

CARINODULINI, A NEW TRIBE OF STICHOLOTIDINAE
BASED UPON A NEW GENUS AND SPECIES FROM
MEXICO (COLEOPTERA: COCCINELLIDAE)

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ABSTRACT

Carinodulini, a new tribe of sticholotidine Coccinellidae, is established for a new genus and species, *Carinodula campbelli*, from Mexico. This species is described, and taxonomically useful structures are illustrated. A key to the New World tribes of Sticholotidinae is presented and the placement of this new tribe, near Microweisini and related tribes, is discussed. Based upon examination of gut contents, this apterous species appears to feed on Homoptera, probably scale insects.

The Sticholotidinae are an enigmatic group of small to minute Coccinellidae. Because of their atypical appearance, these coccinellids are often placed with undetermined specimens from other families in museum collections. It is not surprising, therefore, that one of us (JP) received a large series of a peculiar sticholotidine among undetermined Endomychidae from the Canadian National Collection of Insects, Ottawa. This undescribed species is the basis for establishing a new genus and tribe of Coccinellidae.

One of us (Gordon 1977) presented a key to the tribes of New World Sticholotidinae. Subsequently, Gordon (1985) established a new tribe, Cephaloscymnini, for species previously placed in Scymninae. As Carinodulini represents yet another New World tribe of this subfamily, it seems appropriate to present a new key to these tribes.

KEY TO TRIBES OF NEW WORLD STICHOLOTIDINAE

1. Pronotum with each submarginal carina extending from base to apex (Fig. 1); eye facets coarse to fine Carinodulini, new tribe
- Pronotum without carina or sometimes with fine oblique line separating anterior angle from disc; eye facets coarse or fine 2
2. Antennal club a single knife-shaped or elongate-oval segment; fem-

- ora broad, flat, ventral surface with depressions for receiving femoral apices; prosternum greatly expanded in front to conceal mouthparts
 Serangiini
- Antennal club usually with more than one segment, or if only one segment, club not knife-shaped; femora not broad, flat, ventral surface with or without depressions for receiving legs; prosternum not greatly expanded, not concealing mouthparts 3
3. Pronotum with oblique line separating anterior angle from disc; abdomen with six visible sterna 4
- Pronotum without oblique line; abdomen with five visible sterna 5
4. Dorsal surface with dense pubescence composed of intermixed long and short hairs; prosternal process extremely slender, prosternum not lobed anteriorly Sukunahikonini
- Dorsal surface apparently glabrous or if pubescent, pubescence of uniform length; prosternal process broad, T-shaped, prosternum lobed anteriorly Microweisini
5. Dorsal surface pubescent; head large, exposed, deflexed; eye large, narrow, elongate Cephaloscymnini
- Dorsal surface pubescent or glabrous; head small, partially retracted under pronotum; eye small, round Sticholotidini

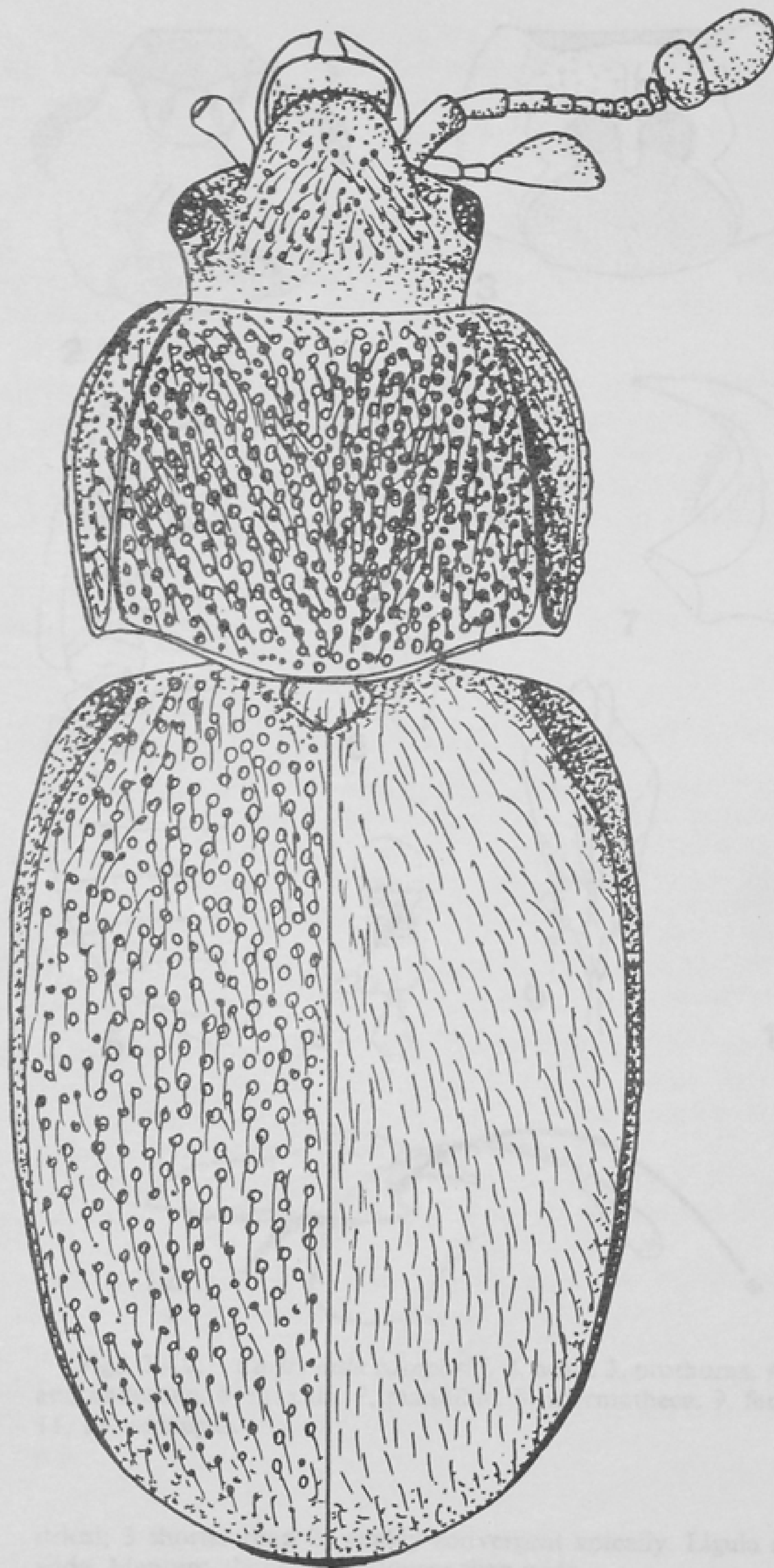
CARINODULINI GORDON, PAKALUK, AND SLIPINSKI, NEW TRIBE

DESCRIPTION. Sticholotidinae with body elongate (Fig. 1); dorsal surface pubescent, hairs of uniform length. Head capsule with clypeus short, thickened, apically truncate. Eye reduced, facets extremely coarse. Antenna 11-segmented, club 2-segmented. Mandible bidentate. Apical segment of maxillary palpus large, elongate oval. Pronotum convex, transverse, with submarginal carina extending from base to apex. Prosternum well developed anterior to coxa, with median carina. Abdomen with six visible sterna.

DISCUSSION. The body form of most species of Sticholotidinae is round or oval, not elongate. Both Cephaloscymnini and Carinodulini, however, are elongate and nearly parallel-sided, causing them to superficially resemble cocciduline and lithophiline Coccidulinae. The strong pronotal carinae of Carinodulini resemble those of certain Endomychidae, such as species of *Mycetaea* spp. The external morphology of Carinodulini does not clearly support a close relationship with any known group of Sticholotidinae, but the structure of the male and female genitalia indicate that Carinodulini should be placed near Microweisini and related tribes (see generic discussion). The carinate pronotum; long antenna with a 2-segmented club; and large, elongate-oval, terminal segment of the maxillary palpus are diagnostic for Carinodulini.

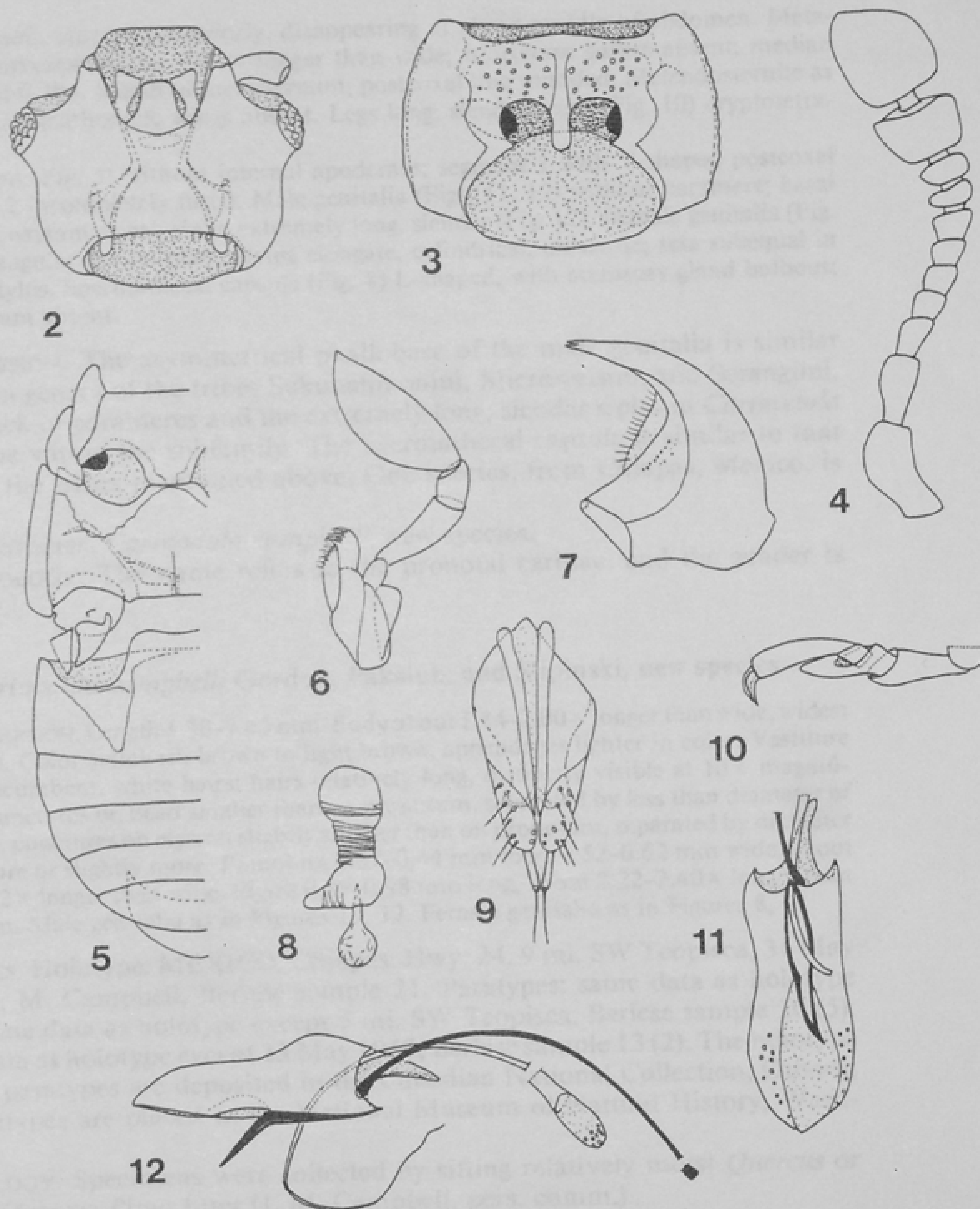
CARINODULA GORDON, PAKALUK, AND SLIPINSKI, NEW GENUS

DESCRIPTION. Head (Fig. 2) deflexed, exposed; tentorium without corporotentorium, posterior arms strongly divergent; eye coarsely faceted, each eye composed of 17–19 ommatidia; gular sutures indistinct. Antenna (Fig. 4) 11-segmented, segments 1–3 elongate, 4–7 subequal in size, 8 and 9 expanded laterally, wider than long, 10 and 11 forming distinct club. Labrum transverse, tormae reduced. Mandible (Fig. 7) with molar lobe narrow, acute, with weakly developed subbasal tooth. Maxilla (Fig. 6) with palpus long, about 0.50 × length of antenna, segment 2 elongate, 4 large, elongate oval. Labium with 3-segmented palpus; segment 1 short, inserted before anterior edge; 2 elongate, cylin-



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Fig. 1. *Carinodula campbelli*, habitus.



Figs. 2-12. *Carinodula campbelli*. 2, head. 3, prothorax. 4, antenna. 5, pterothorax and abdomen. 6, maxilla. 7, mandible. 8, spermatheca. 9, female genitalia. 10, tarsus. 11, 12, aedeagus.

drical; 3 shorter than 2, weakly convergent apically. Ligula about $0.65\times$ longer than wide. Mentum about $1.35\times$ longer than wide.

Pronotum with lateral edge weakly crenulate; submarginal carinae extending from posterior edge to anterior edge. Prosternum (Fig. 3) with intercoxal process relatively narrow, edges subparallel, apex rounded. Mesosternum transverse; mesocoxae globular, separated by about $0.75\times$ width of their cavities. Elytron with lateral margin explanate; explanation widest anteriorly. Epipleuron oblique, flat, broad, about twice as wide as

metepisternum, tapered posteriorly, disappearing at about middle of abdomen. Metasternum transverse, about $0.42\times$ longer than wide; transverse suture absent; median suture about $0.40\times$ length of metasternum; postcoxal line rounded. Metendosternite as in Figure 5. Metathoracic wings absent. Legs long, slender; tarsi (Fig. 10) cryptotetramerous.

Abdomen (Fig. 5) without internal apodemes; segment 1 with V-shaped postcoxal line, 1 and 2 incompletely fused. Male genitalia (Figs. 11, 12) without paramere; basal lobe broad, asymmetrical; siphon extremely long, slender (Fig. 12). Female genitalia (Fig. 9) with triangular genital plate; stylus elongate, cylindrical, unisetose; seta subequal in length to stylus. Spermathecal capsule (Fig. 8) L-shaped, with accessory gland bulbous; infundibulum absent.

DISCUSSION. The asymmetrical phallobase of the male genitalia is similar to those in genera of the tribes Sukunahikonini, Microweisini, and Serangiini, but the lack of parameres and the extremely long, slender siphon in *Carinodula* are unique within the subfamily. The spermathecal capsule is similar to that found in the tribes mentioned above. One species, from Chiapas, Mexico, is known.

TYPE SPECIES. *Carinodula campbelli*, new species.

ETYMOLOGY. The name refers to the pronotal carinae, and the gender is feminine.

Carinodula campbelli Gordon, Pakaluk, and Slipinski, new species

DESCRIPTION. Length 1.30–1.45 mm. Body about $1.84\text{--}2.00\times$ longer than wide, widest at middle. Color yellowish brown to light brown, appendages lighter in color. Vestiture of semirecumbent, white hairs; hairs relatively long, distinctly visible at $10\times$ magnification. Punctures on head smaller than on pronotum, separated by less than diameter of puncture; punctures on elytron slightly smaller than on pronotum, separated by diameter of puncture or slightly more. Pronotum 0.37–0.44 mm long, 0.52–0.62 mm wide, about $0.68\text{--}0.72\times$ longer than wide. Elytra 0.89–0.98 mm long, about $2.22\text{--}2.40\times$ longer than pronotum. Male genitalia as in Figures 11, 12. Female genitalia as in Figures 8, 9.

TYPES. Holotype: MEXICO. Chiapas: Hwy. 24, 9 mi. SW Teopisca, 31 May 1969, J. M. Campbell, Berlese sample 21. Paratypes: same data as holotype (31); same data as holotype except 5 mi. SW Teopisca, Berlese sample 20 (5); same data as holotype except 23 May 1969, Berlese sample 13 (2). The holotype and 28 paratypes are deposited in the Canadian National Collection, Ottawa; 10 paratypes are placed in the National Museum of Natural History, Washington.

BIOLOGY. Specimens were collected by sifting relatively moist *Quercus* or mixed *Quercus-Pinus* litter (J. M. Campbell, pers. comm.).

Food habits of this species are unknown, but examination of gut contents indicates that species of Homoptera, probably scale insects, are the prey.

ETYMOLOGY. This species is named for J. M. Campbell who collected all of the known specimens.

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LITERATURE CITED

- GORDON, R. D. 1977. Classification and phylogeny of the New World Sticholotidinae (Coccinellidae). *Coleopt. Bull.* 31:185-228.
- . 1985. The Coccinellidae (Coleoptera) of America north of Mexico. *Jour. New York Entomol. Soc.* 93:1-912.

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