

PROCEEDINGS OF THE  
ENTOMOLOGICAL SOCIETY OF WASHINGTON

---

---

Vol. 66

JUNE 1964

No. 2

---

---

THE ANT LARVAE OF THE SUBFAMILY CERAPACHYINAE:  
SUPPLEMENT

GEORGE C. WHEELER and JEANETTE WHEELER, *Department of Biology*  
*University of North Dakota, Grand Forks*

This article has been prepared as a supplement to "Ant Larvae of the Subfamily Cerapachyinae" by G. C. Wheeler (1950). It includes (1) earlier references in the literature which had been overlooked, (2) subsequent references in the literature, (3) revised descriptions, (4) descriptions of species not previously described and (5) a key.

Subfamily CERAPACHYINAE Forel

*Revised Description*—Elongate, slender, subcylindrical and curved ventrally. Segmentation distinct. Spiracles small. Leg vestiges present or absent. Head small; at the anterior end. Mouth parts large and prominent; bearing few or no spinules. Head hairs few or none; short and nearly always simple. Antennae moderately large, with two or three sensilla. Labrum a thick flap, usually small. Mandibles rather feebly sclerotized; typically long and slender; base moderately stout; distal two-thirds narrow and thin; tapering to an apex which is slightly curved backward and medially; medial border with denticles. Maxillae lobose; mostly rather long and round-pointed; palp small, a cluster of three to six sensilla or a low elevation bearing sensilla or a short obtuse projection bearing sensilla; galea a slender conical projection bearing two apical sensilla. Labium large and prominent; palp a cluster of three to five sensilla, sometimes slightly elevated. Opening of stricteries a transverse slit.

*Generalized Drawings*—Fig. 1b shows a generalized (or synthetic) profile of a cerapachyine larva. In our study of the body shapes of ant larvae we have used only profiles (i.e., outlines in side view), since dorsal and ventral views rarely show anything distinctive. To facilitate comparison of profiles we decided that all drawings would need to be of the same size. This, however, presented a problem in flexible larvae, because such larvae are preserved with various amounts of curving and contraction. Hence it was necessary to establish a standard measurement to be the same for the profiles of all genera. We chose the distance (on the drawing) from the anus to the first abdominal spiracle, for two reasons: (1) the abdomen is relatively inflexible and scarcely extensible; (2) these are two easily located points (in contrast, for example, to the posterior end, which would have to be designated arbitrarily on a curve).

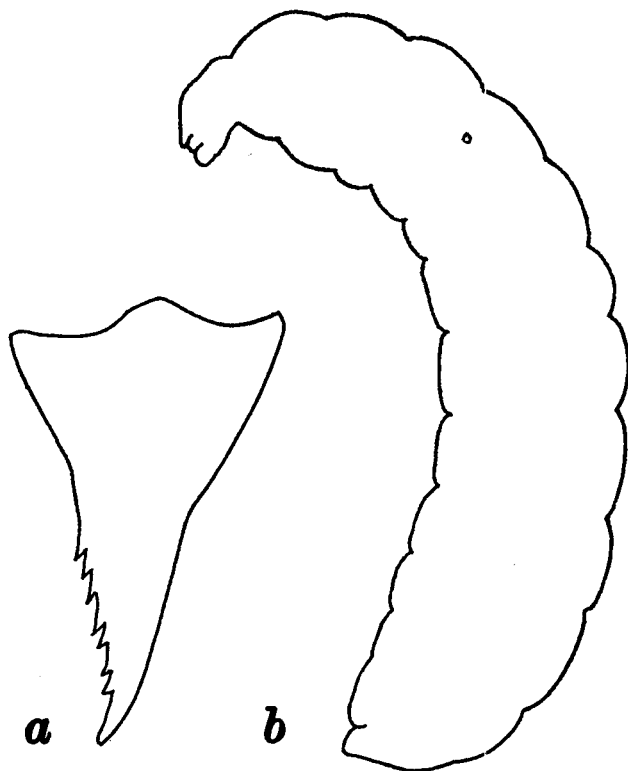


Fig. 1: *a*, generalized mandible (anterior view) for the subfamily Cerapachyinae; *b*, generalized body profile for the subfamily Cerapachyinae.

Our actual procedure (see Wheeler and Wheeler, 1960, for further details) was this:—(a) The drawing of a side view of a larva of *Lioponera* was placed on a Vertical Sketchmaster and the instrument was adjusted until the distance (on the projected image) from anus to first abdominal spiracle was 8 cm (not a significant measurement, merely convenient). (b) The images of the profile and of the first abdominal spiracle were traced on paper. (c) The first drawing was removed and replaced by a side-view drawing of *Eusphinctus*; the instrument was adjusted until the images of anus and first abdominal spiracle were superimposed on corresponding parts of the first drawing; then the image of the second profile was traced on the same paper. (d) Sideview drawings of *Cerapachys* and *Phyracaces* were processed in the same manner as the second. (e) The generalized profile (Fig. 1*b*) for the subfamily was obtained by a sort of averaging of the four generic profiles.

Fig. 1*a* shows a generalized (or synthetic) outline of a cerapachyine mandible in anterior view, derived by the same technique (see above), using the apex and the anterior condyle as the points of reference.

REFERENCES TO THE SUBFAMILY

Bernard, 1951:—"Larves eucéphales, carnivores; se nourrissant seules" (p. 1041). "Les larves sont du type Dorylide" (p. 1046).

Creighton, 1950, p. 56:—"This blending of ponerine and doryline traits had been recognized many years earlier by Emery and Forel but [W. M.] Wheeler was able to augment their observations by additional information concerning the structure of the larvae and the activities of the workers. . . . The larvae of the Cerapachyinae are, so far as is known, very similar to those of the Dorylinae."

Emery (1899, p. 9) thought that the Ponerinae and Cerapachyinae were the most primitive ants: "i caratteri delle loro larve accennano a loro volta ad una forma più semplice, meno perfezionata della cura della prole e della sua alimentazione."

Emery (1904, p. 114-115) used larval characters to support his thesis that *Cerapachys* and related genera belong in the Dorylinae rather than in the Ponerinae. Referring to the larva (p. 115) of *Cerapachys augustae*, he said: "A mio avviso, essa serba completamente il tipo dorylino per la sua forma sottile, quasi cilindrica, che contrasta vivamente con la forma tozza e panciuta delle larve di Ponerinae. La conoscenza di questa larva viene dunque in appoggio alla mia tesi."

Kusnezov, 1962, p. 134: A translation into Spanish of G. C. Wheeler's (1950, p. 102) characterization of the larvae of the Cerapachyinae.

KEY TO MATURE LARVAE OF *Cerapachyinae*  
(in our collection)

- 1a. With a row of long single-hooked hairs around each somite.....**Lioponera**
- 1b. Without such hairs ..... 2
- 2a. Body hairs simple or lacking.....**Cerapachys**
- 2b. Body hairs bifid ..... 3
- 3a. Branches of bifid body hairs simple.....**Eusphinctus**
- 3b. Branches of bifid body hairs multifid .....**Phyracaces**

Genus *Cerapachys* F. Smith

*Revised Description*—Leg vestiges present. Body hairs simple or lacking. Head hairs short or lacking. Labrum small, not covering bases or tips of mandibles; broader than long; numerous sensilla; posterior surface sparsely spinulose. Maxillary palp a cluster of 4-6 sensilla, which are more or less fused into a low elevation; galea an elongate projection.

Subgenus *Cerapachys* F. Smith

Moderately stout; crescentic in profile. Body hairs few and simple. Cranium subhexagonal in anterior view. Head hairs simple or lacking. Maxillae with few or no spinules.

*Cerapachys opacus* Emery  
(Fig. 2)

Length (through spiracles) 3.4 mm. Crescentic in profile; diameter greatest at the fourth abdominal somite, tapering gradually to the anterior end and more

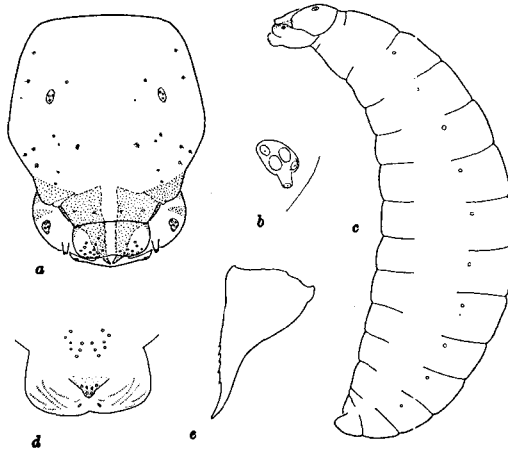


Fig. 2: *Cerapachys opacus*. a, head in anterior view,  $\times 90$ ; b, palp of left maxilla in anterior view,  $\times 278$ ; c, larva in side view,  $\times 22$ ; d, labrum in posterior view,  $\times 139$ ; e, left mandible in anterior view,  $\times 174$ .

rapidly to the posterior end, which is round-pointed. Anus ventral. Leg, wing and gonopod vestiges present. Thirteen feebly differentiated somites. First abdominal spiracle slightly larger than the others. Body naked. Integument without spinules, but with a few sensilla, each of which bears a minute (0.006 mm long) spinule. Head moderately large, cranium subhexagonal in anterior view; widest near the middle. Head naked; integument with about 22 sensilla, each of which bears a minute (0.004 mm long) spinule. Antennae small, each with three sensilla, each of which bears a minute spinule. Labrum small, feebly bilobed, twice as broad as long; anterior surface with 13 sensilla on each half; ventral border with two sensilla near the middle; posterior surface sparsely spinulose, the spinules rather coarse and arranged in oblique rows; posterior surface with two isolated sensilla near the ventral border, a sclerotized cluster of six sensilla near the center and 14 dorsally. Mandibles moderately sclerotized; subtriangular in anterior view; apical tooth long, slender and curved medially; medial border with about five minute denticles. Maxillae with the apex conoidal and directed medioventrally; palp represented by a sclerotized cluster of five sensilla, one of which is elevated; galea peg-like with two apical sensilla. Labium with a few short transverse rows of minute spinules; palp represented by a cluster of five sensilla. (Material studied: three larvae from New Guinea, courtesy of Dr. E. O. Wilson.)

Subgenus *Parasyscia* Emery  
*Cerapachys (Parasyscia) augustae* Wheeler

Emery, 1904, p. 115:—See above. After Wheeler, 1903.

Subgenus *Syscia* Roger

Slender and subcylindrical; curved ventrally. Body hairs lacking. Head subpyriform in anterior view. Head hairs simple. Maxillae with the distal half spinulose. Labium with spinules on the middle of the anterior surface.

**Cerapachys (Syscia) australis** Forel

VERY YOUNG LARVA—Length (through spiracles) about 1.6 mm. Crescentic; diameter (including that of head) nearly uniform throughout. First abdominal spiracle slightly larger than the others. Body hairs moderately numerous, short. Of two types: (1) the more numerous, generally distributed, simple, 0.012-0.036 mm long; (2) more scattered, some on each somite, bifid (at least at the tip), 0.018-0.03 mm long. Integument with transverse rows of minute spinules on thoracic and first three abdominal somites and on the dorsal surface of the last abdominal somite. Head and mouthparts generally similar to *C. (S.) crypta*. (Material studied: two larvae from Queensland, courtesy of Dr. E. O. Wilson.)

Genus **Phyracces** Emery

Anterior end curved ventrally. Body hairs moderately numerous, short, bifid, with the branches simple to multifid. Cranium transversely subelliptical; head hairs few, short, simple. Labrum small; breadth twice the length; numerous sensilla near ventral border; no spinules. Maxillae with a few minute spinules; palp a cluster of five sensilla; galea a low cone. Labium with a few minute spinules; palp a cluster of five sensilla. Hypopharynx spinulose dorsally.

**Phyracces larvatus** Wheeler

(Fig. 3)

MATURE LARVA—Length (through spiracles) 5.7 mm. Arcuate, with the diameter nearly uniform and the anterior end curved ventrally. Leg and wing vestiges present. Thirteen feebly differentiated somites. Spiracles small, nearly uniform in diameter. Body hairs moderately numerous and generally distributed, short (0.054-0.102 mm), more or less deeply bifid, with the branches simple to

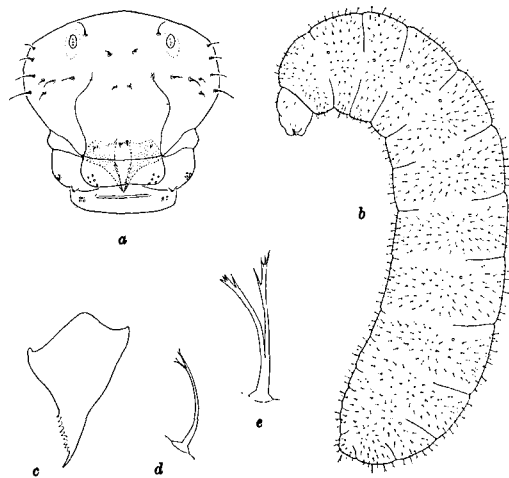


Fig. 3: *Phyracces larvatus*. *a*, head in anterior view,  $\times 85$ ; *b*, larva in side view,  $\times 14$ ; *c*, left mandible in anterior view,  $\times 176$ ; *d* and *e*, two body hairs,  $\times 278$ .

multifid. Integument beset with short transverse ridges, each of which may bear several minute spinules; the spinules most numerous on the ventral surface of the thorax and abdominal somites I-III and also on the dorsal surface of abdominal somites VIII-X. Head small; cranium broader than long, transversely subelliptical. Head hairs few (about 22), short (0.012-0.048 mm long), simple and slightly curved. Each antenna mounted on a rounded elevation and bearing three sensilla, each with a minute spinule. Labrum short and broad, with the ventral border slightly concave; about seven sensilla on and near the ventral surface of each half. Mandibles subtriangular in anterior view; feebly sclerotized; the apical tooth small, acute and slightly curved medially; the medial border with about ten minute denticles. Maxillae rather large and swollen; the apex conoidal and directed medioventrally, with a few minute spinules in short rows on the medial surface; palp represented by a cluster of five sensilla; galea a low cone with two apical sensilla. Labium short, with a few minute spinules in short transverse rows; palp represented by a cluster of five sensilla; opening of sericteries a transverse slit with slightly protruding lips. Hypopharynx with two lateral sensilla on the ventral portion of each half; numerous spinules in short transverse rows on the dorsal portion.

YOUNG LARVA—Body hairs of two types: (1) simple, 0.018-0.188 mm long, longer hairs with flexible tips, generally distributed; (2) 0.024-0.108 mm long, with bifid tip, a few on each somite. Otherwise similar to the mature larva.

Material studied: Three larvae from Victoria, Australia, courtesy of Dr. W. L. Brown.

#### **Phyracaces senescens** Wheeler

YOUNG LARVA—Length (through spiracles) 3.2 mm. Generally similar to *Ph. larvatus*, except in the following details: Body hairs shorter (0.012-0.042 mm), simple. Head hairs moderately numerous (about 50). Mandibles with about five denticles.

VERY YOUNG LARVA—Length (through spiracles) about 1.5 mm. Body straight and of uniform diameter. Hairs mostly simple (a few with the tip bifid), 0.012-0.144 mm long, the longest with long flexible tip. Head hairs few (about 30). Otherwise generally similar to young larva.

Material studied: several larvae from Victoria, Australia, courtesy of Dr. W. L. Brown.

#### Genus **Acanthostichus** Mayr

Emery, 1901, p. 430:—"Le larve di *Dorylus* hanno la medesima forma cilindroide delle larve di *Eciton* e *Acanthostichus* che differisce molto dal tipo a collo sottile e addome rigonfiato delle larve di *Ponerine*."

Kusnezov (1962, p. 134) quotes G. C. Wheeler's (1950, p. 110) English translation of Emery's (1899) description.

#### **Acanthostichus ramosmexiae** Bruch

Bruch, 1925, p. 113-114: Worker larva about 6 mm long. Subcylindrical, somewhat compressed dorsally, considerably attenuated anteriorly to a third of the maximum diameter; sides more parallel, less compressed. Thorax somewhat longer than the three following somites, truncated anteriorly. Posterior end rounded. Abdominal somites IV-VII longer and wider. Entire surface thinly

covered with pale erect hairs, which are somewhat longer than the distances between them. Head inclined ventrally more or less at a right angle to the body. Mouth parts feebly chitinized and pale yellowish. Mandibles subtriangular, very long and sharp-pointed, with the apex slightly curved. Maxillae with a lateral conical papilla, which is rather large and slightly curved. Differing somewhat from the common ponerine type and showing a certain resemblance to the doryline *Eciton*. (Freely translated from the Spanish.) Figure of mouth parts and photographs of larva in side and ventral views, p. 114.

## LITERATURE CITED

- Bernard, F.** 1951. Super-famille des Formicoidea, p. 997-1104. In P. P. Grassé [ed.] *Traité de Zoologie* (Paris: Masson et Cie). Tome X, Fasc. II.
- Bruch, C.** 1925. Macho, larva y ninfa de *Acanthostichus ramosmexiae* Bruch. *Physis* 8: 110-115.
- Creighton, W. S.** 1950. The ants of North America. *Bull. Mus. Comp. Zool. Harvard College* 104: 1-585, 57 pl.
- Emery, C.** 1899. Intorno alle larve di alcune formiche. *Mem. R. Accad. Sci. Ist. Bologna* 8: 3-10.
- . 1901. Studi sul polimorfismo e la metamorfosi nel genere *Dorylus*. *Rend. Sess. R. Accad. Sc. Ist. Bologna, N. S.* 5: 415-433.
- . 1904. Le affinità del genere *Leptanilla* e i limiti delle *Dorylinae*. *Arch. Zool.* 2: 107-116.
- Kusnezov, N.** 1962. El género *Acanthostichus* Mayr. *Acta Zool. Lilloana* 18: 121-138.
- Wheeler, G. C.** 1950. Ant larvae of the subfamily *Cerapachyinae*. *Psyche* 57: 102-113.
- & **Jeanette Wheeler.** 1960. The ant larvae of the subfamily *Myrmicinae*. *Ann. Entom. Soc. Amer.* 53: 98-110.