

SUPPLEMENTARY STUDIES ON ANT LARVAE:
FORMICINAE (HYMENOPTERA: FORMICIDAE)¹

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Introduction

This article describes formicine larvae received since the preparation of our most recent supplement (1980). The larva of *Proformica* has not been previously described. Also included are references to formicine larvae in the literature and a discussion of the status of *Colobopsis*.

The terms describing body profile and mandible shape are explained in our 1976 monograph. Our own contributions are cited by year and page only.

TRIBE 4. FORMICINI

Genus ACANTHOMYOPS Mayr

The larvae are very active and can quickly change their posture from circular to linear or reverse.

Genus FORMICA Linnaeus

Alpert and Ritcher 1975:289. Adults of the scarabaeid beetle *Cremastochilus armatus* feed on larvae of *Formica fusca* and *Formica obscuripes*.

Genus LASIUS Mayr

Lasius sitkaensis Pergande

Akre and Hill 1973. The pselaphid beetle *Adranes taylori* Wickham possesses trichomes (tufts of golden hairs) on the abdomen, tips of elytra and venter. These trichomes are highly attractive to half-grown or smaller ant larvae, less so to larger larvae and workers. The beetles are fed by the larvae through trophallaxis and obtain other nutrients by feeding on dead larvae and workers. Beetles are often seen walking about with larvae actively holding on to the trichomes with their mouthparts; Fig. 4 (p. 531) shows a larva so attached.

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Genus MYRMECOCYSTUS Wesmael

Snelling (1976:22) quoted our characterization (1968:211) of the genus and compared the larvae of this genus with those of *Lasius*. Page 23: "I provided some erroneous identifications to the Wheelers. These may be corrected: '*lugubris*'=*creightoni*; '*mojave*'=*testaceus*; '*semirufus*'=*kennedyi* (Calif.) and *depilis* (Ariz.)"

Page 7: "These data, albeit fragmentary, seem to indicate that protein, such as that derived from the tissues of other insects is essential for larval development." Page 6: "The insect fragments are placed among the larvae and these must fend for themselves. I have seen no indication that larvae of these species are fed by trophallaxis."

Page 8: Larvae are subject to desiccation; hence they are to be found in the upper chambers of the nest only in the evening and early morning. When the surface begins to warm up the brood is removed to deeper chambers.

Genus PROFORMICA Ruzsky

Profile pogonomymecoid. Integument of venter of anterior body somites and of portions of labium, maxilla and labrum papillose. Body hairs mostly with bifid tip. Antenna large. Head hairs few, with 2- or 3-branched tip. Labrum large and subrectangular. Mandible ectatommoid, with one medial tooth.

The specialization index is 18.

Proformica ferrerii Bondroit

Length (through spiracles) about 3.7 mm. Profile pogonomymecoid (i.e., diameter greatest near middle of abdomen, decreasing gradually toward anterior end and more rapidly toward posterior end, which is rounded; thorax more slender than abdomen and forming a neck, which is curved ventrally). Anus posteroventral and with a small posterior lip. Leg, wing and gonopod vestiges present. Spiracles small and decreasing in diameter posteriorly. Integument of venter of anterior somites papillose; dorsal surface of posterior somites sparsely spinulose, the spinules minute and in short to long transverse rows. Body hairs sparse, moderately long (0.024-0.07 mm), with simple, bifid or multifid tip. Cranium suboctagonal, slightly broader than long. Antenna large, with 3 (or 2) sensilla, each bearing a spinule. Head hairs few, short (0.013-0.04 mm long), unbranched or with bifid tip. Labrum large, subrectangular, slightly

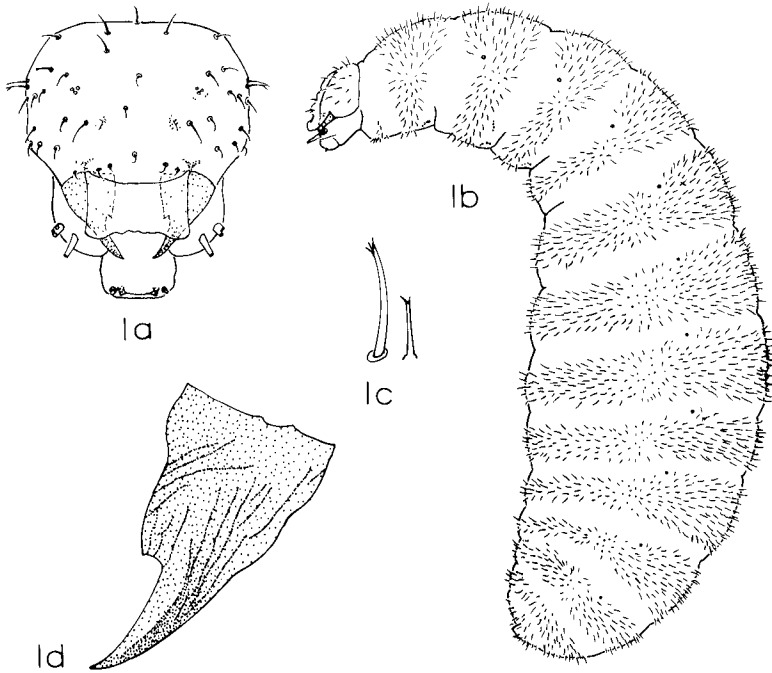


Figure 1. *Proformica ferrari*. a. Head in anterior view, X100; b. larva in side view, X33; c. two body hairs, X320; d. left mandible in anterior view, X320.

broader than long, with ventral border erose; anterior surface with 12 sensilla; with minute papillae near ventral border; ventral surface papillose and with 6 sensilla; posterior surface densely spinulose, the spinules minute and arranged in rows which radiate from the dorsolateral angles, the rows continuous near the base but broken distally; posterior surface with about 6 sensilla. Mandible large; ectatommoid (i.e., subtriangular; with a medial blade arising from the anterior surface and bearing a small medial tooth; apex curved medially to form a tooth); anterior and posterior surfaces with longitudinal rugae. Maxilla rather large; with paraboloidal apex; integument papillose, the papillae bearing minute spinules; palp a short rounded knob bearing 5 (1 encapsulated and 4 bearing a spinule each) sensilla; galea digitiform with 2 apical sensilla. Labium prominent; integument papillose; with a dorsal transverse welt bearing minute spinules in transverse rows; palp a low knob with 5

(1 encapsulated and 4 bearing a spinule each) sensilla; an isolated sensillum medial to each palp; opening of sericteries wide and with a sclerotized projection at each side. Hypopharynx with minute spinules in transverse rows. (Material studied: 16 larvae from Huesca, Spain, courtesy of X. Espadaler.)

TRIBE 7. OECOPHYLLINI

Genus OECOPHYLLA F. Smith

Hinton 1951:169. The larvae of *Wurthia aurivillii* Kemner and *W. myrmecophila* Roepke (Pyralididae) feed on the brood of ants of this genus.

TRIBE 9. PLAGIOLEPIDINI

Genus ACANTHOLEPIS Mayr

Acantholepis frauenfeldi Mayr

Tohmé and Tohmé 1975: 136-138. "Les 5 stades larvaires sont identifiés grâce à leur forme, leur dimension et surtout leurs poils." Fig. 3 (p. 136).

TRIBE 10. BRACHYMYRMECINI

Genus BRACHYMYRMEX Mayr

Brachymyrmex admotus Mayr

Length (through spiracles) about 1.6 mm. Very similar to *Brachymyrmex depilis* (1953:139) except in the following details. Type 2 body hairs twice as long (0.15 mm). Head hairs 2- or 3-branched: 0.038-0.075 mm long. Mandible with apical tooth slightly more curved medially. Palp and galea subequal in height; galea more slender. Labial palp taller. (Material studied: 6 larvae from Costa Rica, courtesy of Jack Longino.)

TRIBE 12. CAMPONOTINI

When we defined "praesaepium" (1953:180) we had overlooked the first description (without a name) of the structure by W. M. Wheeler and Bailey (1920:270-271): — "In a study undertaken by the senior author and Mr. George C. Wheeler of the larvae of a large number of other ant genera, no structure comparable to the Pseudomyrmex trophothylax has been found, except in certain species

of *Camponotus* of the subgenus *Colobopsis*. In all the species of the latter subgenus examined the larva is very hypocephalic and the ventral portion of the first abdominal segment projects considerably beyond the thoracic segments and presents a pronounced concavity or basin in the mid-ventral region precisely in the position of the trophothylax of the *Pseudomyrminae*. A feeble vestige occurs in many *Camponotus* larvae belonging to other subgenera. No solid pellet is deposited in the basin of *Colobopsis*, but it may, perhaps, be used to hold a supply of the liquid food regurgitated by the workers or of the saliva secreted by the larva itself for the benefit of its attendants." We later found pellets in the praesaepium of *Colobopsis* (1970:650).

Genus CAMPONOTUS Mayr

Camponotus rasilis W. M. Wheeler

Petralia and Vinson 1979. Venter—description and SEM.

Genus COLOBOPSIS Mayr

Colobopsis was established by Mayr in 1861 as a genus. In 1889 Emery "reduced it to a subgenus under *Camponotus*, owing to the existence of forms intermediate between these two groups and the relatively unimportant distinguishing characters of *Colobopsis*" (W. M. Wheeler 1904:139). And there it has remained through W. M. Wheeler's "Key to the Genera and Subgenera of Ants" (1922), Emery's "Genera Insectorum" (1925), Creighton's "The Ants of North America" (1950). Brown (1973:179) did not employ subgenera; so he had to synonymize it with *Camponotus* or raise it to generic rank; he chose the former.

However, we have noticed of late a tendency among myrmecologists to elevate *Colobopsis* to generic rank (e.g., Snelling 1981:404). Although we have some doubts about adult characters, we can certainly support the elevation by larval characters. In 1953:181 we wrote: "The genera of this tribe are so similar that we cannot distinguish them; hence we have not attempted to key them. *Colobopsis* is, however, exceptional; differences of generic magnitude separate it not only from the other subgenera of *Camponotus* but also from the other genera of Camponotini."

Tribe Camponotini

1. Posterior $\frac{1}{2}$ of venter of AII raised to form transverse welt, and, on either side ridges from the welt extend forward
2. Body hairs numerous
3. Body hairs of 5 types: (1) 2- to 6-branched; branches all in same plane, the most numerous type; (2) simple, short, slightly curved; (3) few, simple, long and whip-like; (4) few, denticulate (5) few, unciniate
4. Antenna small
5. Head hairs numerous, long

Colobopsis

1. Praesaepium formed from ventral surface of TIII and AI; anterior border of AII forms ventral wall; no side walls
2. Body hairs sparse
3. Body hairs of 3 types: mostly (1) simple or (2) bifid; few (3) very long and whip-like; none unciniate.
4. Antenna minute, peg-like
5. Head hairs moderately numerous, short

Colobopsis pylartes W. M. Wheeler

Petralia and Vinson 1979. Venter—description and SEM.

Genus POLYRACHIS F. Smith

Hinton 1951:169. The larvae of *Wurthia aurivillii* Kemner and *W. myrmecophila* Roepke (Pyralididae) feed on the brood of ants in this genus.

Polyrhachis dives F. Smith

Hinton 1951: 167. The larvae of *Batrachedra myrmecophila* Snell. (Cosmopterygidae) feed on the brood of this ant.

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