

ANT LARVAE OF THE SUBFAMILY FORMICINAE: THIRD SUPPLEMENT

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ABSTRACT

The authors' second supplement on ant larvae of the subfamily Formicinae was published in 1970. This supplement contains descriptions of 11 additional species in the genera *Camponotus*, *Polyrhachis* and *Stigmacros*. References to the literature on formicine larvae are cited.

Key Words: Immatures, taxonomy, Camponotus, Polyrhachis, Stigmacros.

Subsequent to the publication of our second supplement on the ant larvae of the subfamily Formicinae (1970) we have received from other myrmecologists so much additional material that it has become necessary to publish another supplement.

Genus *LASIUS* Fabricius

Donisthorpe (1927: 29) reported that the staphylinid beetle *Homoeusa acuminata* Kr. devoured the larvae of *L. spp.* (according to Silvestri).

Genus *MYRMECOCYSTUS* Wesmael

Myrmecocystus mexicanus Wesmael. Leonard (1911: 95). "The nurse holds the egg in her jaws and squeezes it into the mouth of the helpless baby, who shows great eagerness to be fed. After the larva has got what it can, the nurse cleans out the shell, and regurgitates the remnant into the larva's mouth. Frequently the nurse sticks an egg to the back of a larva's neck, so as to have it ready for the next feeding time. . . . It is quite common to find dead insects . . . lying among the larvae. Sometimes the larger larvae remain for a long time with their heads thrust into the thoraces of dead flies, devouring the muscular tissue." (Repeated Mallis 1941: 81).

Myrmecocystus testaceus Emery (= *M. mexicanus* *mojave* W. M. Wheeler). Leonard (1911: 91) described the larvae as "white, semitranslucent grubs, which resemble a crook-necked squash in general form."

Genus *FORMICA* Linnaeus

Hölldobler (1971) has retold the old story of the myrmecophilous clavigerid beetle *Atemeles* and published a photograph of a larva feeding on a *Formica* larva.

Formica sanguinea Latreille. Donisthorpe (1927: 28) saw a staphylinid beetle (*Dinarda dentata* Gr.) devour the larva of this ant.

Formica subpolita Mayr. Cazier and Statham (1962: 126) reported that an adult scarabaeid beetle *Cremastocheilus armatus* Walker had been found feeding on a larva of this ant.

Genus *OECOPHYLLA* F. Smith

Oecophylla longinoda (Latreille). Ledoux (1950): mature queen larvae are white, sac-like and have a mobile head marked off from the

body by a fold. Sudd (1967: 75) discussed the use of larvae in nest construction.

Oecophylla smaragdina Fabricius. Bodenheimer (1951) reported the use of larvae as human food in Queensland and North Australia; Bristowe (1932) did the same for Siam.

Genus *PLAGIOLEPIS* Mayr

Playiolepis pygmaea Latreille. Passera (1968) described and figured five larval stages. In 1969 he reported that the eggs laid by workers were small and degenerate; they were fed to larvae of every instar and caste.

Genus *STIGMACROS* Forel

Stigmacros anthracina McAreavey. Length (through spiracles) about 4.7 mm. Similar to *S. acutus* (1968: 209) except as follows: Body diameter more nearly uniform; with 2 anal lips. Spiracles small and with diameter decreasing posteriorly. Integument of posterior somites and ventral surface of anterior somites with spinules in short transverse rows. Body hairs: (1) about 0.019 mm long; (2) 0.05-0.11 mm long, the most numerous type; (3) 0.25-0.375 mm long, without denticles but with long flexuous tip, few, on the abdominal somites in a band around the middle of each somite. Cranium transversely subelliptical, a fourth broader than long. Head hairs moderately numerous. Labrum with lateral borders nearly parallel; posterior surface with 6 large and 12 small sensilla near the middle. (Material studied: 16 larvae from South Australia, courtesy of Rev. B. B. Lowery.)

Genus *CAMPONOTUS* Mayr

Bodenheimer (1951: 286) mentioned the use of larvae of *Camponotus* sp. as human food.

All larvae of *Camponotus* have been compared with *C. noveboracensis* (1953: 192); only differences are given here.

Camponotus (Myrmogonia) tristis Clark. Length (through spiracles) about 7.8 mm. Praesaepium apparently permanent. Integument of AX and of venter of anterior somites with spinules in short rows. Hairs (1) 0.038-0.063 mm long, longest with alveolus and articular membrane; (2) 0.05-0.2 mm, stouter, on the ventral surface of thorax and AI and AII. Head hairs 0.075-0.15 mm long. Labrum with about 7 hairs and 7 sensilla on anterior surface; posterior surface with about 22 sensilla. (Material studied: 3 larvae from Western Australia, courtesy of Rev. B. B. Lowery.)

Camponotus (Myrmaphaenus) andrei Forel. Creighton (1969: 6): "The worker has a habit of standing beside a larva with its jaws touching it. When in this position the gaster of the worker is turned under until its tip is close to the larva."

Camponotus (Myrmophyma) cerisipes Clark. Length (through spiracles) about 8.3 mm. Praesaepium apparently permanent. Spiracles decreasing in diameter posteriorly. Integument of posterior somites and of venter of thorax and AI and AII spinulose. Body hairs all branched, 0.038-0.2 mm long, longest with alveolus and articular membrane, on venter of thorax and AI and AII. Head hairs numerous, 0.075-0.15 mm long, simple, bifid-tipped or half bifid. Labrum lacking median ventral projection; anterior surface with 6 hairs and 12 sensilla, ventral border with 2 projecting sensilla and with minute spinules; posterior surface with 6 large and 10 small sensilla. Apex of maxilla a short cone. (Material studied: 7 larvae

from South Australia, courtesy of Rev. B. B. Lowery.)

Camponotus (Myrmophyma) hartogi Forel. Length (through spiracles) about 6.3 mm. Praesaepium apparently permanent. Integument of posterior somites and of venter of anterior somites with spinules in short transverse rows. Body hairs of 3 types: (1) 0.038-0.113 mm long, bifid or multifid, longest on venter of thorax; (2) 0.088-0.125 mm long, simple, on venter of thorax and on posterior somites; (3) 0.038-0.113 mm long, stout, with rather long denticles, a few posteriorly, most on AX. Head hairs 0.033-0.1 mm long, simple or bifid. Anterior surface of labrum with 8 hairs and 2 sensilla, ventral borders with 8 sensilla, posterior surface with about 10 sensilla. (Material studied: 18 larvae from Western Australia, courtesy of Rev. B. B. Lowery.)

Camponotus (Myrmophyma) insipidus Forel. Length (through spiracles) about 7 mm. Praesaepium apparently permanent. Integument of posterior somites and venter of anterior somites with spinules in short transverse rows. Body hairs of 3 types: (1) 0.038-0.09 mm long, 2- to 5-branched (mostly 3- or 4-branched); (2) 0.063-0.169 mm long, simple, on venter of thorax and a few on posterior somites; (3) 0.038-0.1 mm long, stout, with rather long denticles, very few, most numerous on AX. Head hairs 0.025-0.1 mm long, mostly simple, a few bifid. Labrum without midventral projection; anterior surface with 9 hairs and 8 sensilla, ventral border with 6 sensilla; posterior surface with about 14 sensilla. Maxillary palps tall cones; galeae digitiform. (Material studied: 3 larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Camponotus (Myrmothrix) rufipes Fabricius. Lenko (1972) reported the larvae of the carabid beetle *Pseudomorpha laevis* Chaudoir feeding on the larvae of this ant.

Camponotus (Pseudocolobopsis) ustus Forel. Length (through spiracles) about 4.4 mm. Praesaepium apparently permanent. Spiracles decreasing slightly in diameter posteriorly. Integument of posterior somites and venter of anterior somites with spinules in short transverse rows. Body hairs of 4 types: (1) 0.038-0.08 mm long, branched, on all somites; (2) 0.063-0.1 mm long, simple, most numerous on AX; (3) 0.1-0.125 mm long, uncinuate with sharp-pointed apex and straight spur, most numerous posteriorly, some with denticulate shaft; (4) 0.075-0.113 mm long, heavy shaft with denticles, few, on posterior somites. Head hairs branched or with short denticles on single shaft. Labrum with 10 hairs on anterior surface, ventral border with 8 sensilla; posterior surface with about 20 sensilla. Maxillary palp digitiform; galea taller and digitiform. (Material studied: numerous larvae from Puerto Rico, courtesy of Dr. R. LaVigne.)

Camponotus (Tanaemyrmex) barbaricus Emery. Urbani (1968: 484-486) described and figured the larvae.

Camponotus (Tanaemyrmex) nigriceps F. Smith. Length (through spiracles) about 16.4 mm. Praesaepium apparently permanent. Body hairs: (1) 0.05-0.125 mm long, branched; (2) about 0.25 mm long, uncinuate, with strongly coiled tip, 4 in a row across the dorsum of each AI-AVIII. Head hairs very numerous, 0.075-0.113 mm long. Anterior surface of labrum with 8 hairs and 10 sensilla; ventral border with 4 sensilla and 2 on midventral lobe; posterior surface with 12 sensilla, spinules in the usual pattern but so long that the rows overlap. Mandibles with the

apical tooth tapering to a slender point. (Material studied: 5 larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Camponotus (Tanaemyrmex) postcornutus Clark. Length (through spiracles) about 6.7 mm. Praesaepium apparently permanent. Entire integument spinulose, the spinules in short transverse rows. Body hairs of 2 types: (1) 0.05-0.125 mm long, branched, the more numerous type; (2) 0.1-0.15 mm long, simple, on AX and on venter of anterior somites. Cranium about a third broader than long; integument spinulose, the spinules in transverse rows or forming a reticulate pattern. Head hairs 0.04-0.144 mm long, very numerous, simple (a few branched), the longest flexuous. Labrum lacking midventral lobe; anterior surface with 12 hairs and 10 sensilla; ventral border with 8 sensilla, spinulose; posterior surface with 6 sensilla, the spinules fine and so long that the rows overlap. Maxillae with apex shorter; more of the surface spinulose and the spinules larger. Labium with more of surface spinulose and the spinules larger. (Material studied: 2 larvae from Western Australia, courtesy of Rev. B. B. Lowery.)

Genus *POLYRHACHIS* F. Smith

Polyrhachis (Campomyrma) schwiedlandi Forel. Length (through spiracles) about 9.3 mm. Similar to *P. hookeri* (1953: 206) except as follows. Integument of posterior somites and venter of anterior somites with spinules in short transverse rows. Cranium with a small boss on each dorsolateral corner; portions of integument with minute spinules in short transverse rows. Head hairs of 2 types: (1) 0.063-0.125 mm long, denticulate on apical half; (2) 0.05-0.15 mm long, 3- to 6-branched, the longest fine and flexuous. Mandibles lack apical tooth (i.e., apex rounded and blunt). Maxillae with a sclerotized portion in the apical cone; palp taller, with 1 apical, 3 subapical and 1 lateral sensilla. (Material studied: numerous larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

We have noted that our preserved larvae clump together at the slightest provocation; the clumping is effected by the interlacing of the body hairs.

Polyrhachis (Hedomyrma) chrysothorax Viehmeyer. Length (through spiracles) about 5.6 mm. Similar to *P. hookeri* (1953: 206) except as follows. Integument of anterior somites with minute spinules in short transverse rows. Body hairs (1) 0.05-0.125 mm long, branched, generally distributed; (2) 0.05-0.133 mm long, denticulate, some on each somite, more numerous posteriorly; (3) about 0.438 mm long, slender and flexuous, on AIII-AVII. Cranium with the genae more nearly parallel. Labrum with 11 hairs and 4 sensilla on anterior surface; ventral border with 4 sensilla; posterior surface with about 20 sensilla. Mandibles with apical tooth not so sharp. (Material studied: 13 larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Polyrhachis (Hedomyrma) turneri Forel. Length (through spiracles) about 5 mm. Similar to *P. hookeri* (1953: 206) except as follows. Integument of venter of anterior somites with minute spinules in transverse rows. Body hairs (1) 0.025-0.063 mm long, branched; (2) 0.038-0.1 mm long, denticulate; (3) about 0.5 mm long, simple or deeply bifid, tips long and flexuous, in a row across the dorsum of each AIII-AVII: types 1 and 2 about equally numerous, 3 few. Head hairs numerous 0.038-0.088 mm

long, simple or with minute denticles. Labrum with 10 hairs and 8 sensilla on the anterior surface; 7 sensilla on the ventral border. Maxillae with the apex shorter and not so slender. Mandibles lacking apical tooth; apex blunt-pointed. (Material studied: 7 larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Our preserved larvae clump together at the slightest provocation; the clumping is effected by the interlacing of the body hairs.

Polyrhachis (Myrma) gagates F. Smith and *P. (M.) laboriosa* F. Smith. Ledoux 1958: the workers utilize the mature larvae as weaving tools (as in *Oecophylla*). The nest of *P. (M.) alluaudi* Emery was similar, but construction was not observed.

Polyrhachis (Myrmhopla) simplex Mayr. CORRECTION 1970: 649. —Mr. Hung has informed us that his larvae came from Israel (not Japan). Ofer (1970) described and figured the larva (p. 70-72); mobility is discussed on p. 71 and weaving on p. 73-74.

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