RECONSTITUTION OF THE TRIBES ULOMINI AND TRIBOLIINI
FOR NORTH AND CENTRAL AMERICA
(TENEBRIONIDAE; COLEOPTERA)

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Abstract.—The tribes Ulomini and Triboliini are redefined, based on external and internal characters of adults and immatures. New World Ulomini include Alegoria Laporte, Antimachus Gistel, Aptenula Gebien, Aptendonia Gebien, Eutochia LeConte, Metabolocerus Bates, Pheres Champion, Uleda Laporte and Uloma Latreille. Uloma carolynae from southern Mexico is newly described. Triboliini include Aesynmus Champion, Latheticus Waterhouse, Lyphia Mulsant and Rey, Metulosonia Bates, Mycotrogus Horn, Palorus Mulsant, Tharsus LeConte, Tribolium Macleay and Ulosoria Laporte.

As constituted in present catalogues the tribe Ulomini is strongly composite, containing taxa representing at least four distinct lineages. From the North American fauna Doyen (1984) removed Adelina Dejean, Sitophagus Mulsant, Gnato cereus Thunberg, Doliopines Horn, Doliodesmus Spilman, Mophis Champion, and Cynaeus LeConte to Diaperini, as the subtribe Adelinina. Alphitobius Stephens and Metaclisa Jaquelin du Val properly belong to Tenebrionini (Doyen and Tschinkel, 1982; Tschinkel and Doyen, 1980). Adelonia Laporte (= Merotenninus Horn; Spilman, 1961a), sometimes included in Ulomini should be placed in Belopini (Doyen and Tschinkel, 1982). Most of the remaining “ulomine” genera, related to Tribolium and Palorus, should be placed in a separate tribe, Triboliini, as detailed below. Ulomini is then restricted to a relatively small group of genera related to Uloma. In this sense Ulomini comprises a rather uniform assemblage, characterized by several distinctive synapomorphies (see Doyen and Tschinkel, 1982, and below). This arrangement corresponds to that of Reitter (1917), who restricted the European Ulomini to Uloma.

Ulomini and Triboliini are included in the tenebrionoid lineage of Doyen and Tschinkel. This lineage is defined principally by the presence of a spermatheca derived from the bursa copulatrix, and is variable in most other features.

Most characters shared by Ulomini and Triboliini are generalized features distributed widely in the tenebrionoid lineage. These include: lacinia with uncus; epipharynx symmetrical or nearly so; tentorium with bridge posterior, not arched; wing with large recurrent cell, short apical membrane; aedeagus not inverted; ovipositor with subequal coxite and paraproct, coxite with four subequal lobes; defensive reservoirs with nonannulate walls, collecting ducts arranged in a basal line.

Possible synapomorphies linking Ulomini and Triboliini include enlargement
of the defensive reservoirs with a distinct basomedial pouch and closure of the mesocoxal cavities by the apposed mesosternum and metasternum. Reservoir enlargement is, however, an exceedingly common feature, which has occurred independently many times, judging from differences in details of configuration (Tschinkel and Doyen, 1980). More specifically, elongate reservoirs with basomedial pouches occur in Helopini and Cnодalonini as well as Ulomini and Triboliini. It may also be pointed out that relatively small reservoirs with broad openings occur in both Ulomini (Antimachus) and Triboliini (Palorus). Presumably this is a plesiomorphic condition, which admits the possibility that gland enlargement occurred independently. The other potential synapomorphy, closure of the mesocoxal cavities by the sterna, also occurs more widely, most notably in Hypophloeini and some genera of Diaperini.

Opposed to these few similarities are numerous differences between both adult and larval Ulomini and Triboliini. In adult Ulomini the preapical antennal segments bear large placoid sensoriae, with compound (tenebrionoid) sensoriae on only the apical segment. The ligula is sclerotized, the labroclypeal membrane is often exposed, and the seventh abdominal tergite usually forms a pygidium. In larval Ulomini the mandibular incisor is trilobed, the mala apically incised, the hypopharyngeal sclerome produced anteriorly as a flat process, and the second antennal segment bears a C-shaped sensorium. The abdominal pleura are reduced and the ninth tergite is parabolic, concealing the anus and ninth sternite.

In adult Triboliini placoid sensoriae are never present on the antennae, and compound sensoriae are present only in Ulosonina and related genera. The ligula is membranous and the labroclypeal membrane and the seventh tergite are concealed. In larvae the mandibular incisor is bilobed, the mala entire, the hypopharyngeal sclerome simple, U-shaped (absent in some Tribolium; Hayashi, 1966: 16), and the second antennal segment bears a lens-shaped sensorium at its apex. Abdominal pleura are evident, and the ninth tergite is only moderately larger than the sternite, and bears a pair of short, pointed urogomphi.

Most of these differences result from apomorphous conditions in Ulomini. When these features occur elsewhere, it is in such remote groups that convergence is almost certain. For example, placoid sensoriae occur outside Ulomini in Scotobiini and Ammophorini (Medvedev, 1977). The unusual larval hypopharyngeal sclerome, lack of pleural membranes and paraboloid 9th tergite have counterparts in Alleculinae (Hayashi, 1966; Watt, 1974). Most other features of Ulomini are plesiomorphic, and more precise phylogenetic affinities cannot be specified, though some characteristics of the ovipositor and defensive reservoirs suggest relationship to Helopini and Opatrini (Doyen and Tschinkel, 1982).

In contrast, most Triboliini are clearly similar to Tenebrionini. Important shared characters include: configuration of the internal female reproductive tract and ovipositor; similar wing venation; similar mouthparts (lacinia with uncus; mandibular molas simple or carinate) (adults); ninth abdominal tergite with short, pointed urogomphi (larvae). However, most of these features are probably plesiomorphic.

The most significant differences between Triboliini and Tenebrionini appear to be: 1) the enlargement of the defensive reservoirs (very short, eversible pouches in Tenebrionini); 2) closure of the mesocoxal cavities by the apposed sterna (closed by epimeron in most Tenebrionini); 3) larval antenna with a lens-shaped sensoria
(C-shaped in Tenebrionini); 4) 9th abdominal tergite produced as paired urogonomphi (single, medial spine-like process or unmodified in Tenebrionini, except *Tenebrio*).

Most North American Ulomini (s.s.) have the labroclypeal membrane exposed, making it impossible to identify them in existing keys. The following changes in Arnett’s (1960) key will assist with identification, until a new key can be devised.

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<thead>
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<th>2(1).</th>
<th>Epistoma without a membranous margin or a membranous band between it and labrum</th>
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<td>Epistoma with a membranous margin or a membranous band between it and labrum</td>
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<td>2a(2).</td>
<td>Middle and hind tibiae bearing a longitudinal, finely crenulate carina on the outer (dorsal) margin</td>
<td>Diaperini</td>
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<td>Middle and hind tibiae lacking carina on outer margin</td>
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<td>Seventh abdominal tergite partially exposed as pygidium; mesocoxal cavities closed laterally by sternites; fore tibiae usually with serrate outer (dorsal) margins</td>
<td>Ulomini, new sense</td>
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<td>Seventh tergite concealed by elytra; mesocoxal cavities closed by epimeron; fore tibiae with nonserrate outer (dorsal) margins</td>
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<td>10(9).</td>
<td>Scutellum small; elytra without scutellar stria; anterior striae non-parallel</td>
<td>Phrenapatini</td>
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<td>Scutellum large; elytra with scutellar stria; anterior striae parallel</td>
<td>Triboliini</td>
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**Tribe Ulomini, New Sense**

*Ulomiens Mulsant, 1854, 1856.*

*Alegorides Lacordaire, 1859.*

*Ulomides vrai Lacordaire, 1859 (in part).*


**Adult.**—Small to large (3–25 mm), elongate to broadly oval, flattened to subcylindrical. Eyes moderately large, anteriorly emarginate or absent (*Typhuloma*); antennae gradually clavate, apical 5–8 segments bearing large placoid sensoriae (exception, *Aphtora*); apical segment with compound (tenebrionoid) sensoriae; labrum transverse, constricted at base; labroclypeal membrane exposed or concealed; mandibles with molas nonstriate, coarsely ridged in *Aphtora*; right mola weakly convex, surface simple or bluntly lobed; left mola concave, complexly lobed; lacinia with 1–2 enlarged apical unci (exception, *Aphtora*); mentum often sexually dimorphic, subtrapezoidal to cordate or oval, flat or weakly convex in females, broadly oval, enlarged and concave, frequently setose in males; ligula sclerotized; labial palp subcylindrical or enlarged, flattened in some males; teratorium with bridge posterior, not arched. Apical membrane 0.20–0.35 wing length. Procoxal cavities closed internally; protibia usually modified in males; mesocoxal cavities closed laterally by sternae or barely open (some *Uloma*); 7th abdominal tergite usually exposed as heavily sclerotized pygidium. Ovipositor with gonostyles lateral, small or moderate in size; coxite about as long as paraproct, with 4 subequal lobes. Internal female reproductive tract with long, thin, branched and tightly coiled spermatheca at base of accessory gland. Defensive reservoirs short, saccate,
with common volume (Antimachus) or long tubular, with basomedial pouches and without common volume; reservoir walls without annular folding; secretory tissue drained by basal line of ducts. Aedeagus with tegmen dorsal; median lobe adnate.

Larva.—Subcylindrical, sides subparallel; moderately to strongly sclerotized and pigmented.

Antenna with second segment about 2.0–2.5 × length of basal, bearing C-shaped sensoria near apex; third segment a digitate process, about ¼ length of second. Labrum transversely ovate; epipharyngeal masticatory processes simple single teeth, slightly asymmetrical. Mandibles with trilobed incisors or left bilobed with subapical tooth; right mola with two coarse, transverse grooves; left mola concave, with strongly prominent anterior margin. Maxilla with mola incised apically, bearing 2 rows of spines. Hypopharyngeal sclerome with base projecting anterad as stout, flattened process or unmodified (Aphtora); thoracic legs slender, similar in structure, sparsely set with short, stout spinose setae. Abdomen with pleural sutures obscure, indicated by folds on segments 1–7; greatly reduced or absent on segment 8; ninth tergite large, parabolic, weakly bilobed (Oligocara; Cekalovich & Morales, 1974) or produced as single apical and several subapical processes (Alegoria; Spilman, 1978); ninth sternite reduced, anus concealed beneath 8th sternite; pygopods absent. Spiracles annular.

Key to the Genera of Ulomini of North and Central America

1. Tarsi with penultimate segment flattened, expanded, with last segment inserted dorso-basally (Fig. 1) .................................................. Alegoria Laporte
   – Tarsi with penultimate segment subcylindrical, not expanded beneath last segment, which is articulated apically (Fig. 2) ........................................... 2
2. Protibia with outer (dorsal) apical margin coarsely serrate (Fig. 3) ........
   .................. Uloma Latreille (in part)
   – Protibia with outer (dorsal) margin straight or simply curved, sometimes bearing coarse spines (Figs. 4, 5) never serrate ........................................... 3
3. Clypeus separated from frons by visible strip of membrane; head without horns ..............................................................
   – Clypeofrontal membrane concealed beneath frons; males with large medial horn on head .......................................................... Antimachus Gistel
4. Metasternal length about one half mesocoxal diameter or less; protibia of males abruptly bent at apical third (Figs. 5, 7) ........
   – Metasternal length subequal to mesocoxal diameter; protibia straight or arcuate (as in Fig. 4) ................................................... 6
5. Eighth interval produced apically as a rounded crest supertending the enlarged punctures of the epipleural stria .................. Eutochia LeConte
   – Eighth interval not produced as a crest; epipleural punctures subequal to those of other striae ........................................... Uloma Latreille (in part)
6. Epipleuron narrowing gradually to elytral apex (as in Fig. 10); anterior margin of clypeus convex ........................................ Pheres Champion
   – Epipleuron terminating abruptly well before elytral apex (as in Fig. 11); clypeus straight or concave ...................................... Uleda Laporte

Besides the North and Central American genera included in the key above, the

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Ulomini should include *Oligocara* Solier, *Apteruleda* Gebien, *Metabolocerus* Bates, *Apteruloma* Gebien (South America); *Achthosus* Pascoe; *Cneocnemis* Gebien (Oriental); and *Typhuloma* Lea (Australia). Probably such genera as *Macruloma* Pic, *Pycnduloma* Fairmaire, etc., belong in Ulomini in the restricted sense, but I have not made examinations.

*Phlora* (Palearctic) Mulsant (=*Cataphronetis* Lucas; see Spilman, 1966) strongly resembles *Uloma* in external appearance, but differs markedly in mouthpart configuration. The mandibles have undifferentiated, flattened molas, the lacinia lacks an uncus and the labrum is transverse, without a marked basal constriction. In *Phlora* the tentorial bridge is moderately arched, the antennae bear stellate sensoriae, and the wing venation differs from that of Ulomini (s.s.). Finally, *Phlora* inhabits loose, sandy soil substrates, while most Ulomini are confined to well-rotted wood. Several important internal structures of *Phlora* are undescribed, and

its phyletic relationships are unclear. I have not examined *Erelus* Mulsant & Rey, but from Lacordaire's description it may be close to *Phthora*.

*Aphthora rutipes* Sharp and *Ulomotypus laevigatus* Brown are likewise of uncertain taxonomic position. While their larvae have the 9th tergite paraboloid, the pleurosternal sutures are distinct. The hypopharyngeal sclerome lacks the anterior process of other Ulomini (Watt, 1974). Adults superficially resemble *Uloma*, and, like Ulomini, have the labrum constricted at the base and, in *Aphthora*, have the ligula sclerotized. However, they lack placoid antennal sensoriae, have the mandibular molas coarsely ridged, and lack an uncus on the lacinia. *Ulomotypus* is further distinguished by having the procoxal cavities open internally, by lacking the transverse bridge of the tentorium and by the inverted aedeagus.

If true Ulomini, these genera would be the most primitive members of the tribe. More likely the similarity to Ulomini in adult body shape and in configuration of the larval abdominal apex represent convergences deriving from similar rotting wood habitats. The coarsely ridged mandibles occur otherwise only in Phrenapatini, but that tribe differs in numerous other adult and larval characters. Most of the other features of *Ulomotypus* and *Aphthora* are generalized and their taxonomic relationships are unclear.

Several genera deviate in one or more characters. *Typhuloma* lacks eyes, while in *Alegoria* and *Antimachus* the elytra conceal the 7th abdominal tergite and the labroelypceal membrane is concealed. In *Alegoria* the penultimate tarsal segments are enlarged beneath the terminal segment. In *Antimachus* the defensive reservoirs are small relative to body size, with broad exits. This configuration occurs in distantly related members of various tribes (see Tschinkel and Doyen, 1980, Fig. 10), and is probably a retained primitive characteristic in *Antimachus*. In other features these genera are unremarkable.

Considerable variation exists among species of *Eutochia*. In *E. picea* LeConte the metasternal length is subequal to the mesocoxal diameter, the 9th elytral intervals are prominently crested above a row of very large punctures just before the apex, and the enlarged mentum of males is broadly oval, slightly concave and covered with flattened setae. This last modification is similar to that of many species of *Uloma*. In *E. pulla* Erichson, *E. atra* Pic and *E. lateralis* Boheman the metasternal length is subequal to the mesocoxal diameter and the elytral apices are unmodified. The mentum of males is small and subtrapezoidal, but the apical segment of the labial palp is enlarged and secuiform. These differences suggest that *Eutochia* should be restricted to the New World species. *Cenoscelis* Wollaston, (1867) is then the appropriate name for the Old World species.

The large genus *Uloma* is variable in several features that would be considered diagnostic of the smaller ulomine genera. For example, in most of the New World species the mentum is enlarged in males and modified as described above. In *U. longula* LeConte and *U. impressa* Melsheimer these modifications are absent. Similarly, in most *Uloma* the anterior tibiae are gradually enlarged to the apex, with the outer (dorsal) margin coarsely serrate. In *U. spinipes* Champion and *U. carolynae* Doyen the fore tibiae are apically hooked, with the outer margin weakly serrate or entire. Possibly *Uloma* is composite as now constituted, as predicted by Champion (1886). It is also likely that some of the presently recognized genera (e.g. *Achthosus*) represent specialized lineages derived from *Uloma*. A compre-
hensive study of the entire tribe will be required to resolve these questions. The species described below, together with *U. spinipes* will probably constitute a distinct species group of *Uloma* or a separate genus.

**Uloma carolynae**, **New Species**

Fig. 6

Male.—Subcylindrical, elongate oval, shining black with piceous appendages and venter. Cranium with punctures about as large as eye facets medially, separated by ½-1 puncture diameter with an impunctate spot at the epistomal suture, becoming much finer anteriorly and laterally. Epistomum slightly emarginate in dorsal aspect, incised at epistomal suture; suture faint but entire, arcuate; labro-

clypeal membrane broadly exposed, labrum with disk finely, obscurely and ir-

regularly punctate. Eye barely emarginate, ventral lobe narrower than dorsal. Mentum rugosopunctate, flat, about 1.3 times broader than long, ovate with anterior border narrowly emarginate; labial palp with terminal segment ovate, flattened, aboral surface concave.

Pronotal disk with punctures about ½ size eye facets, separated by about 1-2

puncture diameters; lateral borders arcuate, more strongly so in anterior ½, nar-

rowly margined; anterior border nearly straight in dorsal view, anterior angles obtuse, rounded; posterior border weakly bisinuate; posterior corners nearly right angled, weakly produced, labrum with disk finely, obscurely and ir-

regularly punctate. Eye barely emarginate, ventral lobe narrower than dorsal. Mentum rugosopunctate, flat, about 1.3 times broader than long, ovate with anterior border narrowly emarginate; labial palp with terminal segment ovate, flattened, aboral surface concave.

Elytral disk at base slightly wider than pronotum with prominent humeri; broadest at about middle; strial punctures round, shallow. 1-1.5 times eye facet diameter in sutural stria, becoming larger posteriorly; about 3 times eye facet diameter in epipleural stria; connected by fine furrows except in epipleural stria; intervals convex, finely, sparsely punctate; epipleuron gradually narrowed to ely-

tral apex.

Mesosternum deeply, sharply concave; metasternal length less than ½ mesocoaxal
diameter; abdominal sternites finely rugose, with punctures about ½-1 times eye

facet diameter interspersed with exceedingly fine punctures. Fore and middle

femora clavate; fore tibia with blunt triangular tooth about ½ from base; apical

third strongly curved mesally (Fig. 7), posterior surface with raised lateral margin,

mesal subapical tooth and apical flattened projection subtended by row of spinose

fulvous setae; middle femur with sparse strip of short stiff, fulvous setae on

anteroventral surface; middle tibia (Fig. 8) arcuate, with thickened angulation ½

from base, row of erect, spinose setae running from angulation to apex along

posteroventral surface; hind femur weakly arcuate, slightly thicker apically, with

band of fulvous setae on anteroventral surface; hind tibia nearly straight with row

of erect, spinose setae from just before base to apex.

Female.—Labial palp with last segment subcylindrical; fore tibia slightly thick-

ened about ½ from base, apical ¼ bent slightly mesad (Fig. 9), anteroventral

margin with row of erect spinose setae from near base to apex; middle tibia without

angulate thickening on ventral surface.

Elytral length, 8.8-9.25 mm; greatest elytral width 6.0-6.3 mm; median pro-

notal length, 4.4-4.9 mm; greatest pronotal width, 5.2-5.6 mm.

Holotype male and female paratype (California Academy of Sciences) from
Fig. 6. *Uloma carolynae*, male, habitus.

_Uloma carolynae_ is most similar to _U. spinipes_ Champion, from which it differs in having the outer foretibial margin entire (denticulate in _spinipes_), in lacking the apical tooth on the middle tibia, and in lacking both the basal and apical teeth on the hind tibia. _U. carolynae_ has rows of erect setae on the ventral tibial margins, while _spinipes_ has brushes of hairs at the tibial apices. _U. extraordinaria_ Spilman (1961b), evidently belongs in the _spinipes_ species group. It is distinguished by having the basal protibial tooth very long, narrow and acute in the male, and shorter but acute in the female (Spilman, 1961: figs. 1, 2).

I take pleasure in naming this species for Carolyn Mullinex-Tibbets.

**Tribe Triboliini**

Triboliens Mulsant, 1854, 1856.
Triboliides (in part) Lacordaire, 1859.
Ulomini Gebien, 1938-42 (in part).

Adult.—Small to moderate, elongate to broadly oval, flattened to subcylindrical. Eyes moderate in size, anteriorly emarginate or entire (_Palorus_); antennae gradually clavate or with abrupt 4 segmented club (_Lyphia_), with simple, conical sensoriae, or with compound (tenebrionoid) sensoriae on inner and outer margins of apical 7–8 segments. Labrum subquadrate (_Palorus_) or broadly transverse; labroelytpeal membrane concealed; mandibles with molas similar with simple or striate surface; lacinial uncus present or absent; ligula membranous; tentorium with bridge posterior, not arched, or absent (_Palorus_). Mesocoxal cavities closed laterally by sterna; apical membrane less than ⅓ wing length. Ovipositor with
gonostyles lateral, small; coxite as long or longer than paraproct, with 4 subequal lobes, sometimes poorly defined. Internal female tract with long, thin, tightly coiled spermatheca at base of accessory gland, or with single diverticulum (Palorus). Defensive reservoirs short, saccate with broad openings (Palorus) or long, saccate with constricted openings; without common volume; reservoir walls without annular foldings; secretory tissue drained by basal field or basal line of ducts. Aedeagus with tegmen dorsal; median lobe free or adnate.


Antenna with 2nd segment about 1.25–2.0 × length of basal, bearing apico-medial lens shaped sensoria. Labrum transverse (Tribolium) or ovate; epipharyngeal masticatory process of small, single, slightly asymmetrical teeth or undeveloped (Tribolium). Mandibles with bilobed incisor; molar lobes strong, projecting, flat or nearly so, sometimes bearing few carinae. Maxilla with mala evenly convex, not incised; finely setose. Hypopharyngeal sclerome concave with base not produced, or absent (Tribolium; Hayashi, 1966). Thoracic legs slender, similar in structure, sparsely set with hair-like setae. Abdominal segments with pleural sutures distinct; tergite and sternite 9 subequal; tergite 9 produced as sharply pointed urogomphi; pygopods absent (Latheticus; Hayashi, 1966) or present. Spiracles annular.

The following key is modified in part from Spilman, 1962.

**KEY TO THE GENERA OF TRIBOLIINI OF NORTH AND CENTRAL AMERICA**

1. Elytral intervals finely carinate .................................. *Tribolium* Macleay
   - Elytral intervals flat or convex, sometimes with weak carina in eighth interval ................................................. 2
2. Elytral epipleuron tapering gradually posteriorly, attaining elytral apex (Fig. 10) ................................................. 3
   - Elytral epipleuron ending abruptly well before elytral apex (Fig. 11) .......................................................... *Tharsus* LeConte
3. Antenna with last 4 segments forming distinct, capitate club ................................................................. *Lyphia* Mulsant and Rey
   - Antenna gradually clavate ................................................. 4
4. Middle and hind tibiae arcuatey curved .................................. *Aesymnus* Champion
   - Middle and hind tibiae straight ........................................ 5
5. Pronotal disk with punctures of two distinct sizes ................................................................. 6
   - Pronotal disk with punctures of a single size .......................... 8
6. Distance between eye and cardo much less than width of cardo ........................................ 7
   - Distance between eye and cardo greater than width of cardo ................................................................. *Mycotrogus* Horn
7. Prosternal process extending posteriorly beyond procoxae by nearly twice coxal length; apex acute, very narrowly rounded (Fig. 12) ........................................ 6
   - Prosternal process extending posteriorly beyond procoxae by about one coxal length; apex broadly rounded (Fig. 13) .................................. *Ulosonia* Laporte
8. Eye round, entirely ventral of epistomal canthus .................................................. *Palorus* Mulsant

- Eye reniform, emarginated in dorsal third by epistomal canthus

Latheticus Waterhouse

On the basis of adult features, Triboliini comprises two groups of genera. The Palorus "genus group" (Halstead, 1967b) is characterized as follows: labrum subquadrate; lacinia without uncus; eye entire; tentorial bridge absent; defensive glands small, short, saccate with broad openings; bursa copulatrix with single, thick diverticulum (accessory gland?). Palorus is introduced to North America; other members of the Palorus genus group occur in the Old World (see Halstead, 1967b).

The remaining North American Triboliini are more similar to Tribolium, and might be referred to as the "Tribolium genus group." This group is characterized as follows: labrum transverse; lacinia with uncus; eye anteriorly emarginate; tentorial bridge present, posterior, not arched; defensive glands large, elongate; female reproductive tract with both spermatheca and accessory gland.

Although they share a high level of phenetic similarity in external characters of both adults and larvae, the drastic difference between these genus groups in configuration of the female reproductive tract is unusual and suggests that the relationship between these groups deserves further consideration. Such an undertaking would require detailed study of the predominantly Old World fauna of Triboliini, which is beyond the scope of this work.

Among the Tribolium genus group, the genera Ulosonia, Metulosonia and My-
cotrogus have striate mandibular molas, the prosternal process extended far posteriorly and received in the deeply concave mesosternum, compound antennal sensoriae and relatively shorter defensive reservoirs with broad openings. In Lyphia, Latheticus, Tribolium, and Tharsus the mola is nonstriate, the prosternal process is relatively short, the antennal sensoriae are simple cones (with 2 or more sensory pegs in some Tribolium; Roth & Willis, 1951) and the defensive reservoirs are very elongate with constricted openings and basomedian pouches. Tharsus is unique among the genera considered here in having the epipleuron ending before the elytral apex, but this character is quite variable in other tribes such as Diaperini. I have been unable to dissect Aesymnus, but external features indicate placement in Triboliiini.

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