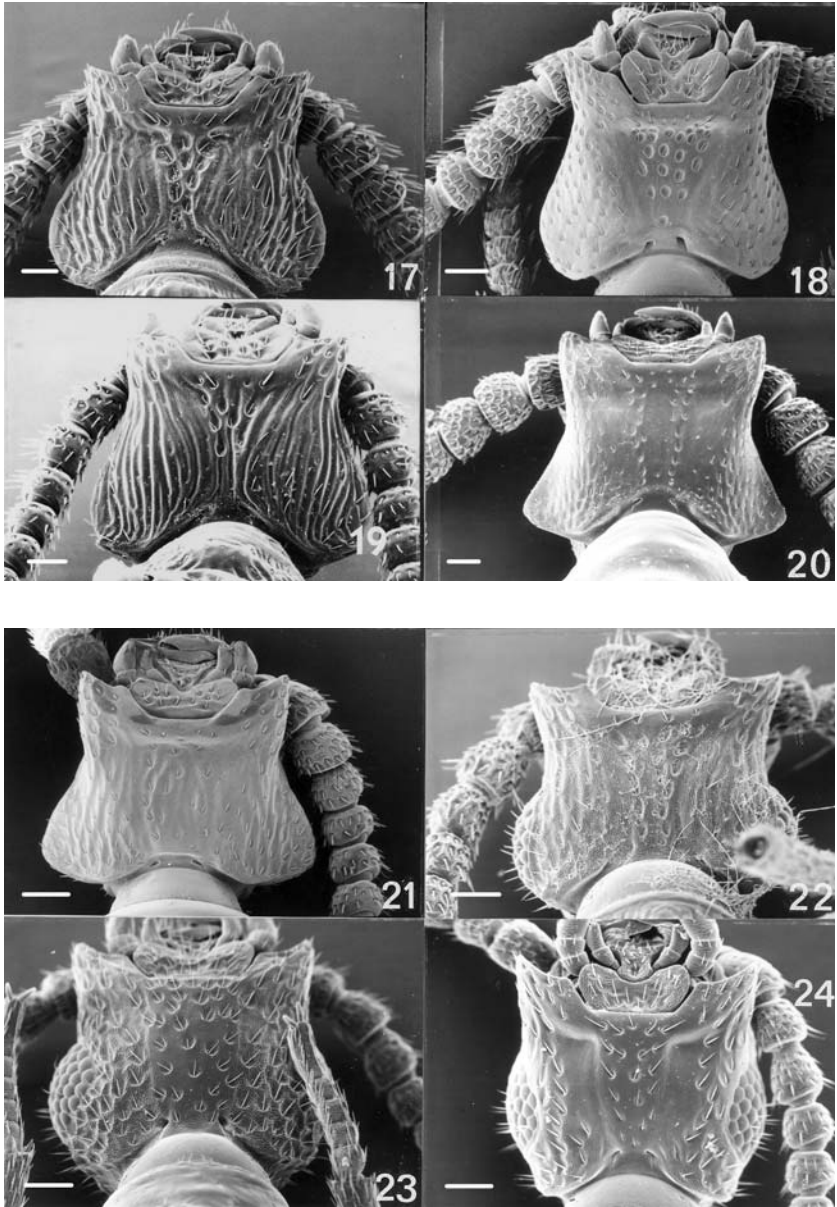
Type Material. Holotype. Gold disc [=California], *Dacoderus striaticeps* (LeC.), MCZC type No. 4509, LeConte collection: **MEXICO: SONORA**, San Carlos, 11 km W, VI-24-75, E. Fisher (1) CISC; Sonoyta, 10 km W, 1200', III-20-80, J. Doyen col.,



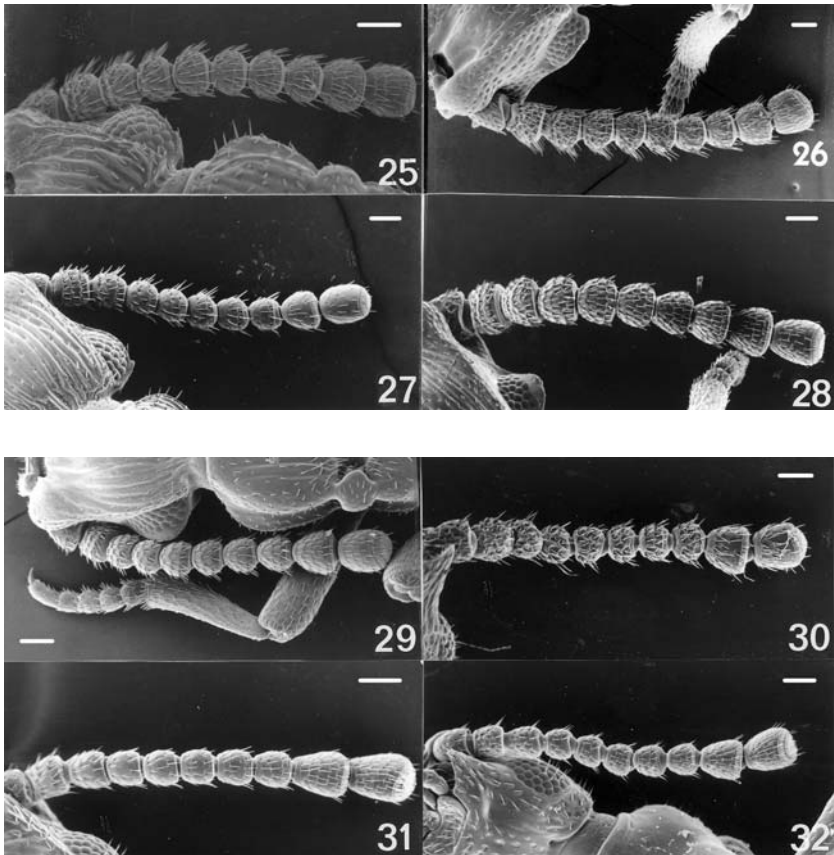
Figs. 1–8. Head, frontal aspect. 1) *Dacoderus striaticeps* LeConte; 2) *D. weneri* n. sp.; 3) *D. sleeperi* n. sp.; 4) *D. rossi* n. sp.; 5) *D. steineri* n. sp.; 6) *Myrmecoderus rileyi* n. sp.; 7) *M. dominicensis* (Horn); 8) *M. laevipennis* (Horn); scalebars = 100.0 μ .



Figs. 9–16. Head, dorsal aspect. **9)** *Dacoderus striaticeps* LeConte; **10)** *D. werneri* n. sp.; **11)** *D. sleeperi* n. sp.; **12)** *D. rossi* n. sp.; **13)** *D. steineri* n. sp.; **14)** *Myrmecoderus rileyi* n. sp.; **15)** *M. dominicensis* (Horn); **16)** *M. laevipennis* (Horn); scalebars = 100.0 μ .

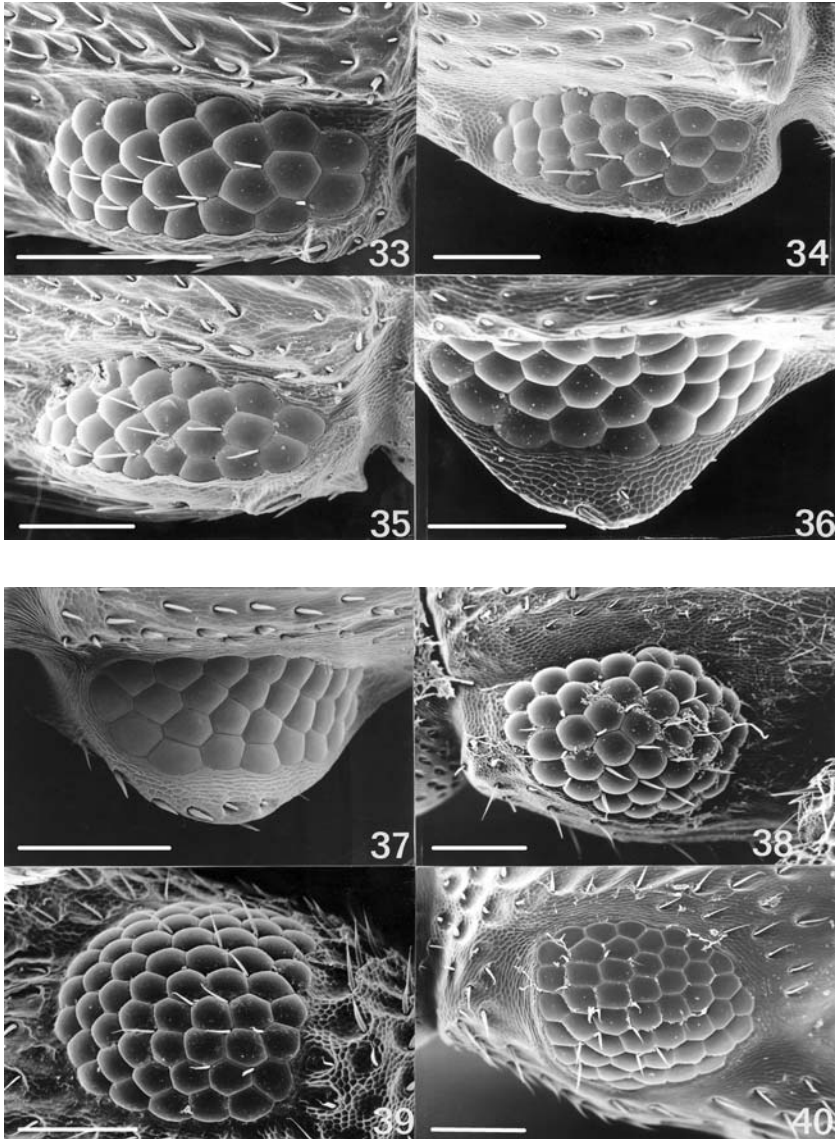


Figs. 17–24. Head, ventral aspect. 17) *Dacoderus striaticeps* LeConte; 18) *D. werneri* n. sp.; 19) *D. sleeperi* n. sp.; 20) *D. rossi* n. sp.; 21) *D. steineri* n. sp.; 22) *Myrmecoderus rileyi* n. sp.; 23) *M. dominicensis* (Horn); 24) *M. laevipennis* (Horn); scalebars = 100.0 μ .



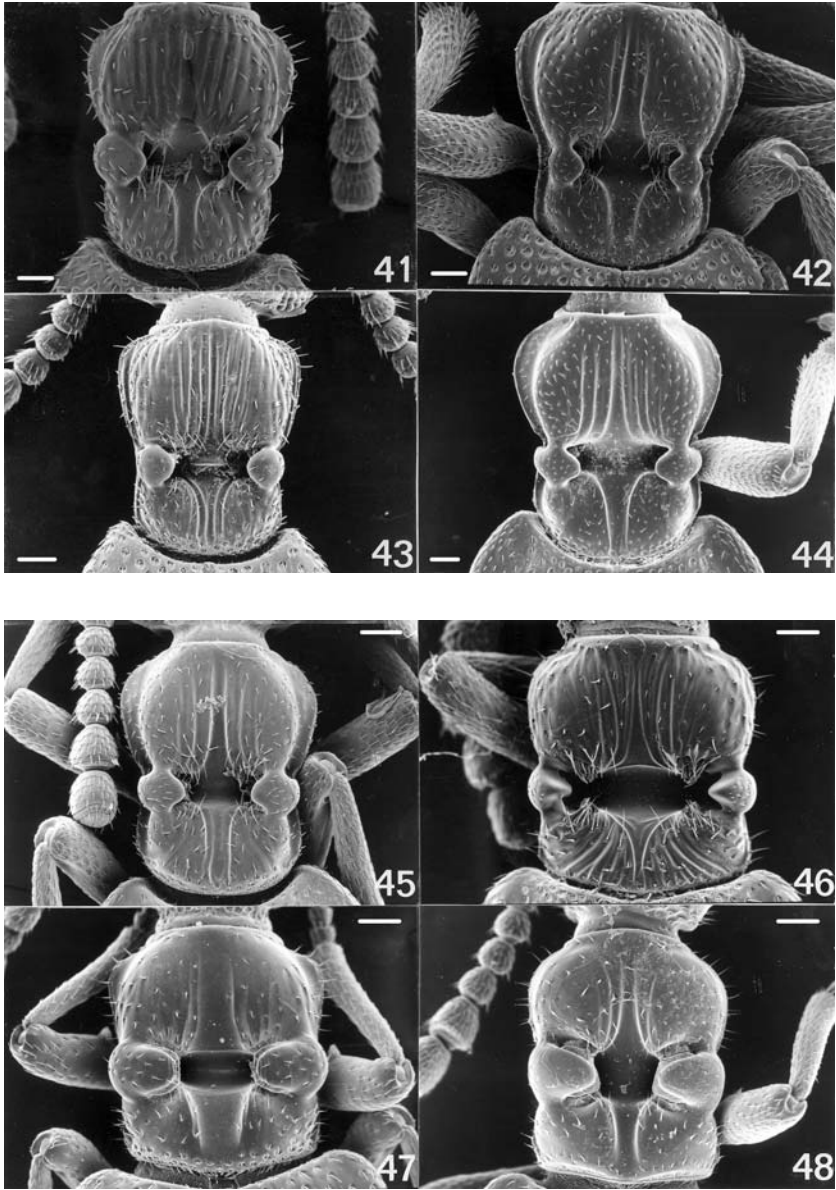
Figs. 25–32. Antenna. 25) *Dacoderus striaticeps* LeConte; 26) *D. werneri* n. sp.; 27) *D. sleeperi* n. sp.; 28) *D. rossii* n. sp.; 29) *D. steineri* n. sp.; 30) *Myrmecoderus rileyi* n. sp.; 31) *M. dominicensis* (Horn); 32) *M. laevipennis* (Horn); scalebars = 100.0 μ .

(2) CISC; Guaymas, V-73, R. Lenczy col., (1) USNM; Alamos, 5 km E VIII-11-1973, under bark, K. Stephan & D. S. Chandler cols., (1) UCDC; 13 km SE, X-30-72, K. Stephan col., (2) FSCA. **UNITED STATES:** no locality, Horn col., H7228 (2) MCZC. **ARIZONA,** (2) MCZC; (1) USNM; Horn col., H7228 (2) MCZC; Morrison, Hubbard & Schwarz coln. (3) USNM; CV Riley coln. (1) USNM; Koebele, Blaisdell colln. (1) CASC; ex. coll. Carl Fuchs via E. R. Leach coll., 1971 gift to CASC, (1) CASC; Palomas, H. C. Fall col. (1) MCZC; Marinette, VIII-1-1918, E. Schiffel, J. G. Collection (2) CASC; Palmerlee Plains, VII-1, H. A. Wenzel col. (1) UCDC; VI-30, H. A. Wenzel col. (1) UCDC; GILA CO., Globe, D. K. Duncan (1) CASC; VIII-15-33, Parker (2) CASC; MARICOPA CO., Tempe, IV, D. K. Dunc. H. C. Fall col., (1) MCZC; COCONINO CO., Flagstaff, IX-13-19, E. Schiffel, J. G. Collection (1) CASC; MOHAVE CO., Wikieup, 10.9 mi S nr. Groom peak 3900', IX-30-80, F. Andrews & A. Hardy cols., (3) CDFA; PIMA CO., Tucson, 3–5, Hubbard & Schwarz coln. (3) USNM; Tucson, Wickham, Horn col., H7228 (1) MCZC; Wickham, (1) MCZC; VIII-4-68, K. Stephan col., (1) FSCA; Sabino cyn, I-23-17, G. Hofer col., (1) FSCA; Baboquivari Mts.,

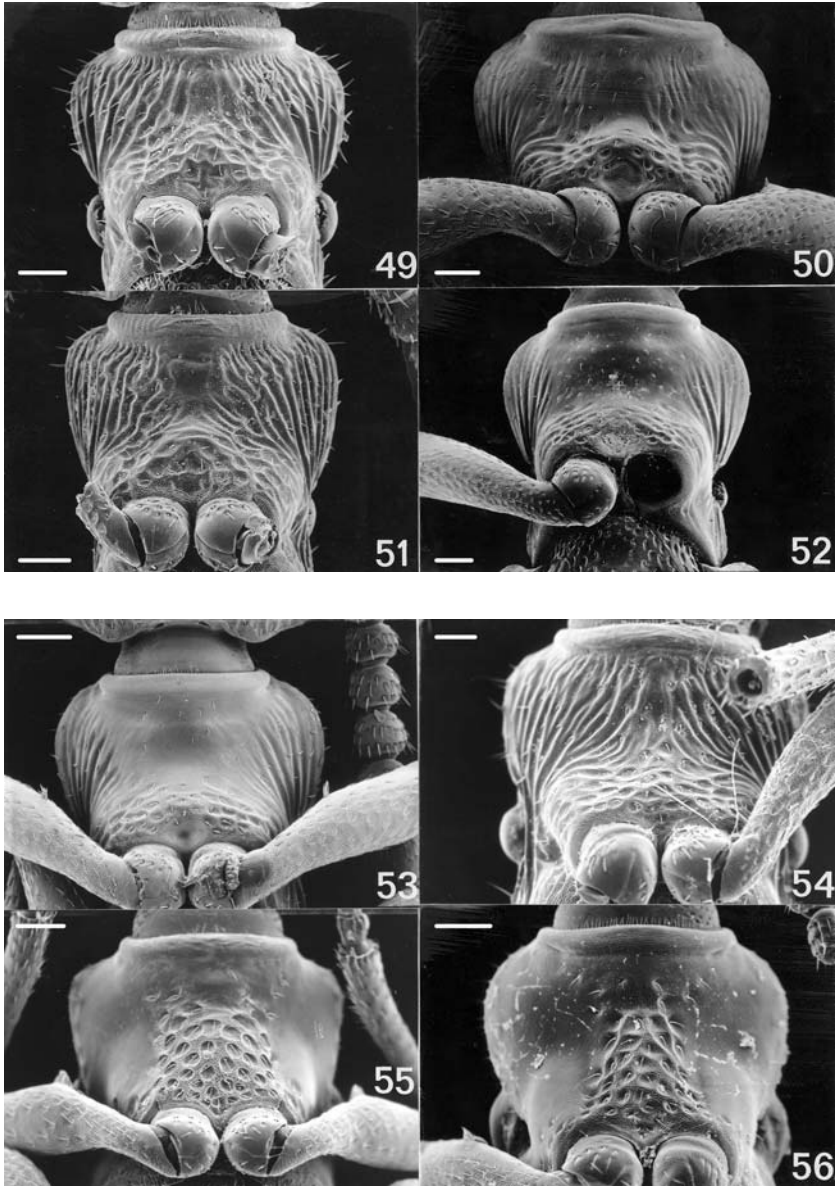


Figs. 33–40. Eyes, dorsal aspect. **33)** *Dacoderus striaticeps* LeConte; **34)** *D. werneri* n. sp.; **35)** *D. sleeperi* n. sp.; **36)** *D. rossi* n. sp.; **37)** *D. steineri* n. sp.; **38)** *Myrmecoderus rileyi* n. sp.; **39)** *M. dominicensis* (Horn); **40)** *M. laevipennis* (Horn); scalebars = 100.0 μ .

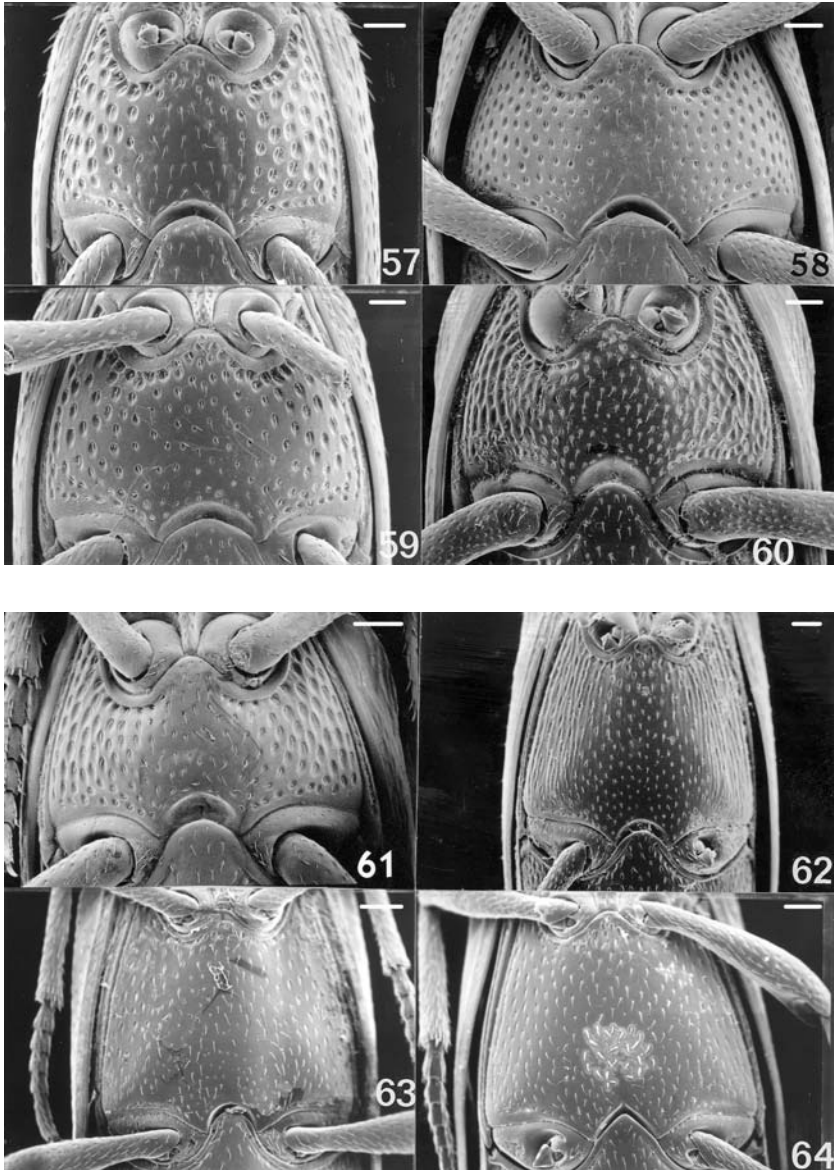
IX-36, Bryant lot 145 (10) CASC; Baboquivari canyon, W. side Baboquivari Mts., VII-25/27-52 (1) CASC; Santa Rita Mts., VIII-36, Bryant lot 144 (1) CASC; Sabino canyon, Santa Catalina Mts., I-23-17, G. Hofer col. (5) USNM; Sabino canyon, I-23-17 (1) CASC; Continental, VII-79, R. Lenczy col. (1) USNM; Green Valley, X-71, R. Lenczy



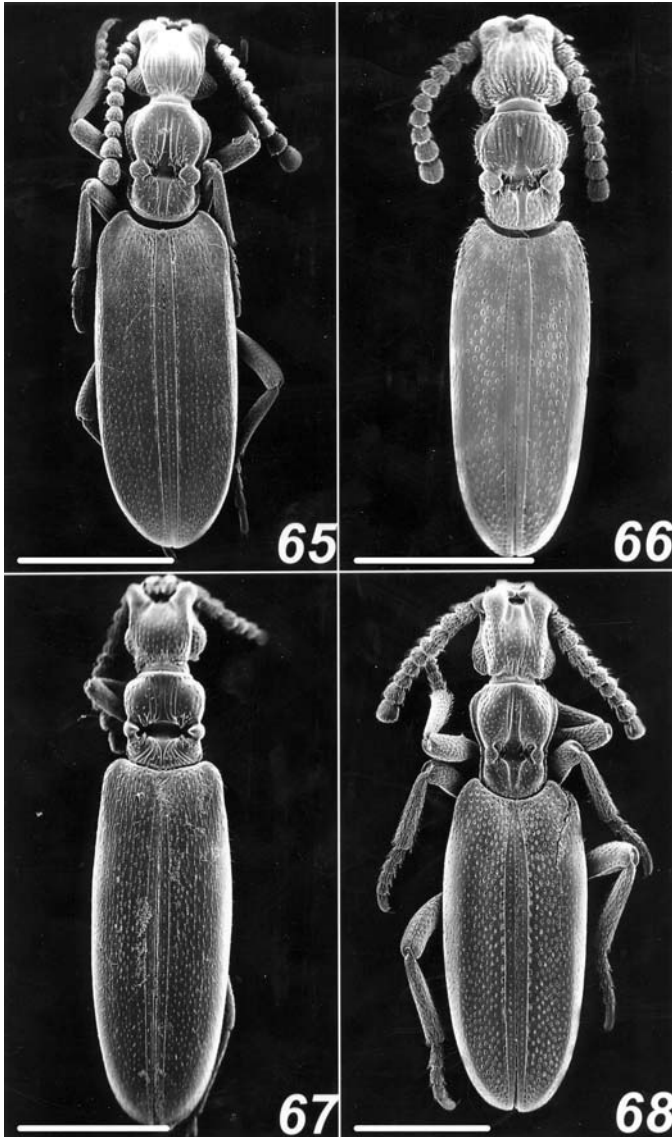
Figs. 41–48. Pronotum, dorsal aspect. **41)** *Dacoderus striaticiceps* LeConte; **42)** *D. weneri* n. sp.; **43)** *D. sleeperi* n. sp.; **44)** *D. rossi* n. sp.; **45)** *D. steineri* n. sp.; **46)** *Myrmecoderus rileyi* n. sp.; **47)** *M. dominicensis* (Horn); **48)** *M. laevipennis* (Horn); scalebars = 100.0 μ .



Figs. 49–56. Prosternum. 49) *Dacoderus striaticeps* LeConte; 50) *D. weneri* n. sp.; 51) *D. sleeperi* n. sp.; 52) *D. rossi* n. sp.; 53) *D. steineri* n. sp.; 54) *Myrmecoderus rileyi* n. sp.; 55) *M. dominicensis* (Horn); 56) *M. laevipennis* (Horn); scalebars = 100.0 μ .

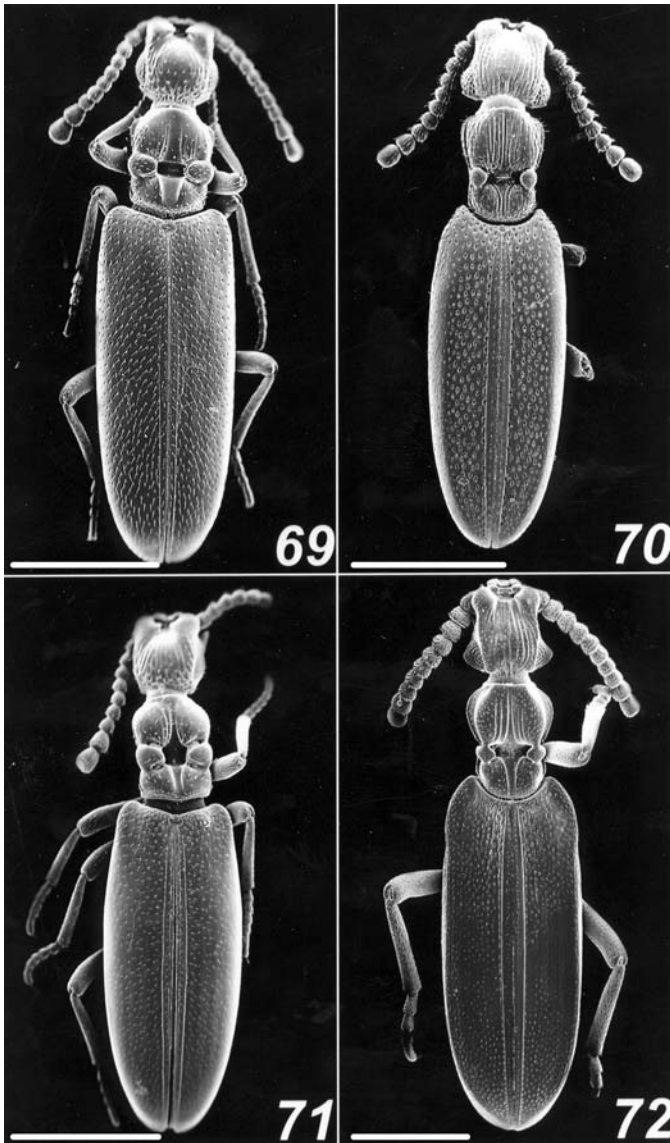


Figs. 57–64. Metasternum. **57)** *Dacoderus striaticeps* LeConte; **58)** *D. weneri* n. sp.; **59)** *D. sleeperi* n. sp.; **60)** *D. rossi* n. sp.; **61)** *D. steineri* n. sp.; **62)** *Myrmecoderus rileyi* n. sp.; **63)** *M. dominicensis* (Horn); **64)** *M. laevipennis* (Horn); scalebars = 100.0 μ .



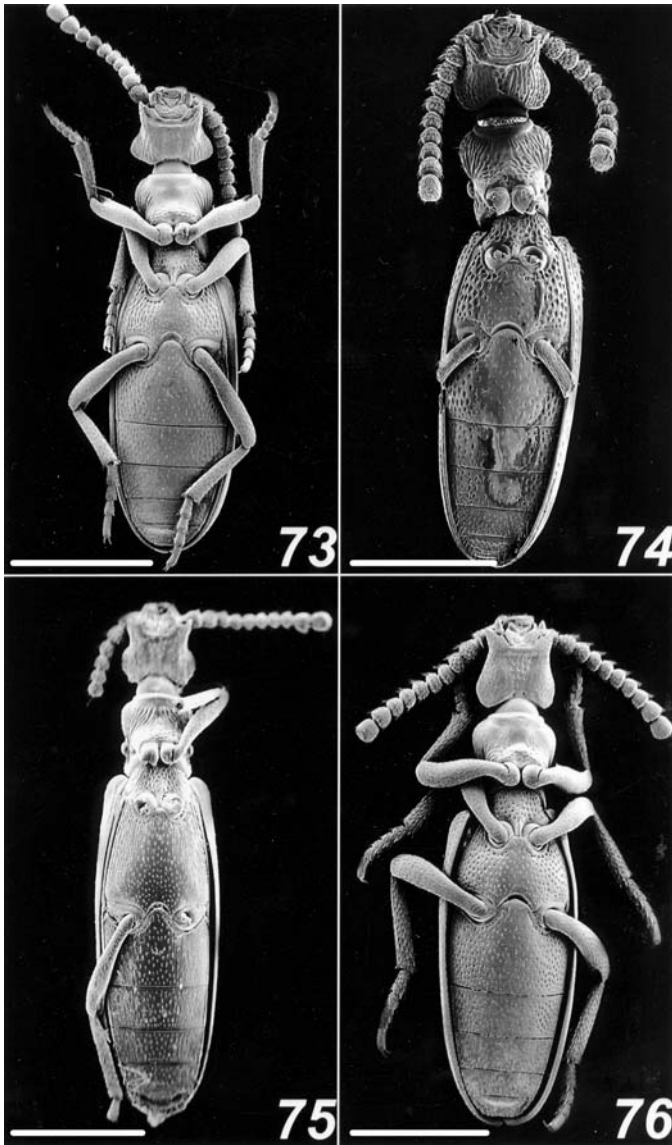
Figs. 65–68. Habitus, dorsal aspect. **65)** *Dacoderus steineri* n. sp.; **66)** *D. striaticeps* LeConte; **67)** *Myrmecoderus rileyi* n. sp.; **68)** *D. wernerii* n. sp.; scalebars = 1,000.0 μ .

col., (1) USNM; V-75, R. Lenczy col., (1) USNM; Madera Canyon, II-3-71, R. Lenczy col., (1) USNM; Florida Canyon, VI-69, R. Lenczy col., (1) USNM; Mt. Lemon Hwy, 7600', X-3-1971, Berlese Oak duff, D. S. Chandler col., (1) UCDC; COCHISE CO., Portal Ranger Station, VI-9-77, at light J. Daneker col., (1) OSUC; Guadalupe cyn., VI-6-78, at light, 1,286 m, S. McCleve col., (2) OSUC; Dragoon Mts., East Stronghold, V-10-75, K. Stephan col., (4) FSCA. PINAL CO. Catal Springs (6) USNM; Mammoth, 10



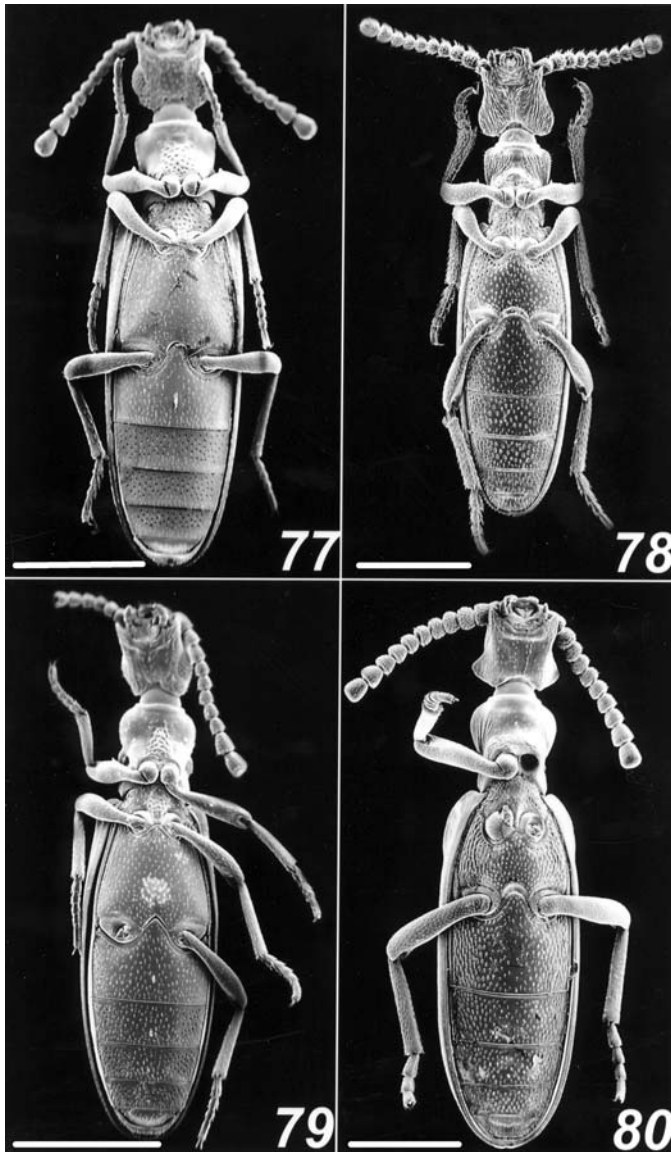
Figs. 69–72. Habitus, dorsal aspect. **69** *Myrmecoderus dominicensis* (Horn); **70** *Dacoderus sleeperi* n. sp.; **71** *M. laevipennis* (Horn); **72** *D. rossi* n. sp.; scalebars = 1,000.0 μ .

mi N VIII-2-1973, D. S. Chandler col. (1) UCDC; VIII-16-73, D. S. Chandler col. (1) UCDC; 5 mi N VII-12-1973, D. S. Chandler col. (1) UCDC; GRAHAM CO., Fort Grant, IV-7, Hubbard & Schwarz coln. (1) USNM; 20-7, Hubbard & Schwarz coln. (2) USNM; GILA CO., Rye, 1 mi S, VII-24/31-88, W. Warner (1) RLAC; SANTA CRUZ CO., Pajarito Mts., Pena Blanca cyn., VIII-15-70, K. Stephan col., (1) FSCA. Adobe cyn.,



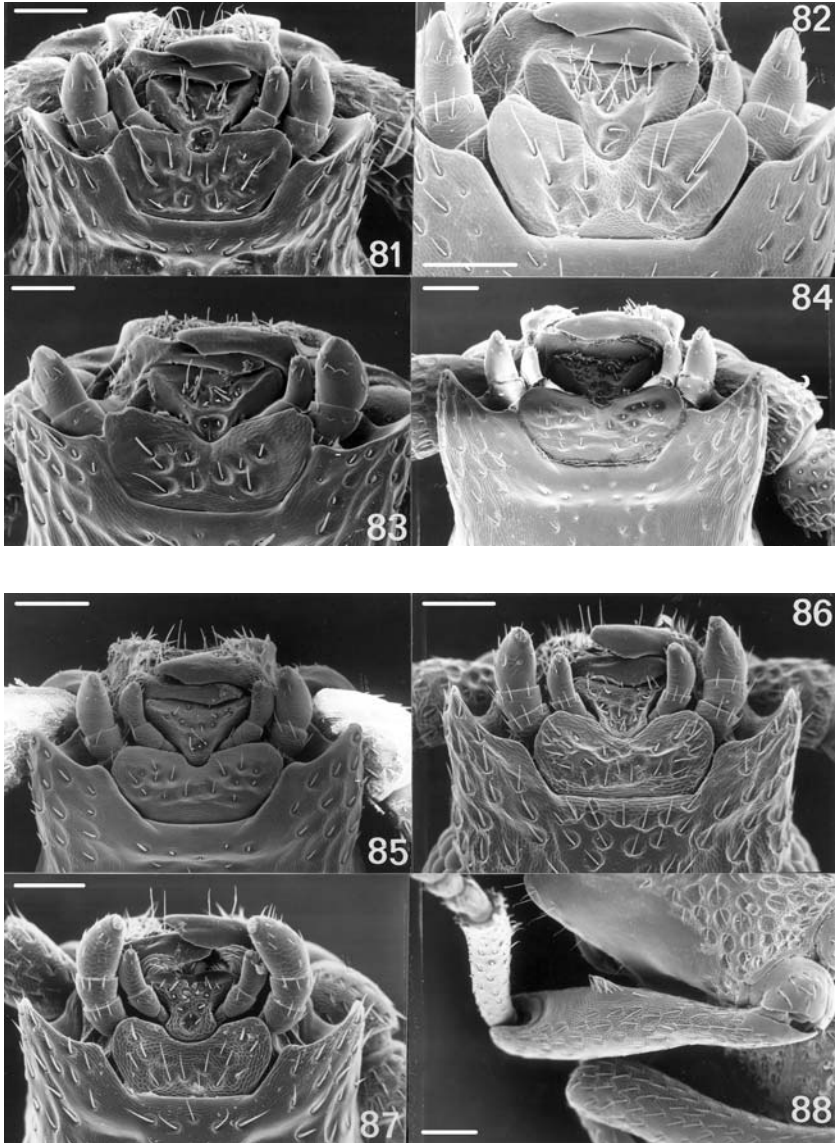
Figs. 73–76. Habitus, ventral aspect. **73)** *Dacoderus steineri* n. sp.; **74)** *D. striaticeps* LeConte; **75)** *Myrmecoderus rileyi* n. sp.; **76)** *D. werneri* n. sp.; scalebars = 1,000.0 μ .

IV-14-74, K. Stephan col. *striaticeps* det Triplehorn, (1) FSCA; LA PAZ CO., Alamo St. Pk., IV-16-76, K. Stephan col., (1) FSCA; YUMA CO., Yuma, near, Horn col., H7228 (1) MCZC; Tacna, 13-4, Hubbard & Schwarz coln. (2) USNM; 14-4, Hubbard & Schwarz coln. (4) USNM; Kufa Game Res., IV-17-76, K. Stephan col., (1) FSCA. **CALIFORNIA**, (1) MCZC; Horn col., H7228 (2) MCZC; IMPERIAL CO., Imperial,



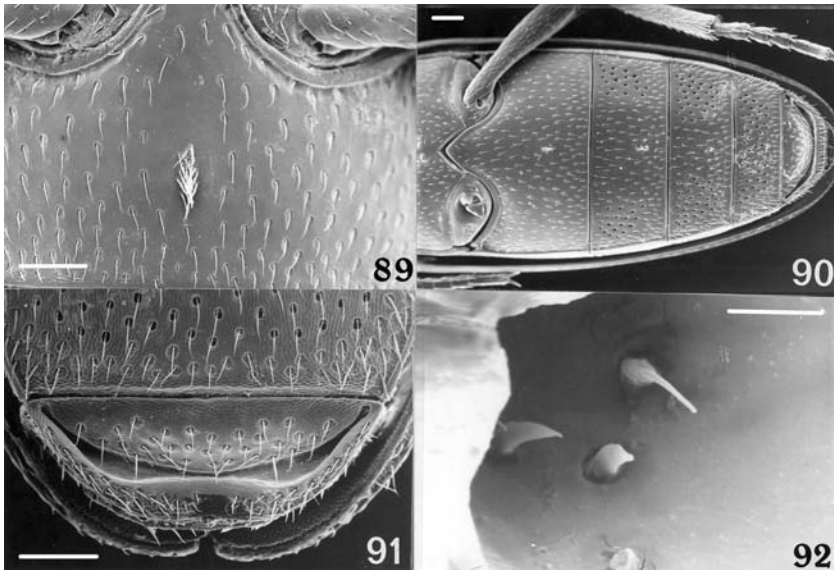
Figs. 77–80. Habitus, ventral aspect. **77)** *Myrmecoderus dominicensis* (Horn); **78)** *Dacoderus sleeperi* n. sp.; **79)** *M. laevipennis* (Horn); **80)** *D. rossi* n. sp.; scalebars = 1,000.0 μ .

II-27-57, H. Blackmore col. (1) CDFA; SAN BERNARDINO CO., Providence Mountains State Recreation Area, Mitchell Caverns State Park, Mitchell Caverns area, El. 4400', V-8/VIII-10-81. R. Aalbu col. (4) RLAC; XII-79/V-81, R. Aalbu col. (3) RLAC; VII-79/V-81, R. Aalbu col. (2) RLAC; Bonanza King Mine, 4100', IV-8-66, J. Doyen col. (2) CISC.



Figs. 81–87. Mentum, ventral aspect. **81**) *Dacoderus striaticeps* LeConte; **82**) *D. werneri* n. sp.; **83**) *D. sleeperi* n. sp.; **84**) *D. rossi* n. sp.; **85**) *D. steineri* n. sp.; **86**) *Myrmecoderus dominicensis* (Horn); **87**) *M. laevipennis* (Horn). **88**) *Myrmecoderus dominicensis* (Horn), male profemoral setal area, ventral view; scalebars = 100.0 μ .

Description. Body 3.95 times longer than wide: length 3.04 mm; width 0.77 mm. **Head** wider than long (length-to-width ratio equals 0.94): length 0.48 mm; width 0.52 mm. Eyes composed of 20 to 30 facets, interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension, not extended laterally,



Figs. 89–92. 89) *Myrmecoderus dominicensis* (Horn), ventral view of first visible abdominal sternite; 90) *M. laevipennis* (Horn), ventral view of abdominal sternites; 91) *M. dominicensis*, ventral view of apical abdominal sternite; scalebars = 100.0 μ . 92) *Dacoderus steineri* n. sp., sensory setae in lateral portion of excavated area on frons; scalebars = 10.0 μ .

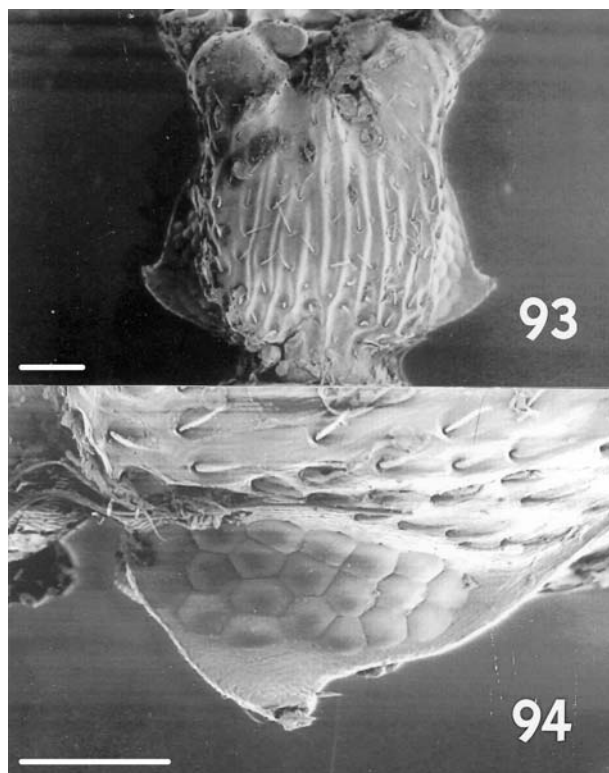
parallel to eye, posterior toothlike projection, posterior aspect concave. Frons anterior medial aspect of inflated lateral areas strongly produced medially, gap over clypeus reduced to one or less facets in size; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum, bearing setal brushes which partially cover clypeus and labrum; mentum narrowly notched anteriorly (ratio of notch to width of mentum approximately 0.2); Antennal segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 9:11:13. **Thorax** (length-to-width ratio equals 1.2): length 0.63 mm; width 0.53 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals expanded, somewhat directed medially, attached slightly lateral to midpoint, visible portion of transverse canal wider than long, without central transverse ridge or setal pads at bridges. Prosternum sculpturing mostly rugose; length of metasternum to length of procoxae between 2.25 to 3. Profemoral dense setal pit in males. **Elytra** 2.6 times longer than wide: length 2.00 mm; width 0.77 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength more abruptly declivous, narrowly rounded, surface at midlength depressed between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength moderately large, about equal in size to eye facets. **Abdomen.** Apical sternite without apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.8; visible segment ratio 100:50:41:31:25.

Label Notations. Ethylene Glycol Pitfall Trap near Neotoma (Say and Ord 1825) nest, cereal bowl pitfall trap, ground trap, ex. feed bags, under stones, *Prosopis juliflora*, (Swartz) berlese oak duff, under bark.

***Dacoderus werner* new species**

(Figs. 2, 10, 18, 26, 34, 42, 50, 58, 68, 76, 82, 97)

Type Material. Holotype (male). MEXICO: MORELOS, Cocoyotla, VI-20-48, 3500, along stream, 48–222, F. Werner & W. Nutting cols., (1) MCZC. **Paratype.**



Figs. 93–94. *Dacoderus acanthomma* Blair. **93)** Head, dorsal aspect; **94)** eye, dorsal aspect.

MEXICO: OAXACA?, Tepetlapa, *Dacoderus striaticiceps* LeC., Det. dr. Kaszab (1) HNHM.

Etymology. This species is named in honor of Floyd Werner, who collected the holotype.

Description. Body 3.54 times longer than wide: length 3.2–4.5 mm; width 1.0–1.2 mm. **Head** longer than wide (length-to-width ratio equals 1.19): length 0.78 mm; width 0.65 mm. Eyes composed of 20 to 30 facets, interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension, not extended laterally, parallel to eye, without posterior toothlike projection, posterior aspect straight. Frons anterior medial aspect of inflated lateral areas strongly produced medially, gap over clypeus reduced to one or less facets in size; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum, bearing setal brushes which partially cover clypeus and labrum; mentum narrowly notched anteriorly (ratio of notch to width of mentum approximately 0.2). Antennal segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 8:9:12. **Thorax** (length-to-width ratio equals 1.16): length 0.92 mm; width 0.79 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals small in size, somewhat directed medially, attached slightly lateral to midpoint, visible portion of transverse canal wider than long, without central transverse ridge or setal pads at bridges. Prosternum sculpturing mostly rugose; metasternum ratio of length of metasternum to length of procoxae between 2.25 to 3. Profemural

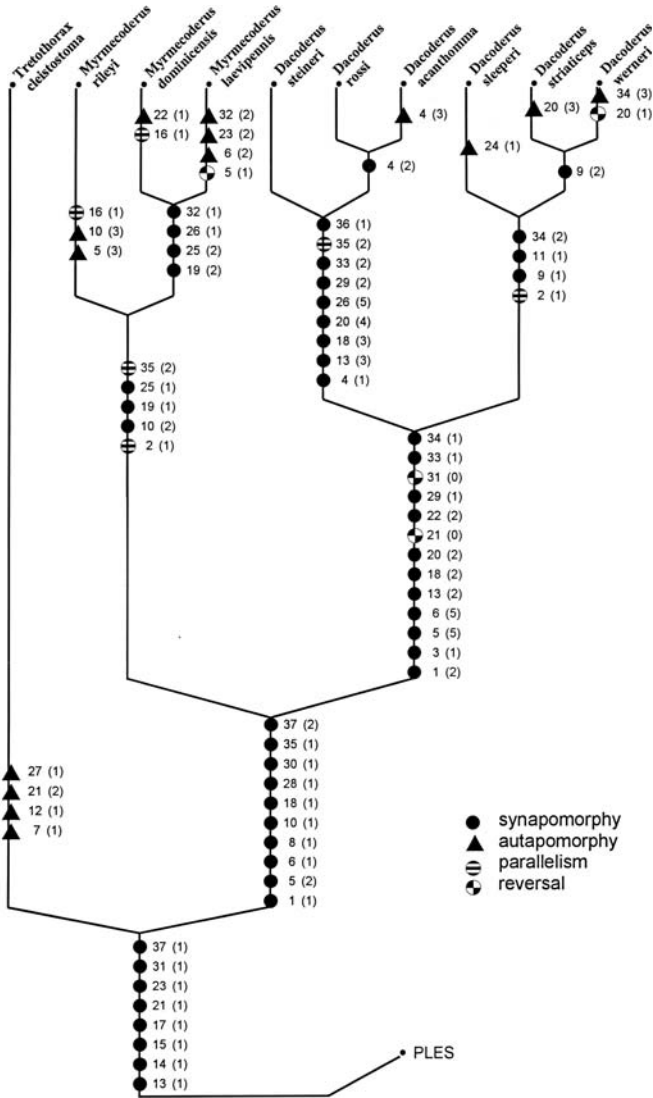


Fig. 95. Reconstructed phylogenetic relationships among species of *Dacoderus* and *Myrmecoderus*.

dense setal pit in males. **Elytra** 2.29 times longer than wide: length 2.62 mm; width 1.14 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength more abruptly declivous, narrowly rounded, surface at midlength strongly depressed between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength moderately large, about equal in size to eye facets. **Abdomen** apical sternite without apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.8; visible segment ratio 100:44:34:25:19.



Fig. 96. Known distributions of *D. sleeperi* n. sp. and *D. striaticeps* LeConte.

Dacoderus sleeperi new species

(Figs. 3, 11, 19, 27, 35, 43, 51, 59, 70, 78, 83, 96)

Type Material. Holotype (male). **UNITED STATES: CALIFORNIA, RIVERSIDE CO.**, Joshua Tree National Monument, Pleasant Valley III, Fried Liver Wash, E. L. Sleeper & S. L. Jenkins cols., X-9-65, CSLB. [Holotype deposited at CASC]. **Allotype**. (female): **UNITED STATES: CALIFORNIA, RIVERSIDE CO.**, Joshua Tree National Monument, Pinyon Wells 1, E. L. Sleeper & S. L. Jenkins cols., IX-23-67, CSLB. [Allotype deposited at CASC]. **Paratypes**. (2391 from the following 118 localities): **MEXICO: BAJA CALIFORNIA (NORTE)**, (241 specimens from 36 localities): Km. 65, VIII-22-84, W. Clark col. (1) CIDC; Catavina, 7.7 mi NW, VII-3-79 to III-24-81, F. Andrews col. (3) CDFa; 2.5 mi NW, VII-13-79, F. Andrews, A. Hardy & D. Giuliani cols., (26) CDFa; 3.5 mi NW VI-23/IX-10-88, F. Andrews & A. Hardy cols., (3) CDFa; El Arco, 34 km NE, Rancho Mina 28°13'N, 113°10'W, El. 550 m, EGPT VIII-16-1982 to I-26-84, W. Clark, D. Ward & P. Blom cols. (25) CDFa; (1) CIDC; El Rosario, IV-2-85, Pitfall, W. Clark & P. Blom cols. (11) CIDC; Km. 70, III-2-1985, Pitfall, W. Clark col. (1) CIDC; 14.7 km E, 30°04'10"N, 115°36'00"W, 190 m, EGPT #2 IV-1-1985 to III-2-86, W. Clark, D. Ward & P. Blom cols. (2) CIDC; EGPT #1 IV-1-1985 to III-2-86, W. Clark & P. Blom cols. (5) CIDC; EGPT #2 XI-7-1984 to IV-2-1985, W. Clark & P. Blom cols. (5) CIDC; EGPT #1 (10) CIDC; EGPT #2 III-9-1991 to VII-18-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (2) CIDC;

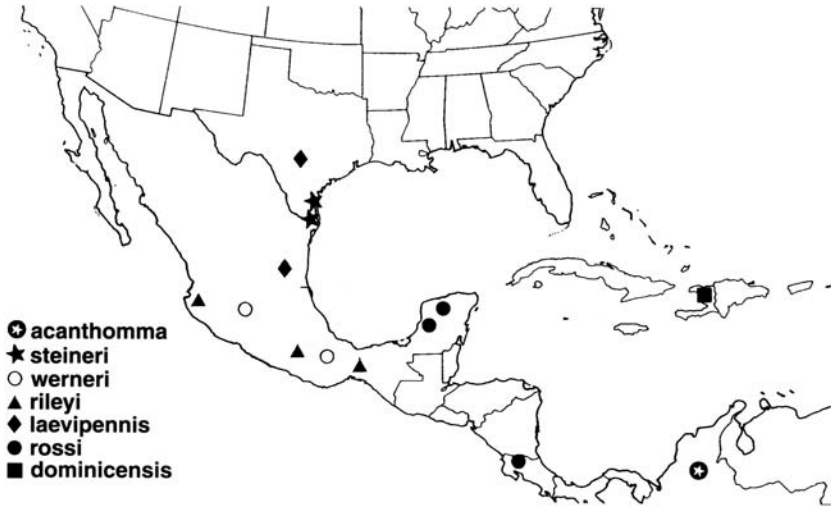


Fig. 97. Known distributions of *D. acanthomma* Blair, *D. steineri* n. sp., *D. weneri* n. sp., *M. rileyi* n. sp., *M. laevipennis* (Horn), *D. rossi* n. sp., and *M. dominicensis* (Horn).

10.7 km E, 30°04'35"N, 115°38'25"W, 160 m, EGPT #1 IV-1-1985 to III-2-86, W. Clark, & P. Blom cols. (2) CIDC; EGPT #2 XI-7-1984 to IV-2-1985, W. Clark & P. Blom cols. (2) CIDC; EGPT #1 XII-18-1988 to VIII-27-1989, W. Clark col. (20) CIDC; 11 air km E, 30°04'40"N, 115°36'36"W, 140 m, EGPT #2 XI-8-1984 to IV-2-85, W. Clark, & P. Blom cols. (1) CIDC; EGPT #2 IV-1-85 to III-2-1986, W. Clark, & P. Blom cols. (1) CIDC; 11.7 km E, 30°04'30"N, 115°37'55" W, 180 m, EGPT #3 IV-1-1985 to III-2-86, W. Clark, & P. Blom cols. (1) CIDC; EGPT #4 VII-1-1985 to III-2-86, W. Clark, & P. Blom cols. (1) CIDC; 12.7 km E, 30°04'15"N, 115°37'10"W, 180 m, EGPT #1 IV-1-1985 to III-2-86, W. Clark, & P. Blom cols. (1) CIDC; 9.7 km E, 30°05'15"N, 115°39'00"W, 140 m, EGPT #1 VII-11-1984 to IV-2-85, W. Clark, & P. Blom cols. (2) CIDC; EGPT #1 IV-1-1985 to III-2-86, W. Clark, & P. Blom cols. (1) CIDC; Punta Colonet, 12 mi NE, 2 km N Ej. Alfredo B. Bonfil. Hwy 1 km 115, 31°08'N, 116°12'W, EGPT I-6 to VIII-10-1982, W. Clark, D. Ward & P. Blom cols. (1) CIDC; El Crucero, IV-4-76, J. Doyen col., (1) CISC; Punta Prieta, 10 mi S, VI-21-38, Michelbacher & Ross cols., *striaticeps* det Blaisdell (2) CASC; El Rosario, 57 mi E, 2 mi E San Fernando Velicata, VII-2-79, F. Andrews & A. Hardy cols., (12) CDFA; Bahía de los Angeles, 6.2 mi W VII-11-79, F. Andrews, A. Hardy & D. Giuliani cols., (5) CDFA; R. Aalbu col., (3) RLAC; Rosarito, 6.2 mi NE, VII-10-79, R. Aalbu (1) RLAC; Rancho Santa Catarina, EGPT 1994, W. Clark col. (3) CIDC; VIII-30-1982, W. H. & E. M. Clark Cols. (1) CIDC; 3.3 km S, 29°41' N, 115°07'W, EGPT VI-19-1990 to III-20-1991, W. & E. Clark cols. (4) CIDC; 1 km NE, 29°44'N, 115°09'W, EGPT #1 III-20-1991 to VII-3-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (3) CIDC; La Ramona, 29°48'N, 115°05'W, EGPT III-21-1991 to VII-3-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (3) CIDC; EGPT VI-20-1990 to III-21-1991, W. H. & E. M. Clark Cols. (4) CIDC; Rancho Santa Ines, 9 km NW, 29°46'N, 114°46'W, 550 m. EGPT #1 VI-22-1990 to III-9-1991, W. & E. Clark cols. (3) CIDC; EGPT #5 IV-5-1985 to III-3-1986, W. Clark, & P. Blom cols. (2) CIDC; EGPT I-4/5-1982 to VIII-25-1982, W. Clark, & P. Blom cols. (1) CIDC; VII-4-81 to I-4/5-1982 (1) CIDC; EGPT #6 I-4/5-1982 to VIII-25-1982, W. Clark, & P. Blom cols. (1) CIDC;

Guayaquil, Km. 127, 1.5 km SW, 29°57'N, 115°06'W, 600 m. EGPT #1 III-23-1991 to VII-3-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (1) CIDC; Arroyo El Sauce, Km 91, 30°03'N, 115°25'W, 500 m. EGPT VI-22-1990 to III-9-1991, W. & E. Clark cols. (1) CIDC; EGPT III-9-1991 to VII-18-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (1) CIDC; La Bocana, 6 km NE, 29°42'N, 114°50'W, 400 m. EGPT III-19-1991 to VII-5-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (1) CIDC; San Telmo, 1 km SE, 29°35'N, 114°46'W, 300 m. EGPT VI-18-1990 to III-19-1991, W. & E. Clark cols. (1) CIDC; EGPT III-19-1991 to VII-5-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (1) CIDC; Todos Santos, 29°30'N, 114°44'W, 350 m. EGPT VI-18-1990 to III-17-1991, W. & E. Clark cols. (1) CIDC; San Jose, 29°30'N, 114°45'W, 60 m, EGPT VI-18-1990 to III-19-1991, W. & E. Clark cols. (5) CIDC; Santo Thomas, 8 km NW, Jct. Hwy 1 & Rd. to Ejido Uruapan, 31°37'N, 116°27'W, 200 m, EGPT VI-22-1990 to III-9-1991, W. & E. Clark cols. (1) CIDC; Uruapan, III-11-1991, W. Clark col. (1) CIDC; Angel Del La Guardia Island, Palm Cyn, gulf of canyon, V-3-21, J. C. Chamberlin colln., (1) CASC; San Lorenzo Island, SW canyon wash VII-27/28-86, R. Aalbu col., (1) RLAC; San Francisquito, 2 mi W, box canyon with caves, VII-26/27-86, R. Aalbu (1) RLAC; Pinturas Montevideo, La Laguna wash, 28°54'7"N, 113°42'17"W, III-13/V-14-99, EGPT, permit #D00750-1502, Rolf L. Aalbu (47) RLAC. **BAJA CALIFORNIA SUR**, (103 specimens from 21 localities): El Pescadero, IV-16-79, M. Wasbauer col., (15) CDFa; San Ignacio, 2 mi E, VII-6-79, F. Andrews, A. Hardy & D. Giuliani cols., (7) CDFa; R. Aalbu col., (2) RLAC; Rancho El Mesquital, 21.4 mi E, VII-9-79, F. Andrews, A. Hardy & D. Giuliani cols., (1) CDFa; San Bartolo, 2.3 mi SW, X-1-81, F. Andrews & D. Faulkner cols., (5) CDFa; (2) RLAC; Canipole, X-2-41, Ross & Bohart cols., (1) CASC; Mulege, 8 km SE, R. Aalbu (2) RLAC; Rosarito, 16 mi E, Rancho San Ignacio, III-26/27-82, M. & K. Wasbauer cols., (1) CDFa; San Antonio, 2.6 mi E, VII-30-71, H. G. Real & R. E. Main cols., (1) CASC; Todos Santos, 8 mi NE, El Salto, X-9-83, F. Andrews & D. Faulkner cols., (5) CDFa; 36.6 mi SE, X-10-83, F. Andrews & D. Faulkner cols., (1) CDFa; Valle Perdido, 2.7 mi SE, El. 1800, X-15/16-68, E. L. Sleeper & F. J. Moore cols., (6) CSLB; El Arco, IV-21-90, W. Clark col. (1) CIDC; VI-26-89, W. Clark col. (1) CIDC; San Andres, 1.5 km NW, 27°15'N, 114°23'W, 20 m. EGPT III-17-1991 to VII-8-1991, W. H., M. H., C. J., & K. D. Clark & J. E. Luther Cols. (1) CIDC; San Jorge, 1.5 mi E, VII-25-71, H. G. Real & R. E. Main cols., U. V. light (1) CISC; 9 mi SW Hwy 256 on rd to San Isidro, VII-14/15-99 24°0'53"110°8'0" R. Aalbu, K. Brown, I. Stahi & F. Piñero, pitraps #D00750-1502 700 m (3) RLAC; 1 mi N. Ej. Guillermo Prieto EGPT, III-14/VII-19-1999 27°48'32"113°18'31" R. Aalbu & F. Piñero #D00750-1502 (24) RLAC; 0.6 mi W Hwy 19 on road to Melitan Albane VII-17-99 to IX-9-03 EGPT El. 19°23'39"7"110°13'58" R. Aalbu (340) RLAC; Punte San Cristobal km 107 VII-16-99 to IX-13-03 478' EGPT 22°58'53"110°1'50" R. Aalbu (237) RLAC; Valle Perdido 0.2 mi N Reserva gate, VII-16/17-99 23°21'49"110°1'12" R. Aalbu, K. Brown, I. Stahi & F. Piñero Cols. #D00750-1502 500 m at night (4) RLAC; same except EGPT VII-16/17-99 to IX-13-03 EGPT R. Aalbu (882) RLAC; Monserrate Island, VI-11/23-78, C. Slobadchikoff col. (3) CISC; Carmen Island, V-23/VI-6-78, C. Slobadchikoff col. (3) CISC. **MICHOACAN**, Tiquicheo, 5 mi SW, 1400', VII-8-70, E. Fisher & P. Sullivan cols., (1) CDFa; Isla Carmen, EGPT, VII-13/18-99 25°47'12"111°12'46", R. Aalbu, K. Brown, I. Stahi & F. Piñero cols. permit #D00750-1502 (3) RLAC; same except carrion trap (1) RLAC; same except PGPT (1) RLAC; same except central wash, Oatmeal Trap (14) RLAC; Isla Mestiza, VII-13/18-99, EGPT 25°46'04"-111°16'58", R. Aalbu, K. Brown, I. Stahi & F. Piñero, cols. permit #D00750-1502 (1) RLAC. **UNITED STATES: CALIFORNIA, IMPERIAL CO.**, (57 specimens from 4 localities): Walter's Camp, 9.3 mi S, IV-28/VII-19-78, F. Andrews & A. Hardy cols., (19) CDFa; (3) CIDC; same except IV-11-98, 33°11'00"N,

114°51'57"W, R. Aalbu, kept alive to VI-21-98 (3) RLAC; 9 mi S, IX-28-80, F. Andrews & A. Hardy cols., (31) CDFA; (1) HNHM; RIVERSIDE CO., (509 specimens from 14 localities): Blythe, 1 mi W, V-23/24-70, J. Johnson & M. Wasbauer cols., (1) CDFA; 3. mi W, V-27-71, M. Wasbauer cols., (1) CDFA; Palm Springs, Andreas cyn., IV-19-79, K. Cooper col., (4) CDFA; Palm Desert, Boyd Desert Research Center, VI-20/27-69, S. Frommer, D. Bixler & L. LaPré cols., (1) CDFA; Whitewater Canyon, palm oasis, el. 2200', V-18/IX-13-78, R. Aalbu col., (1) RLAC; Mecca, 10 mi E, Box canyon, VIII-9/10-86, R. Aalbu col., (1) RLAC; Joshua Tree National Monument (E. L. Sleeper & S. L. Jenkins cols.), Pleasant Valley III, ground trap 1 [V-30-65 (11), CSLB; VI-13-65 (1), CSLB; VI-31-65 (1), CSLB; VII-31-65 (1), CSLB; X-9-65 (1), CSLB]; ground trap 2 [VIII-28-65 (1), CSLB; IX-25-65 (4), CSLB; X-9-65 (2), CSLB; VIII-26-67 (3), CSLB; IX-23-67 (1), CSLB]; ground trap 3 [V-1-65 (4), CSLB; V-30-65 (7), CSLB; VII-15-65 (1) OSUC; IX-25-65 (1), CSLB; X-9-65 (3), CSLB; IV-8-66 (2), CSLB; IV-30-66 (4), CSLB; VIII-27-66 (1), CSLB]; ground trap 4 [V-30-65 (1), CSLB; VI-30-65 (1), CSLB; VII-31-65 (2), CSLB; VIII-28-65 (7), CSLB; IX-25-65 (5), CSLB; X-9-65 (2), CSLB; X-30-65 (1), CSLB; V-14-66 (6), CSLB; VI-14-66 (1), CSLB]; ground trap 5 [V-30-65 (2), CSLB; VII-15-65 (1), CSLB; VII-31-65 (1), CSLB; VIII-28-65 (1), CSLB; IX-25-65 (3), CSLB; X-9-65 (3), CSLB; VII-9-66 (1), CSLB]; ground trap 6 [VI-13-65 (3), CSLB; VII-15-65 (10), CSLB; VII-30-65 (17), CSLB; VIII-27-65 (33), CSLB; X-9-65 (1), CSLB; X-30-65 (10), CSLB; XII-12-65 (1), CSLB; IV-8-66 (1), CSLB; IV-30-66 (6), CSLB; VI-11-66 (16), CSLB; VI-11-66 (1), CDFA; VI-25-66 (1), CSLB; VI-30-66 (1), CSLB; VII-9-66 (9), CSLB; VII-23-66 (5), CSLB; IX-10-66 (8), CSLB; X-1-66 (4), CSLB; VI-24-67 (3), CSLB; VII-24-67 (1), CSLB; VII-29-67 (3), CSLB]; ground trap 7 [X-9-65 (16), CSLB; X-30-65 (1), CSLB; VIII-27-65 (1), CSLB; IX-25-65 (1), CSLB; V-6-67 (1), CSLB]; Pleasant Valley III, Fried Liver Wash, VIII-27-65 (8), CSLB; ground trap 1 [V-1-65 (1), CSLB; (1) OSUC; V-25-65 (1), CSLB; V-30-65 (1), CSLB; VII-15-65 (4), CSLB; VII-30-65 (16), CSLB; VIII-27-65 (16), CSLB; VIII-28-65 (1), CSLB; IX-25-65 (3), CSLB; X-9-65 (1), CSLB; IV-8-66 (3), CSLB; V-14-66 (1), CSLB; (1), USNM; VI-4-66 (1), CSLB; IV-7-67 (1), CSLB; V-6-67 (2), CSLB; V-27-67 (1), CSLB; VI-24-67 (3), CSLB]; ground trap 2 [V-1-65 (1), CSLB; V-30-65 (6), CSLB; (2) OSUC; VII-15-65 (2) OSUC; VIII-27/28-65 (19), CSLB; IX-25-65 (16), CSLB; VII-9-66 (3), CSLB; VII-23-66 (6), CSLB; X-22-66 (1), CSLB; V-27-67 (4), CSLB; VI-24-67 (2), CSLB; VIII-26-67 (4), CSLB; IX-23-67 (1), CSLB]; ground trap 3 [IV-13-65 (1), CSLB; V-1-65 (1), CSLB; VI-13-65 (2), CSLB; VIII-27-65 (3), CSLB; VIII-28-65 (1), CSLB; IX-25-65 (28), CSLB; X-9-65 (3), CSLB; (1) OSUC; VI-25-66 (1), CSLB; VII-9-66 (1), CSLB; X-1-66 (3), CSLB; (1) USNM; X-22-66 (2), CSLB; VIII-26-67 (7), CSLB; IX-23-67 (1), CSLB]; ground trap 4 [IX-25-65 (2), CSLB; V-14-66 (3), CSLB; VII-9-66 (1) USNM; VII-23-66 (4), CSLB; X-1-66 (2), CSLB; VIII-27-66 (2), CSLB; (1) USNM; IV-7-67 (1), CSLB; V-27-67 (8), CSLB; VI-24-67 (7), CSLB; VIII-26-67 (1), CSLB; (2) CDFA]; ground trap 5 [VII-9-66 (2), CSLB; X-1-66 (2), CSLB; VIII-26-67 (1), CSLB]; hanging bait VIII-27-65 (1), CSLB; VII-9-66 (1), CSLB; Pinyon Wells 1, X-4-65 (1), CSLB; X-25-65 (1), CSLB; VIII-27-66 (3), CSLB; (1) USNM; X-12-66 (1), CSLB; X-22-66 (3), CSLB; XI-11-66 (1), CSLB; V-27-67 (1), CSLB; VI-24-67 (1), CSLB; VII-27-67 (1), CSLB; VIII-26-67 (3), CSLB; IX-13-67 (1), CSLB; IX-23-67 (5), CSLB; Pinyon Wells 1, Beating & Sweeping VIII-27-65 (1), CSLB; IX-27-65 (1), CSLB; Pinyon Wells 2, X-9-65 (1), CSLB; VI-24-67 (1), CSLB; VII-28-67 (1), CSLB; VIII-26-67 (1), CSLB; IX-23-67 (2), CSLB; Pinyon Wells 3, VII-23-66 (1), CSLB; Pinyon Wells 4, V-30-65 (1) OSUC; IX-30-66 (2), CSLB; VII-28-67 (4), CSLB; Pinyon Wells 5, VI-29-65 (1), CSLB; VII-30-65 (1), CSLB; IX-25-65 (1), CSLB; VIII-26-67 (1), CSLB; IX-23-67 (1), CSLB; Lower Covington Flat, V-19-1969, F. J. Moore & R. L. Berry col., (16) OSUC; Old Dale Jct., 1.8 mi NW, V-1-65, E. L.

Sleeper (2) CSLB; (1) OSUC; SAN DIEGO CO., (21 specimens from 4 localities): Yaqui Well, 0.5 mi W, Cholla-Ocotillo, El. 1500', II-19-/IX-23-78, R. Aalbu col., (9) RLAC; (1) KWBC; San Felipe Valley, El. 3000', Mesquite Creosote Scrub, IX-23-78/I-7-79, R. Aalbu col., (5) RLAC; (1) KWBC; I-7-79/XII-23-80, R. Aalbu col., (3) RLAC; Valecito, Horn col., H7228, (1) MCZC; Mt. Springs nr. Desert View Tower, III-29-60, W. J. Gertsch col. (1) AMNH.

Etymology. This species is named in honor of Elbert L. Sleeper who, along with S. L. Jenkins, collected over 500 specimens of this species.

Description. Body 3.79 times longer than wide: length 3.64 mm; width 0.96 mm. **Head** wider than long (length-to-width ratio equals 0.93): length 0.63 mm; width 0.67 mm. Eyes composed of 20 to 30 facets, interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension, not extended laterally, parallel to eye, posterior toothlike projection, posterior aspect concave. Frons anterior medial aspect of inflated lateral areas strongly produced medially, gap over clypeus about two facets in size; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum, bearing setal brushes which partially cover clypeus and labrum; mentum narrowly notched anteriorly (ratio of notch to width of mentum approximately 0.2); Antenna segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 8:10:14. **Thorax** (length-to-width ratio equals 1.31). Length 0.71 mm; width 0.54 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals moderate in size, somewhat directed medially, attached slightly lateral to midpoint, visible portion of transverse canal wider than long, central transverse ridge; without setal pads at bridges. Prosternum sculpturing mostly rugose; Length of metasternum to length of procoxae between 2.25 to 3. Profemur presence of dense setal pit in males. **Elytra** 2.5 times longer than wide: length 3.00 mm; width 0.96 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength more abruptly declivous, narrowly rounded, surface at midlength depressed between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength moderately large, about equal in size to eye facets. **Abdomen.** Apical sternite without apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.9; visible segment ratio 100:48:38:28:21.

Label Notations. Ethylene glycol pitfall trap (EGPT) in desert wash, sand dunes, propylene glycol pitfall trap (PGPT), cereal bowl pitfall trap, ground trap, Ultraviolet light, berlese litter under palm fronds and *Neotoma* droppings, drift fence pitfall trap, pitfall traps near *Chilopsis linearis* (Cavanilles), hanging bait.

Dacoderus rossi new species

(Figs. 4, 12, 20, 28, 36, 44, 52, 60, 72, 80, 84, 97)

Type Material. Holotype (male). **COSTA RICA:** Guanacaste, La Pacifica nr. Cañas, V-22/26-84, D. Rider, D. LeDoux & E. Riley cols., (1) RILEY. [TAMU]. **Allotype.** (female): **MEXICO: YUCATAN,** Chitzen Itza, V-25-84, at lite, R. Turnbow. [USNM]. **Paratypes. COSTA RICA:** Guanacaste, Parque Nac. Santa Rosa, 260 m, IX-13-76, E. Ross col. (1) CASC. Guanacaste, Cerro El Hacha, 300 m 12 km SE La Cruz, Malaise trap, 1988 GNP Biodiversity Survey 320000, 364000, INBIO CR1000 (5) 049263, 049357, 049484, 049422, 049000 INBC. Guanacaste, Parque Nac. Santa Rosa, Guan, E. Alcazar, Ene col. 1991, L.N. 309300–353300, INBIO CR1000 (1) 676079 INBC; Guanacaste, Fca. Jenny, 30 km N Liberia, VtoVI-1992, Malaise trap, L.N. 316200–364400, INBIO CR1000 (1) 500121 INBC; Guanacaste, Est. Cacao lado SW Volcan Cacao, 1,060 m, berlese leaf litter in moist forest, V-4-1995, R. S. Anderson col., (1) DAPC; Guanacaste, 8.5 km WNW Bagaces, dry oak forest, VII-18-96, site 3, berlese, S. O'Keefe col., (1) UCBC; Guanacaste, 7 km WNW Bagaces, oak riparian forest, VII-18-96, site 5, berlese, S. O'Keefe col., (1) UCBC; **MEXICO: CAMPECHE,** Chicana

Ruins, 6 mi E Xpujil, VI-13/14-1983, trop. seas. for., R. Anderson & W. Madison cols (1) DAPC; YUCATAN, Chitzen Itza, V-25-84, at lite, R. Turnbow col., (1) RHCT.

Etymology. This species is named in honor of Edward Ross, who first collected specimens of this species.

Description. Body 3.65 times longer than wide: length 3.30–4.67 mm; width 0.90–1.21 mm. **Head** wider than long (length-to-width ratio equals 0.92); length 0.73 mm; width 0.79 mm. Eyes composed of 20 to 30 facets, without interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension strongly extended dorso-laterally for a distance equal to three facets, angle sharp; without posterior toothlike projection. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum, not bearing setal brushes which partially cover clypeus and labrum; mentum very narrowly, deeply notched anteriorly (ratio of notch to width of mentum approximately 0.1); Antennal segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 9:11:14. **Thorax** (length-to-width ratio equals 1.2): length 0.96 mm; width 0.80 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals expanded, equally directed medially and laterally, attached at midpoint, visible portion of transverse canal wider than long, without central transverse ridge or setal pads at bridges. Prosternum anterior medial 2/3 sculpturing smooth; length of metasternum to length of procoxae less than 2. Profemoral dense setal pit in males. **Elytra** 2.6 times longer than wide: length 3.09 mm; width 1.19 mm; lateral humeral area produced antero-laterally; dorso-lateral margin at midlength abruptly declivous, forming a right angle, surface at midlength flat between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen.** Apical sternite without apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.6; visible segment ratio 100:49:41:30:24.

Dacoderus acanthomma Blair

(Figs. 93, 94, 97)

Dacoderus acanthomma Blair, 1918:153 (description); Gebien, 1937:693 (Catalog).

Type Material. **Holotype.** “red bordered disc,” BMNH Type number 31755, Nova grenada, *Dacoderus acanthomma* type Blair. Known only from the type.

Description. Body 3.99 times longer than wide: length 3.59 mm; width 0.90 mm. **Head** (length-to-width ratio equals 1.00): length and width 0.75 mm. Eyes composed of 20 to 30 facets, without interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension strongly extended dorso-laterally for a distance equal to three facets, anterior, angle obtuse, forming a sharp toothlike projection; without posterior toothlike projection. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and frons, not bearing setal brushes which partially cover clypeus and labrum; clypeus slightly indented anteriorly; mentum very narrowly, deeply notched anteriorly (ratio of notch to width of mentum approximately 0.1); Antennal segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8. **Thorax** (length-to-width ratio equals 1.37): length 0.81 mm; width 0.59 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals expanded, equally directed medially and laterally, attached at midpoint, visible portion of transverse canal wider than long, without central transverse ridge or setal pads at bridges. Prosternum anterior medial 2/3 sculpturing smooth; length of metasternum to length of procoxae less than 2. Profemoral dense setal pit in males. **Elytra** 2.44 times longer than wide: length 2.20 mm; width 0.90 mm; Elytra lateral humeral area produced antero-laterally; dorso-lateral margin at midlength abruptly declivous, forming a right angle, surface at midlength flat between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen** apical sternite without apical marginal

groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.6.

Dacoderus steineri new species

(Figs. 5, 13, 21, 29, 37, 45, 53, 61, 65, 73, 85, 92, 97)

Type Material. **Holotype** (male). **UNITED STATES: TEXAS, HILDALGO CO.,** Weslaco, VIII-19-1990, D. A. Dean col., pitfall trap in wooded area, OSUC [CASC]. **Allotype.** (female): **UNITED STATES: TEXAS, HILDALGO CO.,** Weslaco, VIII-19-1990, D. A. Dean col., pitfall trap in wooded area, OSUC [CASC]. **Paratypes.** (17 from the following 4 localities) **UNITED STATES: TEXAS, SAN PATRICIO CO.,** Welder Wildlife Refuge, VII-20-89, pitfall trap in clay soil bushland, J. M. Mora col., (1) EGRC; same except: IX-21-1989, J. M. Mora col., (2) TAMU; **HILDALGO CO.,** Mission, Bentsen State Park, VII-18-81, W. Steiner col., (1) WESC; Weslaco, VIII-19-1990, D. A. Dean col., pitfall trap in wooded area (1) OSUC; (7) TAMU; VI-8-58, D.J. & J.N. Knull colls., (1) OSUC; **CAMERON CO.,** Sabal Palm Grove Sanct., X-16/17-1993, H. Blackman & E. G. Riley cols., Berlese rotten log and Celtis leaf litter, (1) EGRC.

Etymology. This species is named in honor of Warren Steiner, who collected the first specimen of this species.

Description. Body 3.79 times longer than wide: length 2.90–4.90 (mean 3.55) mm; width 0.70–1.30 (mean 0.94) mm. **Head** about as long as wide (length-to-width ratio equals 1.01); length 0.61 mm; width 0.60 mm. Eyes composed of 20 to 30 facets, without interspaced setae; positioned on dorsal surface of lateral plate-like extension of genae, not visible from below, very slightly inflated; eye plate extension moderately extended dorso-laterally for a distance equal to about two facets, lateral angle rounded; without posterior toothlike projection. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension not expanded dorso-anteriorly, widely exposing clypeus and labrum, not bearing setal brushes which partially cover clypeus and labrum; mentum very narrowly, deeply notched anteriorly (ratio of notch to width of mentum approximately 0.1). Antennal segment 10 less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 9:11:14. **Thorax** (length-to-width ratio equals 1.28): length 0.77 mm; width 0.60 mm. Pronotum widest at anterior 1/3, lateral ridge present throughout length; lateral bridges over transverse canals expanded, equally directed medially and laterally, attached at midpoint, visible portion of transverse canal wider than long, without central transverse ridge or setal pads at bridges. Prosternum anterior medial 2/3 surface glabrous; length of metasternum to length of procoxae less than 2. Profemoral dense setal pit in males. **Elytra** 2.3 times longer than wide: length 2.24 mm; width 0.92 mm; lateral humeral area produced antero-laterally; dorso-lateral margin at midlength abruptly declivous, forming a right angle, surface at midlength flat between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen** apical sternite without apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 0.6; visible segment ratio 100:50:44:28:25.

Myrmecoderus new genus

Type Species: *Myrmecoderus dominicensis* (Horn), 1876: Present Designation.

Description. Apterous. **Body** slender, elongate, depressed, glabrous, antlike in shape, 3.6 to 4.0 times longer than wide: length 3.50 to 4.80 mm; width 0.90 to 1.30 mm. **Head** about as long as wide to longer than wide (length-to-width ratio equals 1.01 to 1.20): length 0.60 to 0.65 mm; width 0.53 to 0.63 mm. Eyes large, positioned laterally on head near base, rounded, moderately inflated, globose, composed of 35 to 60 facets, interspaced setae. Frons acutely excavate antero-medially behind clypeus, anteriorly produced basal extension expanded dorso-anteriorly, narrowly exposing

clypeus and labrum. Mentum widely notched anteriorly: ratio of notch to width of mentum approximately 0.3. Antenna with 10 visible segments. **Thorax** (length-to-width ratio equals 1.10 to 1.30): length 0.66 to 0.79 mm; width 0.56 to 0.64 mm. Pronotum quadrate, widest at lateral bridges or equally wide at lateral bridges and anterior 1/3; medial and transverse canals present; lateral bridges over transverse canals strongly directed medially; attachment of lateral bridges over transverse canals forming medially directed hooklike lobe, attached at lateral margins; shape of visible portion of transverse canal wider than long or equally as long as wide, without transverse ridge; presence of setal pads at bridges present on pronotum near bridges or present both on pronotum and on bridges. Length of metasternum to length of procoxae greater than 3.25. Profemoral dense setal pit in males. Abdomen apical sternite bearing apical marginal groove. **Elytra** 2.45 to 2.75 times longer than wide: length 2.30 to 2.64 mm; width 0.96 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength gradually declivous, rounded, surface at midlength gradually rounded between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets, first interval elevated throughout length.

***Myrmecoderus rileyi* new species**

(Figs. 6, 14, 22, 30, 38, 46, 54, 62, 67, 75, & 97)

Type Material. Holotype (male). **MEXICO: PUEBLA**, 60 mi S. Puebla, VII-3-1955, Derham Giuliani col., *Dacoderus* Det. J. F. Lawrence, CASC. **Paratypes: MEXICO: CHIAPAS**, Parque Nacional El Aguacero, V-23-87, D. Rider, T. J. & E. G. Riley cols., (1) EGRC. **JALISCO**, Chamela, Res. Sta., VIII-20-86, M. Sanchez-M.T. col. (1) CIDC. **MEXICO**, (ex.) IV-6-1938, T. F. Chong, Honolulu #12915, (1) USNM.

Etymology. This species is named in honor of Ed Riley.

Description. Body 3.86 times longer than wide: length 3.80–4.00 (mean 3.93) mm; width 0.96–1.10 (mean 1.02) mm. **Head** longer than wide (length-to-width ratio equals 1.06): length 0.64 mm; width 0.60 mm. Eyes moderately inflated, globose, composed of 35 to 60 facets, interspaced setae; positioned laterally on head, ventral aspect concave, approximately equal in width throughout most of visible length. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension expanded dorso-anteriorly, narrowly exposing clypeus and labrum, not bearing setal brushes which partially cover clypeus and labrum; mentum widely notched anteriorly (ratio of notch to width of mentum approximately 0.3); Antennal segment 10th greater than 1.8 times length of 8, 9th greater than 1.5 times length of 8; ratio of last three antennal segments 8:11:14. **Thorax** (length-to-width ratio equals 1.13): length 0.67 mm; width 0.59 mm. Pronotum quadrate, without lateral ridges, widest at lateral bridges or equally wide at lateral bridges and anterior 1/3; lateral bridges over transverse canals small, strongly directed medially, attached near lateral margins; visible portion of transverse canal wider than long, without central transverse ridge; setal pads present on pronotum near bridges. Prosternum sculpturing mostly rugose; ratio of length of metasternum to length of procoxae greater than 3.25. Profemoral dense setal pit in males. **Elytra** 2.75 times longer than wide: length 2.64 mm; width 0.96 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength gradually declivous, rounded, surface at midlength gradually rounded between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen** apical sternite apical marginal groove, sternites without dense setal areas in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 1.6; visible segment ratio 100:53:43:30:17.

***Myrmecoderus dominicensis* (Horn), NEW COMBINATION**

(Figs. 7, 15, 23, 31, 39, 47, 55, 63, 69, 77, 86, 89, 91, 97)

Dacoderus dominicensis Horn, 1876:219 (description), 1893:139 (keyed); Blair, 1918:154 (notes); Gebien, 1910:114 (Catalog), 1937:693 (Catalog).

Type Material. Sta. Domingo, MCZC Type No. 8005, *Dacoderus dominicensis* Horn., *Dacoderus*, head lost in accident XII-1940 [head and thorax missing] **PARALECTOTYPE HERE DESIGNATED.** Labeled “**Syntype.**” “light blue bordered disc.” **Type.** “red bordered disc.” *Dacoderus dominicensis* type Horn., F. Bates, 81-19, BMNH [head missing] **LECTOTYPE HERE DESIGNATED.**

Material Examined. HAITI: Ennery (1) MCZC.

Description. Body 3.83 times longer than wide; length 3.68 mm; width 0.96 mm. **Head** about as long as wide (length-to-width ratio equals 1.01); length 0.63 mm; width 0.62 mm. Eyes moderately inflated, globose, composed of 35 to 60 facets, interspaced setae; positioned laterally on head, ventral aspect convex, widest anterior to midpoint. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension not expanded dorso-anteriorly, narrowly exposing clypeus and labrum, not bearing setal brushes which partially cover clypeus and labrum; mentum widely notched anteriorly (ratio of notch to width of mentum approximately 0.3). Antennal segment 10th greater than 1.8 times length of 8, 9th greater than 1.5 times length of 8; ratio of last three antennal segments 9:15:18. **Thorax** (length-to-width ratio equals 1.12); length 0.71 mm; width 0.63 mm. Pronotum quadrate, lateral ridge present only present at anterior 1/3, widest at lateral bridges or equally wide at lateral bridges and anterior 1/3; lateral bridges over transverse canals large, strongly directed medially, attached near lateral margins; visible portion of transverse canal wider than long, without central transverse ridge; setal pads present both on pronotum and on bridges. Prosternum sculpturing with lateral and anterior medial 1/3 smooth; ratio of length of metasternum to length of procoxae greater than 3.25. Profemoral dense setal pit in males. **Elytra** 2.48 times longer than wide; length 2.48 mm; width 0.96 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength gradually declivous, rounded, surface at midlength gradually rounded between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen** apical sternite apical marginal groove, sternites with dense setal area present on first visible sternite in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 1.8; visible segment ratio 100:52:41:34:17.

Myrmecoderus laevipennis (Horn), NEW COMBINATION

(Figs. 8, 16, 24, 32, 40, 48, 56, 64, 71, 79, 87, 90, 97)

Dacoderus laevipennis Horn, 1893:139 (description, keyed); Blair, 1918:154 (notes); Gebien, 1910:114 (Catalog), 1937:693 (Catalog).

Type Material. Holotype. Tex., small red square, 27, MCZC Type No. 8004, *Dacoderus laevipennis* Horn.

Material Examined. (2 from the following 2 localities): **MEXICO: TAMAULIPAS,** Bocatoma, 7 km SSE Gomez Farias, III-25/30-78, E. G. Riley col., (1) EGRC. **UNITED STATES: TEXAS,** Kerville, VII-19-96, Light Midnight–7:00 am, W. F. Chamberlain (1) TAMU.

Description. Body 3.69 times longer than wide; length 3.54–4.80 mm; width 0.96–1.30 mm. **Head** longer than wide (length-to-width ratio equals 1.11); length 0.60 mm; width 0.54 mm. Eyes slightly inflated, globose, composed of 35 to 60 facets, interspaced setae; positioned laterally on head, ventral aspect convex, widest posterior to midpoint. Frons anterior medial aspect of inflated lateral areas not strongly produced medially; anteriorly produced basal extension not expanded dorso-anteriorly, narrowly exposing clypeus and labrum, not bearing setal brushes which partially cover clypeus and labrum; mentum widely notched anteriorly (ratio of notch to width of mentum approximately 0.3). Antennal segment 10th less than 1.75 times length of 8, 9th less than 1.4 times length of 8; ratio of last three antennal segments 8:11:14. **Thorax** (length-to-width ratio equals 1.3); length 0.78 mm; width 0.57 mm. Pronotum quadrate, without lateral ridge present, widest at lateral bridges or equally wide at lateral bridges and anterior 1/3; lateral bridges over transverse canals large, strongly directed medially, attached near lateral margins; visible portion of transverse

canal equally as long as wide, without central transverse ridge; setal pads present both on pronotum and on bridges. Prosternum sculpturing with lateral and anterior medial 1/3 smooth; ratio of length of metasternum to length of procoxae greater than 3.25. Profemoral dense setal pit in males. **Elytra** 2.58 times longer than wide; length 2.32 mm; width 0.96 mm; lateral humeral area not produced antero-laterally; dorso-lateral margin at midlength gradually declivous, rounded, surface at midlength gradually rounded between lateral margin and first striae; surface of elytra lateral to first intervals punctures at midlength much smaller in size than eye facets. **Abdomen** apical sternite apical marginal groove, sternites with dense setal area present on first, second and third visible sternites in males. Ratio of length of 1st abdominal sternite to length of metepisternum equals 1.5; visible segment ratio 100:54:43:32:21.

Higher Classification

Since its description by LeConte (1858), *Dacoderus* has always been recognized as very distinctive. This is reflected in its historical systematic placement, in which it was always accorded its own tribe or subfamily. Beginning with LeConte (1862) and followed by Horn (1876), Blair (1918), and Blackwelder (1945), the genus was placed in a separate tribe of Tenebrionidae. Blair (1918) was the first author to recognize the similarity between *Dacoderus* and *Tretothorax cleistostoma* Lea, the latter of which was collected from ant nests in Australia. Blair used characters of the anterior coxal cavities, 10-segmented antennae and the deeply excavated prothorax as evidence of their close relationship. Blair (1918:153) stated that “an affinity between two such specialized genera, each so isolated in its peculiar fauna, is somewhat surprising, but the resemblance between them . . . is really remarkable.”

Watt (1967) excluded *Dacoderus* (and *Tretothorax*) from Tenebrionidae on bases of possession of free ventrites, structure of prothorax, and structure of aedeagus (the latter of which has diverging, setose parameres [= accessory lobes] never found in Tenebrionidae). Watt (1967:117) admitted that “Dacoderidae agrees with Salpingidae in almost all its important characters, the exceptions being the inverted aedeagus and the large mentum, which conceals the mouthparts.” The inverted aedeagus is found also in other salpingid group taxa (e.g., Pilipalpinae, Pollock 1994) and is probably not a critical character. The enlarged mentum could be a product of the (probably) specialized habits of the adults of *Dacoderus*.

Watt (1987) presented a classification of the salpingid group of families, and listed the following synapomorphies for Salpingidae: (7) Larval spiracles bicameral; (8) Adult procoxal cavities closed internally¹; (9) Adult mesocoxal cavities closed laterally by sterna. Adults of Dacoderinae exhibit both of these features, which Watt (1987: 117) hypothesized were associated with decreased coxal mobility. The larval character states is unknown in the Dacoderinae.

Pollock (1994) revised the classification of the salpingid group of families as follows: [Trictenotomidae + Salpingidae + Pythidae] + [Boridae + (Pyrochroidae)]. The single given synapomorphy for [Trictenotomidae + Salpingidae + Pythidae] is the presence of parameral struts, as opposed to median struts, on the aedeagus. The base of the median lobe in the Dacoderinae is essentially cylindrical, and is attached to the parameres by distinct (although not completely darkened or sclerotized) parameral struts.

Therefore, the combination of the parameral struts, and closed pro- and mesocoxal cavities places the Dacoderinae within Salpingidae. It is prudent to leave *Dacoderus*,

¹ The procoxal cavities are in fact narrowly open behind externally but closed internally as remarked on and illustrated by Watt (1967:112). These characters in themselves do not necessarily preclude *Dacoderus* from the Tenebrionidae as both states are found in a number of genera of Tenebrionidae in what are considered to be secondary reversals. See Doyen (1993: 457–458) for review.

Myrmecoderus and *Tretothorax* in Dacoderinae (Salpingidae) until discovery and description of the larva of these genera. Perhaps the larvae will be so specialized that their salpingid features are obscured.

Characters and Character States

Character and character state descriptions, presented in Appendix A and used in the phylogenetic analysis (Fig. 53) are discussed below. Cladistic relationships among taxa are presented in the next section.

Eyes, Head and Antennae (characters 1–17). In all known Salpingidae (except *Aglenus brunneus* Gyllenhal, 1813, which is eyeless) as well as in *Tretothorax cleistostoma* the eyes are composed of 100 facets or more. In *Myrmecoderus*, the number is reduced to 35 to 60 facets. In *Dacoderus*, the number is further reduced to 20 to 30 facets [1]. The presence of interspaced setae between eye facets is unknown in the Salpingidae outside the Dacoderinae. Such interspaced setae are found both in *Myrmecoderus* and in one species group of *Dacoderus* [2]. In *Dacoderus* a unique condition occurs in that the eyes are situated on the dorsal surface of a lateral plate-like extension of the gena [3]. In one species group of *Dacoderus* the lateral eye plate extension is further extended laterally for a distance equal to about two facets as in *Dacoderus steineri* with the lateral angle rounded; in *Dacoderus rossi* the extended area is equal to three facets with a sharper angle. This is most developed in *Dacoderus acanthomma* where the anterior angles are obtuse, forming a sharp toothlike projection posteriorly [4]. In most Salpingidae, the eyes, if visible from below are widest at midpoint with the medial aspect convex. In *Dacoderus* the subgenae are extended beyond the eye to form the lateral eye plate as mentioned above. In species of *Myrmecoderus* the visible aspect of the eye is difficult to polarize. The ventral proximal edge of the eye is evenly concave in *Myrmecoderus rileyi*, (Fig. 22) due to the laterally expanded subgenae: the eye appearing crescent shaped. However, in *Myrmecoderus dominicensis* the subgenae is only partially expanded toward the posterior of the eye, the eye appearing only partially concave and widest at the anterior end. In *Myrmecoderus laevipennis* (Fig. 24) the subgenae are not expanded laterally, the visible ventral portion of the eye appearing convex although slightly wider posteriorly [5]. In most Salpingidae, the eyes, if present, are large, globose and inflated laterally. In *Myrmecoderus rileyi* and *Myrmecoderus dominicensis* the eyes are only moderately inflated laterally. In *Myrmecoderus laevipennis* eyes are only slightly inflated laterally [6].

In most Salpingidae, the head is wider than long, or as wide as long. In *Rhinosimus Latreille* (Salpinginae), the head is rostrate and at least slightly longer than wide. In *Tretothorax* the head is rostrate, twice as long as wide [7]. In both *Myrmecoderus* and *Dacoderus*, the frons is acutely excavate antero-medially behind clypeus. This condition is unknown in other Salpingidae [8]. In both *Myrmecoderus* and *Dacoderus*, the frons is laterally inflated. In one species group of *Dacoderus*, the antero-medial aspect of inflated lateral areas with the medial aspect strongly produced medially with the gap over clypeus two or less eye facets in size (Fig. 11). This gap is further reduced in both *Dacoderus striaticeps* and *Dacoderus werneri* to one or less facets in size (see Fig. 10). In both *Myrmecoderus* and *Dacoderus*, anteriorly produced basal extension are present on the frons. These anteriorly produced basal extensions are not expanded dorso-anteriorly, thus widely exposing the clypeus and labrum in *Dacoderus*. In *Myrmecoderus*, anteriorly produced basal extensions are not expanded dorso-anteriorly, but narrowly expose the clypeus and labrum. In *Myrmecoderus rileyi*, the anteriorly produced basal extension are expanded dorso-anteriorly, narrowly exposing clypeus and labrum [10]. The species group composed of *Dacoderus striaticeps*, *Dacoderus werneri* and *Dacoderus sleeperi*

also have setal brushes present which partially cover the clypeus and frons on the anteriorly produced basal extensions of the frons [11]. In *Tretothorax* the mentum completely covering ventral anterior aspect of the head [12].

In the Dacoderinae, the mentum is widely notched anteriorly with a plesiomorphic state being a ratio of notch to width of mentum of approximately 0.3 in. In *Dacoderus*, this notch is reduced to approximately 0.2. and in the species group composed of *Dacoderus rossi*, *D. acanthomma* and *D. steineri* the mentum very narrowly, deeply notched anteriorly with ratio of notch to width of mentum approximately equal to 0.1 [13].

The antennal shape is moniliform in the Dacoderinae [14], with ten visible segments [15]. In most Dacoderinae, the ratio of antennal segment 10 is less than 1.75 times length of 8 and segment 9 is less than 1.4 times length of 8. In both *Myrmecoderus rileyi* and *M. dominicensis*, ratio of antennal segment 10 is greater than 1.8 times length of 8 and segment 9 is greater than 1.5 times length of 8 [16].

Abdomen (characters 17–32). Within the Salpingidae, the presence of medial and transverse canals on the central aspect of the pronotum is restricted to the Dacoderinae [17]. In *Myrmecoderus*, the lateral bridges over transverse canals form medially directed hooklike lobes, attached at lateral margins. In *Dacoderus*, the lateral bridges over transverse canals are inflated, not forming hooklike lobes, and attached slightly lateral of the midpoint of the bridge. In the species group composed of *D. rossi*, *D. acanthomma* and *D. steineri* the lateral bridges over transverse canals are attached at midpoint of bridge [18]. In *Myrmecoderus rileyi*, the size of medially directed hooklike lobes is small. In *M. dominicensis* and in *M. laevipennis* the size of medially directed hooklike lobes is very large [19]. In most species of *Dacoderus*, the lateral bridges are moderate in size, somewhat directed medially, attached slightly lateral to midpoint. In *D. striaticeps*, the lateral bridges are expanded. In the species group composed of *D. rossi*, *D. acanthomma* and *D. steineri*, the lateral bridges are expanded, equally directed medially and laterally, and attached at the midpoint. In *D. weneri*, a more plesiomorphic condition occurs in that the lateral bridges are small in size (the lateral margins of thorax being visible laterally) [20]. In most Salpingidae, the pronotum is widest at anterior 1/3. In both *Myrmecoderus* and *Dacoderus*, the pronotum is quadrate, either widest at lateral bridges or equally wide at lateral bridges and the anterior 1/3. In *Tretothorax*, the pronotum is widest posterior to midpoint [21]. In *Dacoderus*, a lateral ridge is present throughout the length of the pronotum. In *M. dominicensis*, a lateral ridge is also present but only at the anterior 1/3 [22]. The shape of visible portion of the transverse canal is wider than long in the Dacoderinae. In *M. laevipennis* the shape is equally as long as wide [23]. On the central aspect of the pronotum, between lateral bridges (dorsal view) a central transverse ridge is present in *D. sleeperi* [24]. In *Myrmecoderus*, setal pads are present on the pronotum near the bridges. In *M. dominicensis* and in *M. laevipennis*, setal pads are present both on pronotum and on the bridges [25].

In Salpingidae the sculpturing of the prosternum is variable. In most Dacoderinae the prosternum is mostly punctate to rugose. In *M. dominicensis* and in *M. laevipennis*, the prosternum is smooth on the lateral and anterior medial 1/3. In the species group composed of *D. rossi*, *D. acanthomma* and *D. steineri* the anterior medial 2/3 of the prosternum is smooth [26]. In *Tretothorax cleistostoma*, the prosternum is longitudinally keeled with a central oval smooth tubercle [27]. In both *Myrmecoderus* and *Dacoderus*, the elytra are fused and hind wings are absent [28]. In both *Myrmecoderus* and *Tretothorax*, the ratio of the length of procoxae is greater than 3.25. In most *Dacoderus*, the ratio of the length of metasternum to length of procoxae is reduced to 2.25 to 3. In the species group composed of *D. rossi*, *D. acanthomma* and *D. steineri* the ratio of the length of metasternum to length of procoxae is reduced to less than 2 [29]. In both *Myrmecoderus* and *Dacoderus* males, a pit filled with dense setae is

present on the profemur [30]. In both *Myrmecoderus* and *Tretothorax*, an apical marginal groove is present on the terminal sternite. This groove is lost in *Dacoderus* [31]. In *M. dominicensis*, an area of dense setae is present in males on the first abdominal sternite. In *M. laevipennis* the central setal areas is present on the first, second and third visible sternites [32].

Elytra (characters 33–37). In most Salpingidae, the dorso-lateral margin of the elytra at midlength is rounded, gradually declivous. In *Dacoderus*, the dorso-lateral margin of the elytra at midlength is more abruptly declivous, narrowly rounded. In the species group composed of *Dacoderus rossi*, *D. acanthomma* and *D. steineri* the dorso-lateral margin of the elytra at midlength is abruptly declivous, forming a right angle [33]. In most Salpingidae, the elytral surface at midlength is gradually rounded to first striae. In *Dacoderus*, the elytral surface at midlength is horizontal between lateral margin and first striae. In *Dacoderus striaticeps* and *D. sleeperi*, the elytral surface at midlength is depressed between lateral margin and first striae. In *Dacoderus weneri*, the elytral surface at midlength is strongly depressed between lateral margin and first striae [34]. The size of puncture of the second plus interval at midlength is problematic. In the Salpingidae this character is variable. In *Tretothorax cleistostoma*, these punctures are very large, much larger in size than eye facets. In the species group composed of *Dacoderus striaticeps*, *D. sleeperi* and *D. weneri*, these punctures are moderately large about equal in size to eye facets. However in the species group composed of *Dacoderus rossi*, *D. acanthomma* and *D. steineri* and in *Myrmecoderus* these punctures are much smaller in size than eye facets [35]. In the species group composed of *Dacoderus rossi*, *D. acanthomma* and *D. steineri* the lateral aspect of the humeral of the elytra is produced antero-laterally [36]. The first interval of the elytra is elevated at apical 1/3 in the Dacoderinae. In both *Myrmecoderus* and *Dacoderus*, the first interval of the elytra is elevated throughout the length of the elytra [37].

Cladistic Relationships among Genera and Species of Dacoderinae

All three programs utilized for character analysis (Hennig86, version 1.5; Nona version 1.0; and Clados version 1.2) resulted in one shortest tree (Fig. 106) with a length of 86 [c.i. = 0.86; r.i. = 0.91]. In this cladogram, although slightly over 19% of characters generated homoplasy, only characters 2, 16 and 35 (because of their presumed adaptive nature) reflected parallelisms.

For outgroup determination of the Dacoderinae, the following Salpingid genera were examined: *Elacatis* Pascoe (Othniinae); *Ocholissa* Pascoe, *Szekessya* Kaszab (Prostominiinae); *Aglenus* Erichson (Agleninae); *Inopeplus* Smith (Inopeplinae); *Lanthanus* Champion, *Lissodema* Curtis, *Platamops* Reitter, *Rhinosimus* Latreille (Salpinginae); and *Aegialites* Mannerheim, *Antarcticodomus* Brookes (Aegialitinae). A number of subfamilies and genera of Salpingidae are highly specialized as *Aglenus* and *Inopeplus*. The Dacoderinae seem to be most closely related to the Salpinginae sharing contiguous procoxae, not found in the Agleninae, Inopeplinae or Aegialitinae.

The Dacoderinae are defined by at least eight synapomorphies as discussed above [characters 13(1), 14(1), 15(1), 17(1), 21(1), 23(1), 31(1) & 37(1)].

Tretothorax is separated from *Myrmecoderus* by at least 22 characters and from *Dacoderus* by at least 32 characters. It is characterized by having the following autapomorphic characters involving the presence of wings the shape of the head, pronotum and prosternum [characters 7(1), 12(1), 21(2) & 27(1)].

The *Dacoderus-Myrmecoderus* clade is defined by at least ten synapomorphies [characters 1(1), 5(2), 6(1), 8(1), 10(1), 18(1), 28(1), 30(1), 35(1) & 37(2)].

Dacoderus is a clearly defined genus with at least eleven synapomorphies [characters 1(2), 3(1), 5(5), 6(5), 13(2), 18(2), 20(2), 22(2), 29(1), 33(1) & 34(1)]. Only two

characters indicate homoplasy in the form of reversals in which in *Dacoderus* the pronotum is widest at lateral bridges or equally wide at lateral bridges and anterior [character 21(0)]. *Dacoderus* also lacks the apical marginal groove on the terminal sternite [character 31(0)]. Two species groups are formed within the genus, each with three species. The first group is defined by eight synapomorphies [characters 4(1), 13(3), 18(3), 20(4), 26(2), 29(2), 33(2) & 36(1)] and only one character indicating homoplasy in form of a parallelism with *Myrmecoderus* involving the punctures of the second elytral interval at midlength [character 35(2)]. In this group *Dacoderus steineri* is basal without any autapomorphies. The two other species (*Dacoderus rossi* and *Dacoderus acanthomma*) are joined in the shape of the eye plate lateral extension [character 4(2)]. *Dacoderus acanthomma* further differs in having the eye plate forming a sharp toothlike projection [character 4(3)].

The second species group of *Dacoderus* is defined by three synapomorphies [characters 9(1), 11(1), and 34(2)] and one character indicating homoplasy in form of a parallelism with *Myrmecoderus* involving the presence of interspaced setae in between the eye facets [characters 2(1)]. *Dacoderus sleeperi* is basal with the presence an autapomorphy in the form of the central aspect of the pronotum having transverse ridge [character 24(1)]. The remaining species (*D. striaticeps* and *D. weneri*) share a synapomorphy involving the anterior medial aspect of the inflated lateral areas of the frons [character 9(2)]. *Dacoderus striaticeps* is unique in having shape of inflated bridges over transverse canals expanded, somewhat directed medially, and attached slightly lateral to midpoint [character 20(3)]. *Dacoderus weneri* also has an autapomorphy in that the elytral surface at midlength is strongly depressed between lateral margin and first striae [character 34(3)] and one character indicating homoplasy in form of a reversal in the size and shape of inflated bridges over transverse canals on the pronotum [character 20(1)].

Myrmecoderus is defined by three synapomorphies [characters 10(2), 19(1), and 25(1)] and two characters indicating homoplasy in forms of parallelisms [characters 2(1) & 35(2) see above]. *Myrmecoderus rileyi* is basal. It is defined in having two autapomorphic characters involving the ventral aspect of the eyes and anteriorly produced basal extension of the frons which are expanded dorso-anteriorly, narrowly exposing clypeus and labrum [characters 5(3) & 10(3)]. This species also shares one character indicating homoplasy in form of a parallelism with *Myrmecoderus dominicensis* involving the ratio of antennal segments 8, 9 and 10 [character 16(1)].

The remaining two species of *Myrmecoderus*, *M. dominicensis* and *M. laevipennis* form a clade joined by four synapomorphies [characters 19(2), 25(2), 26(1) & 32(1)]. *Myrmecoderus dominicensis* is defined by an autapomorphy involving the shape of the lateral ridge on the pronotum [character 22(1)] as well as the parallelism shared with *M. rileyi* [character 16(1) see above]. *Myrmecoderus laevipennis* is defined by three autapomorphies involving the lateral aspect of the eyes, the shape of visible portion of transverse canal of the pronotum and the presence in males of a dense central setal area on first, second and third visible sternites [characters 6(2), 23(2) & 32(2)]. In *M. laevipennis* the ventral shape of the eye is homoplasious [character 5(1)].

Biology

Dacoderus striaticeps was first mentioned as being collected under bark of cottonwood. We have mainly collected specimens of *Dacoderus* by overnight pitfall traps on the fine soil found on small islands created by Mesquite and Palo Verde trees in the center of large dry desert washes. They seem to be more abundant on these "islands," rather than at the edge of the wash where the same trees are found. Attempts to rear *Dacoderus* have failed although specimens have been kept alive for up to a year.

Dacoderus certainly exhibits a number of characters associated with myrmecophiles or termitophiles (see Crowson 1981:541 & Kistner 1982). *Tretothorax cleistostoma* has been collected in nest of ponerine ants of the genera *Odontomachus* and *Leptogenys* (Phil Ward, pers. comm.). Possibly, both *Dacoderus* and *Myrmecoderus* will also be found to be associated with ants, although not ponerine ants, as the species *D. sleeperi* has been found on islands where ponerine ants do not occur.

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Literature Cited

- Arnett, R. H., Jr. 1973.** The beetles of the United States (a manual for identification). The American Entomological Institute, Ann Arbor, Michigan Catholic University Press, Washington, D.C. 1112 pp.
- Abdullah, M. 1974.** Heteromera (Coleoptera): a key to the world families including their distinguishing characters in the adult stage. *Journal of Natural History* 8:49–59.
- Blackwelder, R. E. 1944–57.** Checklist of the Coleopterous insects of Mexico, Central America, the West Indies, and South America. *Bulletin of the United States National Museum*, 185: xii + 1492 pp.
- Blair, K. G. 1918.** A note on the systematic position of the genus *Tretothorax* Lea (Coleoptera). *Entomologist's Monthly Magazine* 54:152–154.
- Casey, T. L. 1907.** A revision of the American Components of the Subfamily Tenetyriinae. *Proceedings of the Washington Academy of Sciences* 9:275–522.
- Crowson, R. A. 1955.** The natural classification of the families of Coleoptera. Nathaniel Lloyd, London (seen as 1967 reprint, E. W. Classey, Hampton. 187 pp.).
- Crowson, R. A. 1981.** The biology of Coleoptera. Academic Press, New York. xii + 802 pp.
- Doyen, J. T. 1993.** Cladistic relationships among Pimeliine Tenebrionidae. *Journal of the New York Entomological Society* 101:443–514.
- Doyen, J. T., and J. F. Lawrence. 1979.** Relationships and higher classification of some Tenebrionidae and Zopheridae. *Systematic Entomology* 4:333–377.
- Farris, J. S. 1970.** Methods for computing Wagner trees. *Systematic Zoology* 18:374–385.
- Farris, J. S. 1973.** A probability model of inferring evolutionary trees. *Systematic Zoology* 22: 250–256.
- Gebien, H. 1910.** Tenebrionidae II [pp. 167–354]. *In: Coleopterorum Catalogus, Part 22, Volume 18* (W. Junk, editor). W. Junk, Berlin. 740 pp.
- Gebien, H. 1938–1944.** Katalog der Tenebrioniden. *Mitteilungen der Münchener Entomological Gesellschaft*. Teil II:28(1938), 283–428 (370–465); 29(1939), 443–474, 739–770 (446–529); 30(1940), 405–436, 755–786, 1061–1092, (530–625); 31(1941), 331–362, 803–834, 1131–1146 (626–705); 32(1942), 308–346 (706–744). Teil III: 32(1942), 729–760 (746–777); 33(1943), 339–430, 895–926 (778–841); 34(1944), 497–555 (842–899).
- Geminger, M., and B. Harold. 1870.** *Catalogus Coleopterorum, Volume VII: Tenebrionidae*. 1801–2057 pp.
- Hennig, W. 1966.** *Phylogenetic systematics*. University of Illinois Press, Urbana. 263 pp.

- Hetschko, A. 1933.** Tretothoracidae *In*: Junk et Schenkling. Coleopterorum Catalogus. pars 138: 127–649.
- Horn, G. H. 1870.** Revision of the Tenebrionidae of America, north of Mexico. Transactions of the American Philosophical Society, Philadelphia, Series 2, 14:219–226.
- Horn, G. H. 1876.** Description of a new species of *Dacoderus* from the island of Santo Domingo. Transactions of the American Entomological Society 5:219.
- Horn, G. H. 1893.** Miscellaneous coleopterous studies. Transactions of the American Entomological Society 20:136–144.
- Kistner, D. H. 1982.** The social insects' Bestiary. Social Insects 3:1–244. Academic Press, New York.
- Lawrence, J. F. 1982.** Coleoptera [pp. 482–553, 1106–1107]. *In*: Synopsis and classification of living organisms. (S. P. Parker, editor). McGraw-Hill, New York.
- Lawrence, J. F., and E. B. Britton. 1991.** Coleoptera (Beetles) [pp. 543–683]. *In*: The insects of Australia: a textbook for students and research workers, Second Edition. Volume 2 (CSIRO Division of Entomology, editor). Cornell University Press, New York. 1129 pp.
- Lawrence, J. F., and E. B. Britton. 1994.** Australian beetles. Melbourne University Press. 192 pp.
- Lawrence, J. F., and A. F. Newton, Jr. 1995.** Families and subfamilies of Coleoptera (with selected genera, notes references and data on family-group names) [pp. 779–1006]. *In*: Biology, Phylogeny, and Classification of Coleoptera, Papers Celebrating the 80th Birthday of Roy A. Crowson (J. Pakaluk and S. A. Slipinski, editors). Museum Instytut Zoologii PAN, Warszawa. 1092 pp.
- Lea, A. M. 1911.** Australian and Tasmanian Coleoptera inhabiting or resorting to the nests of ants, bees and termites. Proceedings of the Royal Society of Victoria 23:16–231.
- LeConte, J. L. 1858.** Description of new species of Coleoptera, chiefly collected by the United States and Mexican Boundary Commission, under Major W. H. Emory, U.S.A. Proceedings of the Academy of Natural Sciences of Philadelphia 10:59–89.
- LeConte, J. L. 1862.** Classification of the Coleoptera of North America. Prepared for the Smithsonian Institution. Part 1. Smithsonian Miscellaneous Collections 3:209–286.
- Pollock, D. A. 1994.** Systematic position of Pilipalpinæ (Coleoptera: Tenebrionoidea) and composition of Pyrochroidae. The Canadian Entomologist 126:515–532.
- Pollock, D. A. 2002.** 116. Salpingidae [pp. 544–548]. *In*: Beetles of the United States. Volume (R. Arnett, M. Thomas, P. Skelley, and J. Frank, editors). CRC press, New York.
- Slowinski, J. B. 1993.** “Unordered” vs “Ordered” characters. Systematic Biology 42:155–165.
- Watrous, L. E., and Q. D. Wheeler. 1981.** The out-group comparison method of character analysis. Systematic Zoology 30:1–11.
- Watt, J. C. 1967.** The families Perimylopidae and Dacoderidae (Coleoptera, Heteromera). Proceedings of the Royal Entomological Society of London (B) 36(7–8):109–118.
- Watt, J. C. 1974.** A revised subfamily classification of Tenebrionidae (Coleoptera). New Zealand Journal of Zoology 1:381–452.
- Watt, J. C. 1987.** The family and subfamily classification and New Zealand genera of Pythidae and Scaptiidae (Coleoptera). Systematic Entomology 12:111–136.
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Appendix A. Character and Character-State Descriptions

[state hypothesized to be plesiomorphic listed as (0)]

EYES AND HEAD AND ANTENNAE (characters 1–16)

1. Eyes (size): composed of 100 facets or more (0); composed of 35 to 60 facets (1); composed of 20 to 30 facets (2).
2. Eyes (facets): without interspaced setae (0); with interspaced setae (1).
3. Eyes (location): lateral (0); on dorsal surface of lateral plate-like extension of genae (1).
4. Eyes (eye plate lateral extension): not extended laterally, parallel to eye (0); moderately extended dorso-laterally for a distance equal to about two facets, lateral angle rounded (1);

- strongly extended dorso-laterally for a distance equal to three facets, angle sharper (2); strongly extended dorso-laterally for a distance equal to three facets, anterior, angle obtuse, forming a sharp toothlike projection (3).
5. Eyes (ventral aspect); if visible, aspect evenly convex, widest at midpoint (0); if visible, posterior aspect straight, anterior aspect convex, widest posteriorly (1); if visible, aspect partially concave posteriorly, widest anteriorly (2); if visible, aspect concave, eye crescent shaped (3); not visible from below (5).
 6. Eyes (lateral aspect) strongly inflated, globose (0); moderately inflated (1); only slightly inflated (2); eyes dorsal, very slightly inflated (5).
 7. Head (shape); not twice as long as wide (0); rostrate, twice as long as wide (1).
 8. Head (frons); not acutely excavate antero-medially behind clypeus (0); acutely excavate antero-medially behind clypeus (1).
 9. Head (frons, anterior medial aspect of inflated lateral areas); not strongly produced medially (0); strongly produced medially, gap over clypeus two or less eye facets in size (1); gap over clypeus reduced to one or less facets in size (2).
 10. Head (frons, anteriorly produced basal extension): not present, clypeus completely exposed (0); not expanded dorso-anteriorly, widely exposing clypeus and labrum (1); not expanded dorso-anteriorly, narrowly exposing clypeus and labrum (2); expanded dorso-anteriorly, narrowly exposing clypeus and labrum (3).
 11. Head (frons, anteriorly produced basal extension): without setal brushes partially covering clypeus and frons (0); with setal brushes present, which partially cover the clypeus and frons (1).
 12. Head (ventral aspect): mentum not completely covering ventral aspect (0); completely covering ventral aspect (1).
 13. Head (ventral aspect): mentum not notched anteriorly (0); mentum widely notched anteriorly ratio of notch to width of mentum approximately 0.3 (1); mentum narrowly notched anteriorly ratio of notch to width of mentum approximately 0.2 (2); mentum very narrowly, deeply notched anteriorly ratio of notch to width of mentum approximately 0.1 (3).
 14. Antenna (shape): not moniliform (0); moniliform (1).
 15. Antenna (number of visible segments): 11 (0); 10 (1).
 16. Antenna (ratio of antennal segments): 10th less than 1.75 times length of 8, 9th less than 1.4 times length of 8 (0); 10th greater than 1.8 times length of 8, 9th greater than 1.5 times length of 8 (1).

THORAX AND VENTRAL ASPECT OF THE ABDOMEN (characters 17–32)

17. Pronotum (presence of medial and transverse canals): not present (0); present (1).
18. Pronotum (shape, attachment of lateral bridges over transverse canals): not present (0); forming medially directed hooklike lobe, attached at lateral margins (1); inflated, not forming hooklike lobe, attached slightly lateral to midpoint of bridge (2); attached at midpoint of bridge (3).
19. Pronotum (size of lateral joined bridges over transverse canals): not present or bridges not forming hooklike lobe (0); small (1); very large (2).
20. Pronotum (size, shape of inflated bridges over transverse canals): not present or bridges forming hooklike lobes (0); small in size, lateral margins of thorax visible laterally (1); moderate in size, somewhat directed medially, attached slightly lateral to midpoint (2); expanded, somewhat directed medially, attached slightly lateral to midpoint (3); expanded, equally directed medially and laterally, attached at midpoint (4).
21. Pronotum (shape): widest at anterior 1/3 (0); quadrate, widest at lateral bridges or equally wide at lateral bridges and anterior 1/3 (1); widest posterior to midpoint (2).
22. Pronotum (lateral ridge): not present (0); only present at anterior 1/3 (1); present throughout length (2).
23. Pronotum (shape of visible portion of transverse canal): not present (0); wider than long (1); equally as long as wide (2).
24. Pronotum (central aspect, between lateral bridges, dorsal view): without central transverse ridge (0); with central transverse ridge (1).
25. Pronotum (presence of setal pads at bridges): not present (0); present on pronotum near bridges (1); present both on pronotum and on bridges (2).
26. Prosternum (sculpturing): anterior medial 2/3 smooth (5); mostly rugose (0); lateral and anterior medial 1/3 smooth (1).

27. Prosternum (shape): flat (0); longitudinally keeled with a central oval smooth tubercle (1).
 28. Wings: present (0); not present, species flightless (1).
 29. Metasternum (ratio of length of metasternum to length of procoxae): greater than 3.25 (0); 2.25 to 3 (1); less than 2 (2).
 30. Profemur (presence of dense setal pit in males): absent (0); present (1).
 31. Abdomen (shape of terminal sternite): without apical marginal groove (0); with apical marginal groove (1).
 32. Abdominal sternites (presence of dense central setal area in males): not present (0); present on first visible sternite (1); present on first, second and third visible sternites (2).

ELYTRA (characters 33–37)

33. Elytra (dorso-lateral margin at midlength): gradually declivous, rounded (0); more abruptly declivous, narrowly rounded (1); forming a right angle, abruptly declivous (2).
 34. Elytra (surface at midlength) gradually rounded to first striae (0); horizontal between lateral margin and first striae (1); depressed between lateral margin and first striae (2); strongly depressed between lateral margin and first striae (3).
 35. Elytra (2+ interval punctures at midlength); very large, much larger in size than eye facets (0); moderately large about equal in size to eye facets (1); much smaller in size than eye facets (2).
 36. Elytra (lateral humeral area): not produced antero-laterally (0); produced antero-laterally (1).
 37. Elytra (first interval): not modified (0); elevated at apical 1/3 (1); elevated throughout length (2).

Appendix B. Distribution of Character States

	0000000011111111222222222233333333
	1234567890123456789012345678901234567
<i>Tretothorax cleistostoma</i>	0000001000011110100020100010001000001
<i>Dacoderus striaticeps</i>	2110550121102110120302100001110012102
<i>Dacoderus weneri</i>	2110550121102110120102100001110013102
<i>Dacoderus sleeperi</i>	2110550111102110120202110001110012102
<i>Dacoderus rossi</i>	2012550101003110130402100501210021212
<i>Dacoderus acanthomma</i>	2013550101003110130402100501210021212
<i>Dacoderus steineri</i>	2011550101003110130402100501210021212
<i>Myrmecoderus rileyi</i>	1100310103001111111010101001011000202
<i>Myrmecoderus dominicensis</i>	1100210102001111112011102101011100202
<i>Myrmecoderus laevipennis</i>	1100120102001110112010202101011200202