

# STUDIES ON CALIFORNIA ANTS, 5. REVISIONARY NOTES ON SOME SPECIES OF CAMPONOTUS, SUBGENUS TANAEMYRMEX

(HYMENOPTERA: FORMICIDAE)

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**ABSTRACT**—The status of four names applied to North American *Camponotus* is discussed: *C. maccooki* is restricted to the type series from Guadalupe Island, Mexico; *C. semitestaceus* is elevated to species level and most mainland records for *C. maccooki* referred to it; *C. dumetorum* is recognized as a valid species in southern California; *C. maculatus maccooki berkeleyensis* is made a synonym of *C. vicinus*. The taxonomic characters of the species are discussed and figured, and appropriate lectotype designations are made.

The genus *Camponotus*, prior to the reclassification proposed by Creighton (1950), was represented in the United States by an unmanageable array of forms. One of the most perplexing of the several complexes recognized by Wheeler (1910) was that assembled around the protean species *C. maculatus* (F.). Creighton transferred these to the subgenus *Tanaemyrmex* from the nominate subgenus; several forms were elevated to specific rank and the remainder largely disappeared into synonymy. Creighton's rearrangement has remained essentially unchanged in subsequent years. An interest in the status of one name prompted me to reexamine the types of several forms. As a result of this study the following nomenclatorial changes are proposed.

Forel (1879) described *C. sylvaticus maccooki* from specimens of all castes taken on Guadalupe Island, Mexico, some two hundred miles west of central Baja California. The original description is very vague by current standards and the identity of this ant has depended largely upon the interpretation rendered by Carlo Emery (1894). Emery's conclusions were based upon a single cotype worker media which he received from Forel. Eight cotypes from the Forel collection have been studied and it is clear that Emery's conclusions were invalid and a drastic revision of certain of our forms is necessary.

In addition to the Forel cotype Emery had several additional samples of *Camponotus* which he had received from Theodore Pergande. Pergande usually retained a portion of the series from which samples were sent to Emery. This material, retained by Pergande, is largely still extant in the collections of the United States National Museum and is an invaluable aid in sorting out some nomenclatorial problems. The National Museum specimens were studied during this investigation.

Among the samples which Emery received from Pergande was a

series from Descanso, San Diego County, California. Emery considered these specimens, largely worker medias, to be conspecific with Forel's Guadalupe Island form. At the same time (1894) he transferred *C. sylvaticus maccooki* to *C. maculatus* as a subspecies. He redescribed and illustrated *C. maculatus maccooki* on the basis of the Descanso specimens. Until the present time the concept of this species has been dependent upon Emery's description and figures.

At the same time Emery described as new *C. maculatus vicinus* var. *semitestaceus*. This variety was based on a few specimens from Plumas County (erroneously cited as "Plummer Co.") and Fuller's Mill, San Jacinto, California. He distinguished this new form from *C. maculatus maccooki* by its slightly less shiny occipital area. Although no mention was made of a basally lobulate antennal scape in the description, Emery brought his new variety out in his key along with *C. maculatus maccooki*, so that both, presumably, possessed such a lobe as that which he had already attributed to Forel's ant. My examination of the Pergande material from Plumas County, San Jacinto and Descanso reveals that all are very similar; the scape is flattened at the base and slightly expanded so that a barely discernible lobule is present. These specimens are all equivalent to the ant which Creighton (1950) recognized as *C. maccooki* and associated major workers possess a pronounced basal lobe on the scape.

Wheeler (1910), in reviewing the United States species of *Campotonotus*, retained, unchanged, Emery's interpretations of the various forms. To these, however, he added a few new varieties. Only one of these new varieties is of concern at this time: *C. maculatus dumetorum*, described from workers and males from the San Gabriel Mountains, Los Angeles County. The diagnostic feature of this form was the exceptional development of the lobe on the antennal scape. An additional form was described by Forel (1914) as *C. maculatus maccooki* var. *berkeleyensis* from workers taken at Berkeley, California. This was synonymized by Wheeler (1917) under *C. maculatus dumetorum*. Creighton (1950) elevated *C. maculatus maccooki* to species level and assigned to it, as synonyms, *C. maculatus vicinus* var. *semitestaceus*, *C. m. dumetorum*, and *C. m. vicinus berkeleyensis*.

Some years ago Mr. R. H. Crandall expressed to me his opinion that *C. m. dumetorum* was a valid species. Subsequent collections which I made in southern California convinced me that Crandall's observation was well taken. Accordingly, I examined considerable material from the southwestern United States, as well as Pergande's original series and cotypes of *C. sylvaticus maccooki*, *C. maculatus vicinus semitestaceus*, *C. maculatus dumetorum*, and *C. maculatus vicinus berkeleyensis* with the following results.

First, *C. sylvaticus maccooki*, from Guadalupe Island, has little in

common with the mainland ant assigned to that name. The scape is flattened basally but there is no trace of a lateral lobule. Thus, in Creighton's key it will run directly to *C. vicinus*. At the moment the only thing to separate *C. maccooki*, as here understood and restricted to the type series, from *C. vicinus* is that the majors of the former have a slightly longer scape (extending well beyond the occipital corner) and fewer erect hairs on the body. It seems probable that *C. maccooki* will eventually be recognized as a synonym of *C. vicinus*, but I believe that additional samples from Guadalupe Island are necessary before this can be certain.

Since the name *C. maccooki* has here been restricted to the insular species, the species from the western United States must then be known as *C. semitestaceus* and nearly all mainland records of *C. maccooki* transferred to *C. semitestaceus*. The type locality is here restricted to Plumas County, the first of two California localities mentioned by Emery. This species extends from northern Baja California del Norte, Mexico, north along the Coast Ranges to Mendocino County, California, the San Joaquin and Sacramento Valleys, the foothills of Sierra Nevada and Cascade Mountains (below 5500 ft.) northward into Oregon, and the Great Basin Desert of Nevada, Oregon, and Washington.

I do not regard *C. maculatus dumetorum* as a synonym of *C. semitestaceus*, but believe that it should be accorded specific rank. That *C. semitestaceus* and *C. dumetorum* are closely related cannot be denied, and both are closely related to *C. vicinus* and other members of the subgenus *Tanaemyrmex* in western North America.

Although both species possess a lobe at the base of the antennal scape this is much more variable in *C. semitestaceus* than in *C. dumetorum*; in some specimens of *C. semitestaceus* the lobe may be so reduced that it is barely discernible. In no specimens which I have seen, however, does it approach the condition seen in *C. dumetorum*. In this species the lobe is always prominent, strongly flattened, usually somewhat angulate on its lower margin. This difference, while obvious when both species are available for comparison, is not, of itself, sufficiently clear-cut to prove useful in separating the two.

The two species differ markedly in the shape of the frontal lobes. In *C. semitestaceus* the margins of the lobe are expanded above the antennal sockets, the lyrate condition normal to most species of this group. The frontal area, measured from the clypeal base to its upper margin, is longer than wide, even in the largest specimens available to me. This is not true in *C. dumetorum* in which the lateral margins are arcuately expanded above the level of the antennal sockets, so that when measured in the above manner, the frontal area is broader than long. The two species differ in other cephalic characters, but these are largely of a more subtle nature. In *C. dumetorum* the antennal scape

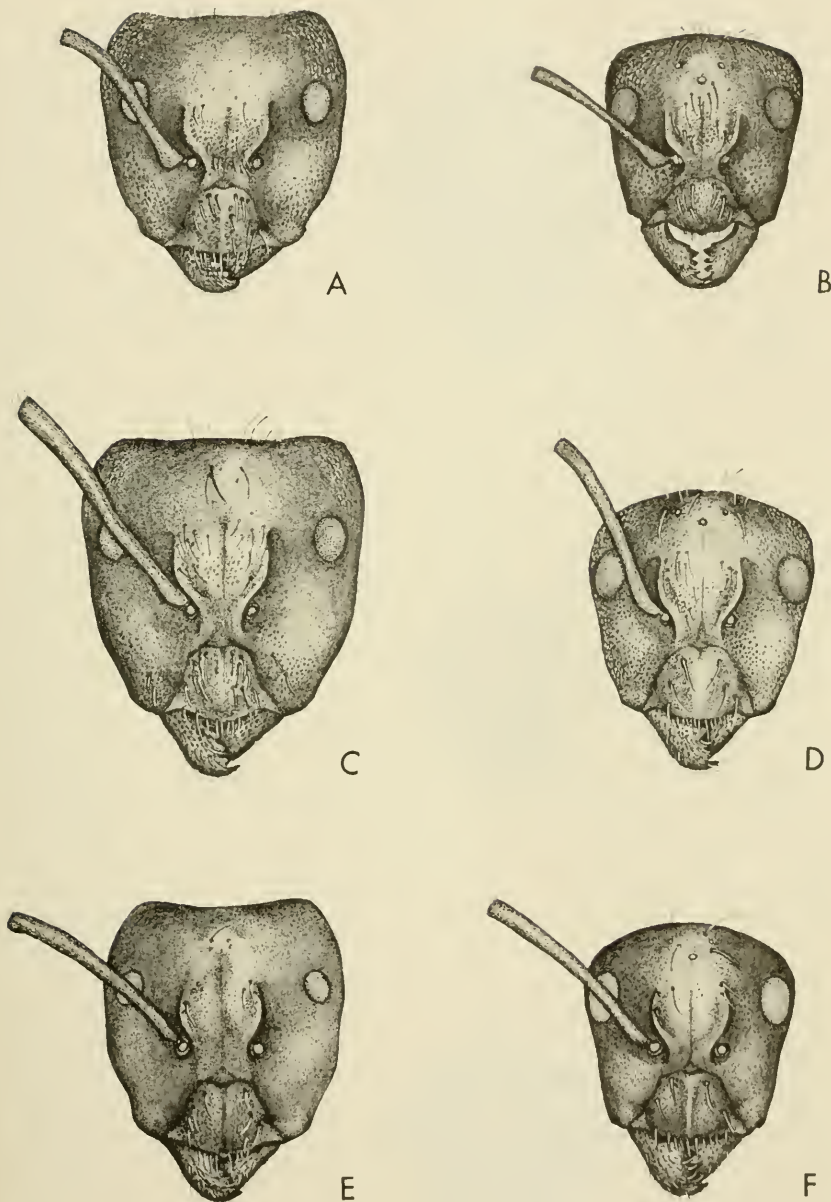
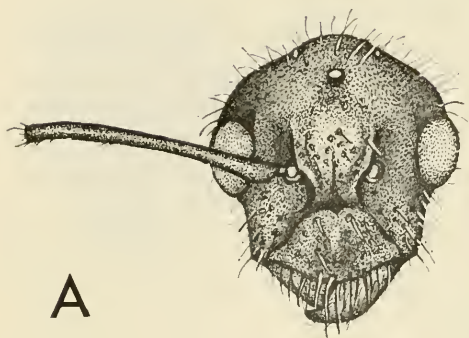
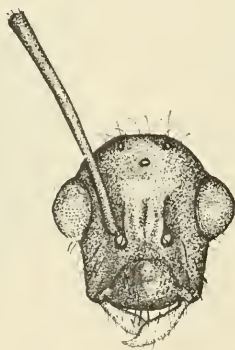
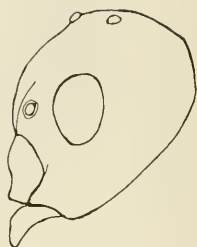


Fig. 1, *Camponotus* (*Tanaemyrmex*) spp., frontal view of head: A, *C. dumetorum* Wheeler, worker major (lectotype); B, *C. semitestaceus* Emery, worker major (Plumas Co., Calif.); C, *C. maccooki* Forel, worker major (cotype); D, *C. dumetorum*, female (San Gabriel Mts., Calif.); E, *C. semitestaceus*, female (Tuolumne Co., Calif.); F, *C. maccooki*, female (cotype).

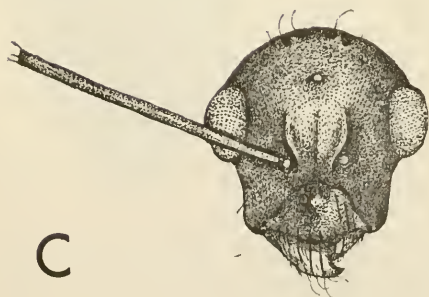




A



B



C



is a little shorter; the outer margins of the head are a little less strongly narrowed toward the mandibular insertions and the integument, especially on the lower third of the face, is duller and more conspicuously roughened. This roughening is most conspicuous on the clypeus. The clypeal disc of *C. semitestaceus* is tessellate, slightly shining and with few scattered, coarse punctures from which arise long erect bristle-like hairs. In addition, there are scattered fine, shallow, non-piligerous punctures, especially on the lower half of the clypeus. In contrast, the clypeal integument of *C. dumetorum* is dull and the surface is distinctly roughened and uneven. The coarse, piligerous punctures are larger, more elongated and decidedly more numerous. While some specimens of *C. semitestaceus* may have a pair of setigerous punctures at the basal one-fifth of the clypeal disc, the punctures are concentrated along the lateral and basal clypeal margins. In *C. dumetorum* the piligerous punctures are scattered over the entire clypeal disc and are absent only from a very narrow longitudinal median strip.

The stiff erect hairs of *C. dumetorum* are more abundant on all body surfaces than in *C. semitestaceus*; this is most obvious on the gaster. The appressed pubescence is longer, denser, and more conspicuous in Wheeler's species and on the epinotum these fine hairs may be readily discerned in profile. A similar examination of the epinotal profile of *C. semitestaceus* reveals little detectable fine pubescence. In this species it is so closely appressed against the surface that it usually cannot be seen at all. In rare specimens one or two hairs may be visible in profile and I suspect that this is accidental. The femora of *C. semitestaceus* are characterized by the scarcity of coarse erect hairs. This is especially evident on the hind femora which typically have no erect hairs, although two or three may be present. Such is not true of *C. dumetorum* for erect hairs are abundant on the under surface of all femora, and often on the outer face as well. The above characterizations apply to the workers and female castes, and are supplemented by differences in the configuration of the head and petiole.

The males of *C. dumetorum* and *C. semitestaceus* differ from one another to a significant degree. The basal portion of the scape of *C. semitestaceus* male, while distinctly flattened, seldom possesses a distinct lobe, although the lower margin may be slightly expanded. The scape of *C. dumetorum*, on the other hand, seems always to have a fully distinct lobe (fig. 2A). The upper part of the head of *C. semitestaceus*, in full face view, is evenly rounded across the occiput so

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Fig. 2, *Camponotus* (*Tanaemyrmex*) spp., frontal view (left) and lateral view (right): A, *C. dumetorum* Wheeler, male (cotype, San Gabriel Mts., Calif.); B, *C. semitestaceus* Emery, male (Plumas Co., Calif.); C, *C. maccooki* Forel, male (cotype).

that this area presents a nearly semicircular outline. When viewed in a like manner the head of the *C. dumetorum* male is seen to be distinctly elevated in the ocellar region. Further, there are slight, but perceptible, occipital angles. In a few specimens the occipital angles are quite pronounced and in these the occipital margin may be essentially transverse. In profile, the head of the *C. dumetorum* male has a more prolonged occiput, so that the distance from the eye to the farthest point of the occiput is distinctly greater than the maximum eye length (equal to or slightly exceeding maximum eye length in *C. semitestaceus*). The integument of the *C. dumetorum* male is much duller; the coarse erect hairs are both longer and more abundant. The petiolar scale of males of *C. semitestaceus*, when viewed from above, is from 1.5 to 1.8 times wider than long, while that of *C. dumetorum* is 2.1 or more times wider than long.

The above comments are drawn largely from original material of both species. In the case of *C. semitestaceus* this is the material retained by Pergande from samples sent to Emery. Cotypes of *C. maculatus dumetorum*, in the collections of the American Museum of Natural History, Los Angeles County Museum of Natural History, Museum of Comparative Zoology, and United States National Museum, have been studied. A worker major of *C. maculatus dumetorum*, in the Museum of Comparative Zoology, is here selected as the lectotype of this name.

A single worker media of *C. maculatus maccooki* var. *berkeleyensis*, one of the two original cotypes, has been studied. It is indistinguishable from *C. vicinus* (new synonym).

The synonymies of the various forms discussed here should be arranged as follows:

- C. (Tanaemyrmex) semitestaceus* Emery, 1893 (**New status**)  
= *C. maculatus maccooki*, sensu Emery, et seq., nec Forel, 1879
- C. (Tanaemyrmex) dumetorum* Wheeler, 1910 (**New status**)
- C. (Tanaemyrmex) maccooki* Forel, 1879
- C. (Tanaemyrmex) vicinus* Mayr, 1870
  - = var. *nitidiventris* Emery, 1893
  - = var. *infernalis* Wheeler, 1910
  - = var. *luteangulus* Wheeler, 1910
  - = var. *maritimus* Wheeler, 1910
  - = var. *plorabilis* Wheeler, 1910
  - = var. *subrostratus* Forel, 1914
  - = var. *berkeleyensis* Forel, 1914 (**New synonym**)

The extensive synonymy under *C. vicinus* is that proposed by Creighton (1950).

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THE AMERICAN BEACH FLIES OF THE *CANACE SNODGRASSII* GROUP  
(DIPTERA: CANACEIDAE)

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**ABSTRACT**—Characters of the male genitalia are figured which show the existence of four closely related American species of the genus *Canace*: *aldrichi* Cresson from California, *currani* n. sp. from Panama and Ecuador, *macateei* (Malloch) from the Atlantic and Gulf Coasts of North America, and *snodgrassii* Coquillett from Panama and the Galapagos Islands. Taxonomic and distributional notes and a key to species are presented.

Examination of the male genitalia of the American beach flies related to *Canace snodgrassii* Coquillett reveals the existence of four species in the group instead of the two which are currently recognized. *C. snodgrassii* occurs in the Galapagos Islands and Panama and *C. aldrichi* Cresson is known only from California. The population from the Atlantic and Gulf Coasts of North America will now take the name of *C. macateei* (Malloch), and a population from Panama and Ecuador is described as a new species.

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