

**ANT LARVAE OF THE SUBFAMILY DORYLINAE:
SECOND SUPPLEMENT (Hymenoptera: Formicidae)**

GEORGE C. WHEELER AND JEANETTE WHEELER

Reprinted from the
JOURNAL OF THE KANSAS ENTOMOLOGICAL SOCIETY
Vol. 47, April, 1974, No. 2
pp. 166-172
Made in United States of America

WILLIAM L. BROWN

**ANT LARVAE OF THE SUBFAMILY DORYLINAE:
SECOND SUPPLEMENT (Hymenoptera: Formicidae)¹**

GEORGE C. WHEELER AND JEANETTE WHEELER
Laboratory of Desert Biology, Desert Research Institute,
University of Nevada System, Reno 89507

ABSTRACT

The authors' first supplement on ant larvae of the subfamily Dorylinae was published in 1964. This supplement contains new or revised descriptions of 5 species in *Aenictus*, *Eciton* and *Labidus*. The characterizations of genera, tribes and subfamily are revised and some earlier illustrations are redrawn.

Subsequent to the publication of our first supplement of the ant larvae of the subfamily Dorylinae (1964) we have received from other myrmecologists so much additional material that it has become necessary to publish another supplement. In this one the characterizations of genera, tribes and subfamily are revised. Also some of our earlier illustrations have been redrawn to take advantage of better material, improved techniques and 30 years of experience.

SUBFAMILY DORYLINAE

Myrmecioid (i.e., elongate and rather slender; curved ventrally; without a differentiated neck; diameter diminishing only slightly from midabdomen to anterior end). Head large, on anterior end. Spiracles minute. Leg vestiges large and conspicuous. Hairs short; sparse to moderately abundant. Antennae with 2 sensilla each.

Larson and Larson (1965:51): "They show affinities to the ponerines in that the larvae and pupae are carried lengthwise under the body as in the ponerines, and in that the larvae are not fed by regurgitation, as in the higher subfamilies. Food is simply dropped on or about them, or they are dropped on or about the food which they then proceed to devour."

Rettenmeyer (1963:289): "The army ants usually carry their own larvae by grasping the thoracic segments, whereas ant larvae which are booty are frequently carried by the posterior ends." Description of larvae of subfamily based on G. C. Wheeler (1943:190).

Schneirla's book (1971) is a comprehensive treatment of what is known about army ants; naturally it includes a great deal about larvae—far too much to mention here in any detail.

W. M. Wheeler (1910:264): "The *Ecitons* carry their larvae and pupae under their bodies like the *Dorylii* and the *Ponerinae*."

¹ Received for publication August 7, 1973.

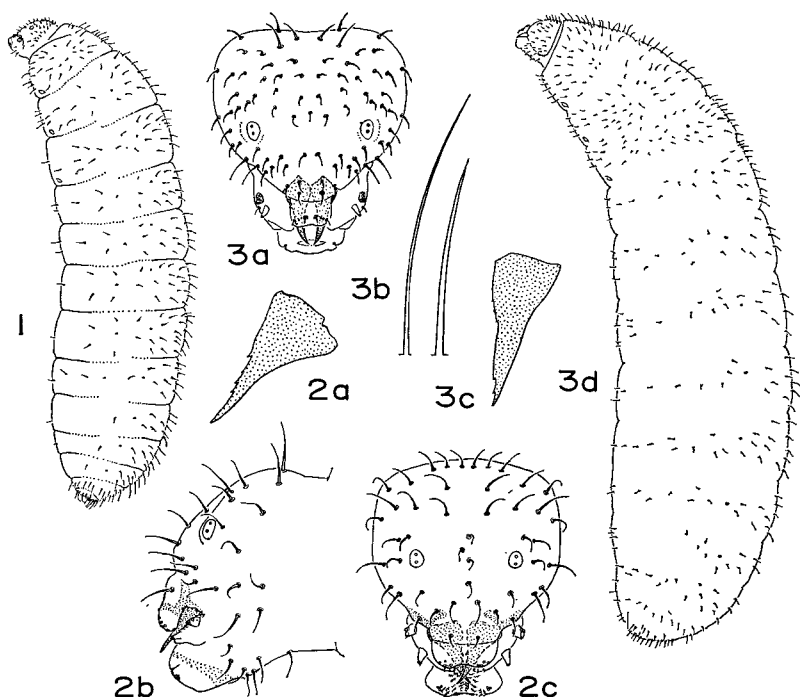


FIG. 1. *Cheliomyrmex megalonyx*: larva in side view, $\times 12$. FIG. 2. *Aenictus laeviceps*: a, left mandible in anterior view, $\times 185$; b, head in side view, $\times 81$; c, head in anterior view, $\times 81$. FIG. 3. *Labidus coecus*: a, head in anterior view, $\times 50$; b, two body hairs, $\times 235$; c, left mandible in anterior view, $\times 114$; d, larva in side view, $\times 14$.

TRIBE CHELIOMYRMECINI

Body hairs few, uniformly distributed, simple. Head hairs moderately numerous. Mandibles dolichoderoid (i.e., basal portion inflated and narrowed more or less abruptly to the distal portion, which is slender and sharp-pointed; no medial teeth or blade). Maxillary palp a raised discrete cluster of about 9 sensilla.

Genus CHELIOMYRMEX Mayr

With the characters of the tribe.

Cheliomyrmex megalonyx Wheeler. (Fig. 1). Revised drawing.

TRIBE DORYLINI

Body hairs very few, simple. Head hairs few. Mandibles dolichoderoid (i.e., basal portion inflated and more or less abruptly narrowed

to the distal portion, which is slender and sharp-pointed; no medial teeth or blade). Maxillary palp represented by numerous scattered sensilla.

Genus DORYLUS Fabricius

With the characters of the tribe.

TRIBE ECITONINI

REVISED CHARACTERIZATION: Mandibles amblyoponoid (i.e., narrowly subtriangular, without a blade, straight or with the apex slightly curved medially, with minute teeth on the medial border).

Genus AENICTUS Shuckard

Body hairs moderately numerous, uniformly distributed, simple. Head hair moderately numerous. Maxillary palp a paxilla with apical sensilla.

Schneirla (1965) discussed the influence of larvae on the colony cycle and gave a photograph of a mass of larvae. Schneirla et al. (1968: Fig. 10), a photograph of many larvae (very similar to Schneirla 1971: 129).

Aenictus laeviceps F. Smith. (Fig. 2). Length (through spiracles) about 3.9 mm. Profile myrmecoid. Anus terminal, with a posterior lip. With about 12 differentiated somites. Spiracles small and of uniform diameter. Integument with spinules in short transverse rows. Body hairs moderately abundant, short (0.05–0.075 mm long), simple. Cranium subhexagonal in anterior view, frons, clypeus and labrum bulging. Antennae small, each with 2 minute sensilla, each bearing a spinule. Head hairs moderately numerous, moderately long (0.025–0.05 mm), simple. Labrum small; width twice length; feebly bilobed in anterior view; each lobe with one minute sensillum near ventral border on anterior surface, with one sensillum and a few rows of minute spinules on ventral border, with a few short rows of minute spinules near ventral border on posterior surface; posterior surface with a cluster of 4 large sensilla ventrally, with 2 longitudinal rows of 3 or 4 sensilla each dorsally. Mandibles amblyoponoid (i.e., narrowly subtriangular, without a blade, with the apex slightly curved medially, with three or four minute teeth on the medial border); length twice the width. Maxillae with apex paraboloidal and bearing a few short rows of minute spinules; palp a stout paxilla with 4 (2 large and encapsulated and 2 small and bearing a spinule each) apical sensilla; galea paxilliform, with 2 apical sensilla. Labium feebly bilobed in anterior view; palp represented by a cluster of 3 sensilla; an isolated sensillum between each palp and opening of sericteries; the latter a rather wide transverse slit on the ventral border. (Material studied: numerous larvae from Philip-pines.)

Genus ECITON Latreille

Body hairs moderately numerous, uniformly distributed, simple. Head hairs moderately numerous to dense. Maxillary palp a discoid with numerous sensilla (one elevated).

Klots and Klots (1959:282) discussed the influence of the larvae on the colony cycle. Michener and Michener (1951:147-150) summarized Schneirla's observations; Fig. 88 workers transporting larvae.

Eciton burchelli Westwood. YOUNGEST LARVA: Length (through spiracles) about 0.8 mm. Similar to mature larva (1943:328) except as follows. Elongate subellipsoidal, head end larger. Anus terminal. Entire integument sparsely spinulose, the spinules minute and isolated. No body hairs nor head hairs. Maxillary palp represented by a cluster of 5 sensilla; galea represented by 2 raised sensilla.

VERY YOUNG LARVA: Length (through spiracles) about 0.9 mm. Similar to youngest larva except as follows. Body elongate-subellipsoidal, chunky, ends subequal. Head on anterior end and of the same diameter as T1. Body hairs 0.006-0.012 mm long, simple and slightly curved. Cranium width equal to length; lateral bulges lower and more prominent than in *E. hamatum*. Head hairs few, 0.01-0.02 mm long, simple or denticulate. Mandibles with broader base and with straight tooth extending from middle. Maxillary palp a cluster of 7 sensilla.

YOUNG LARVAE: Length (through spiracles) 1.9-2.9 mm. Similar to youngest larva except as follows. Elongate-subcylindrical. Integument with minute spinules in transverse rows. Occiput spinulose. Head hairs simple, moderately numerous, 0.037-0.075 mm long. Mandibles as in very young larva above. Maxillary palp a cluster of 9 sensilla.

IMMATURE LARVAE: Length (through spiracles) 3.2-7 mm (7 mm larva ready to moult). Similar to mature larva except as follows. Integument with minute spinules in transverse rows. Head hairs 0.025-0.9 mm long, simple.

Material studied; numerous larvae from Trinidad, courtesy of Dr. N. A. Weber.

Schneirla et al. (1968) showed (Fig. 9) a graduated polymorphic series of mature worker larvae. Schneirla (1971) repeated 1968 (above) as Fig. 6.3(a) on p. 129; Fig. 9.1 on p. 204 showed mature queen and male larvae.

Eciton hamatum (Fabricius). Schneirla (1965), photographs of larvae; influence of larvae on colony cycle. Schneirla et al. (1968: Fig. 8), photograph of a mass of larvae and workers. Schneirla (1971: Fig. 6.5(a) = col. pl. IV), a photograph of a mass of larvae and workers.

Eciton rapax F. Smith. Length (through spiracles) about 13.4 mm. Similar to *E. hamatum* (1943: 327) except in the following details. Posterior end more rounded and anal lips more prominent. Entire integument spinulose, spinules minute and in numerous subparallel

transverse rows. Labrum feebly bilobed; anterior surface with 11 sensilla and 3 minute (about 0.003 mm) hairs; ventral border with 4 sensilla near middle; ventral and lateral borders with numerous minute spinules in short transverse rows; posterior surface with 4 sensilla and with minute spinules in short to long rows. Mandibles heavily sclerotized. Maxillae with minute spinules in short encircling rows on the apex; palp an irregularly raised cluster of 9 sensilla. Anterior surface of labium spinulose, spinules minute and in transverse rows. (Material studied: numerous larvae from Ecuador, Courtesy of P. Kazan.)

Eciton vagans (Olivier). Length (through spiracles) about 1.5 mm. Similar to *E. hamatum* (1943: 327) except as follows. Body long, slender and of nearly uniform diameter. Spiracles diminishing slightly posteriorly. Entire integument spinulose, spinules minute and isolated. Head hairs 0.013–0.063 mm long. Ventral and lateral borders of labrum with a few short rows of minute spinules; posterior surface with minute spinules in short rows. Maxillary palp a cluster of 7–9 sensilla.

VERY YOUNG LARVA: Length (through spiracles) about 0.95 mm. Long and slender, slightly curved ventrally, anterior end more broadly rounded; head on anterior end. Anus ventral. Entire integument with minute isolated spinules. Body and head without hairs or sensilla. Each antenna represented by 2 sensilla on a flat disc. Labrum arcuate with lateral surfaces bulging. No spinules seen on maxillae, labium or hypopharynx. Maxillary palp represented by a cluster of 7–9 sensilla.

Material studied: 10 larvae from Ecuador, courtesy of P. Kazan.

Genus LABIDUS Jurine

In 1943 *Labidus* was treated as a subgenus of *Eciton*. It is now considered to be a separate genus and consequently we offer here a characterization of the genus and a revised description of *L. coecus* together with revised and additional drawings.

Body hairs moderately numerous on thorax, sparse posteriorly, simple. Head hairs moderately numerous. Maxillary palp a skewed peg with 6 sensilla.

Rettenmeyer (1963: 289): "Only in the genus *Labidus* [in the Dorylinae] can one find brood of all ages at the same time."

Labidus coecus Latreille (Fig. 3). Length (through spiracles about 6.4 mm. Subcylindrical, slender, head on anterior end. Anus subterminal. Leg vestiges distinctly elevated areas without hairs or spinules; wing rudiments present. Thirteen differentiated somites. Spiracles small, decreasing in diameter posteriorly. Integument of venter of thorax with minute spinules in transverse rows. Body hairs 0.05–0.1 mm long, simple, slightly curved. Cranium feebly subcordate, slightly broader than long. Antennae rather large and low on cranium, each with 2 sensilla, each of which bears a minute spinule. Head hairs moderately numerous, 0.046–0.063 mm long, simple. Labrum feebly

bilobed; each half with 2 short hairs and 2 sensilla on anterior surface; entire posterior surface sparsely spinulose, spinules in short to long rows radiating from the dorsolateral angles; posterior surface with about 12 sensilla near middle. Mandibles long and slender, subtriangular in anterior view, with several small denticles on medial border. Maxillae with the apex paraboloidal and spinulose, spinules minute and in rows; palp a skewed peg with 6 sensilla; galea a cone with 2 apical sensilla. Labium with anterior surface sparsely spinulose, spinules minute and in transverse rows; palp represented by a cluster of sensilla; an isolated sensillum near palp; opening of sericteries a wide transverse slit. Hypopharynx with a few minute spinules in transverse rows.

YOUNG LARVA: Length (through spiracles) about 3.6 mm. Similar to mature larva except as follows. Body more slender, anus subterminal. Entire integument spinulose, spinules numerous, minute and in subparallel rows. Head hairs fewer.

Material studied: 8 larva from British Guiana, courtesy of Dr. N. A. Weber.

Genus NEIVAMYRMEX Borgmeier

Body hairs numerous, uniformly distributed; simple and denticulate or branched. Head hairs moderately numerous. Maxillary palp a discoid with several sensilla, one of which is elevated.

Neivamyrmex harrisi (Haldeman). Watkins (1968: 275), description of male larva; Fig. 1 on p. 274, head in anterior view.

Neivamyrmex nigrescens (Cresson). Plsek et al. (1969: 455) stated that the carabid beetle *Helluomorphoides texanus* (Le Conte) fed on the brood. Topoff (1969: 380): *H. latitarsis* Le Conte and *H. ferrugineus* Casey fed on the larvae.

LITERATURE CITED

- Klots, A. B., and Elsie Klots. 1959. Living insects of the world. Doubleday and Co., Garden City, New York. 304 p.
- Larson, Peggy P., and M. W. Larson. 1965. All about ants. The World Publishing Co., Cleveland and New York. 220 p.
- Michener, C. D., and Mary Michener. 1951. American social insects. D. Van Nostrand Co., New York. 267 p.
- Plsek, R. W., J. C. Kroll, and J. F. Watkins. 1969. Observations of carabid beetles, *Helluomorphoides texanus*, in columns of army ants and laboratory experiments on their behavior. J. Kansas Entomol. Soc. 42:452-456.
- Rettenmeyer, C. W. 1963. Behavioral studies of army ants. Univ. Kansas Sci. Bull. 44:281-465.
- Schneirla, T. C. 1965. Dorylines: raiding and in bivouac. Natur. Hist. 74: 41-47, 44-51.
- . 1971. Army ants. A study in social organization. W. H. Freeman and Co., San Francisco (Ed. H. R. Topoff). 349 p.
- Schneirla, T. C., R. R. Gianutsos, and B. S. Pasternak. 1968. Comparative allometry in the larval broods of three army-ant genera, and differential growth as related to colony behavior. Amer. Natur. 102:533-554.

- Topoff, H. R. 1969. A unique predatory association between carabid beetles of the genus *Heluomorphoides* and colonies of the army ant *Neivamyrmex nigrescens*. *Psyche* 76:375-381.
- Watkins, J. F. 1968. The rearing of the army ant male, *Neivamyrmex harrisi* (Haldeman) from larvae collected from a nest of *N. wheeleri* (Emery). *Amer. Midland Natur.* 80:273-276.
- Wheeler, G. C. 1943. The larvae of the army ants. *Ann. Entomol. Soc. Amer.* 36:319-322.
- Wheeler, G. C., and Jeanette Wheeler. 1964. The ant larvae of the subfamily Dorylinae: supplement. *Proc. Entomol. Soc. Washington* 66:129-137.
- Wheeler, W. M. 1910. *Ants*. Columbia Univ. Press, New York. 663 p.