STUDIES ON CALIFORNIA ANTS.
2. *MYRMECINA CALIFORNICA* M. R. SMITH (Hymenoptera; Formicidae)

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Since it was originally described by Smith (1948) *Myrmecina californica* has remained little known. In spite of the ridiculous assertion of T. W. Cook (1953), this species does not have a habitat range which includes the "entire United States," nor is there a cotype specimen in the California Academy of Sciences. This species was based on a unique specimen, now in the U. S. National Museum collections, collected in Santa Barbara, California.

Until recently, the species has been known only from this unique type specimen. Additional material has since become available, and it may be shown that the range includes the mountainous areas of the California Coast, with apparent extensions into the interior along the inland valleys. The first specimens to come to my attention were two workers collected at Pleasant's Valley, Solano County, on April 15, 1961 by Mr. A. J. Beck. According to Dr. Robert O. Schuster, from whom I received these specimens, "Pleasant's Valley is along the foothills . . . between Winters and Vacaville." The specimens came from a one quart volume Berlese sample of litter of mixed *Quercus* sp. and poison oak.

Three additional workers, also made available by Dr. Schuster, are from a site 5.4 miles southwest of Winters, Yolo County, taken in Berlese sample by Mr. F. C. Raney, April 15, 1960.

The third capture, seven foraging workers, was made in Eaton Canyon wash, near Pasadena, Los Angeles County, on June 6, 1963. I collected these individuals in leaf litter under a small grove of oaks, *Quercus* sp. The workers were picked up singly by searching through the litter. An effort to locate the colony proved futile, and several subsequent visits to the site yielded no additional specimens.

There is, finally, a single specimen, agreeing in all particulars with the above specimens, recovered from a Berlese sample taken at the Southwest Research Station, Chiricahua Mountains, Arizona, on August 7, 1958, by L. M. Smith and R. O. Schuster. Included in this

sample were two workers typical of *M. americana brevispinosa* Emery. The discovery of *M. californica* at a station so far removed from what would seem to be its normal habitat is very perplexing. Certainly it points out the necessity for intensive collecting in the Southwest to clarify these puzzling distributional discontinuities.

When *M. californica* was described, Dr. Smith stressed several characteristics as diagnositic of his new species. These were as follows: (1) base of antennal scape broad and flat; (2) anterior border of clypeus distinctly tridentate; (3) body weakly-sculptured, the pronotum and mesonotum largely smooth and shining; (4) body and appendages reddish-brown, gaster blackish.

Two specimens from the Eaton Canyon sample were sent to Dr. Smith for comparison with the type. These specimens, according to him, differ from the type as follows: "the anterior border of the clypeus is not 3-toothed, the antennal scape not as flattened and broad, the head smoother and more polished." All the specimens recorded above agree in these two very important aspects. The differences noted above present us with varying possibilities of interpretation.

Myrmecina americana differs from *M. californica* in lacking the tridentate clypeal border, the slender scape which is not basally flattened, and has the head and thorax with well developed rugae, the pronotum and mesonotum never largely smooth and shining. In addition, fully colored individuals of both subspecies of *M. americana* are much darker in color. Although the specimens from California have the clypeal border and scapal characteristics of the Eastern species, there are still certain characters which seem to be more like those assigned by Smith to *M. californica.* In the latter, the head of the type is 1.06 times as long as broad, while in the material before me, the variance is from 1.05 to 1.07 times as long as broad, so that the type of *M. californica* falls exactly in the middle of this range. In a random sample of *M. americana* (including its subspecies *M. a. brevispinosa*) the variance is from 0.90 to 1.02 times as long as broad.

In the sculpturing of the head and thorax, the present specimens are undeniably close to *M. californica*, of which Smith says ". . . clypeal lobe, frontal area, lower side of head, propleura, pronotum, mesonotum, legs, epinotal declivity and gaster largely smooth and shining; rest of body subopaque." If this condition is the same in the type as in the specimens now at hand, then the differences which separate most of the California material from Eastern are very strik-

ing. For these areas of the head and thorax of *M. americana* are crossed by prominent rugae and punctures which give these parts a decidedly subopaque appearance. The two specimens from Pleasant's Valley, however, are somewhat intermediate in these characters; the frontal surface of the head is conspicuously duller than in the other California specimens, with faint rugae and punctures highly suggestive of those seen in *M. americana.* The thorax, too, reflects this intermediate nature; there are a number of prominent, rather widely spaced rugae on the sides of the thorax, and the pronotum and mesonotum are duller than in the rest of the California specimens, with vague suggestions of the longitudinal rugae which are so conspicuous in the Eastern form. In one of these individuals there is an indication of a median tooth on the anterior clypeal border.

The Arizona specimen presents certain problems of its own. The head is almost exactly 1.05 times as long as broad, which places it barely within the head dimension limits of *M. californica.* In cephalic sculpturing it is similar to the above mentioned specimens from Pleasant'sValley, punctate and rugulate, but not so sharply so as in *M. americana.* The dorsum of the thorax is smooth and shining, as in most of the California specimens, but with prominent widely spaced rugae on the mesopleurae and epinotal sides. The anterior border of the clypeus not only lacks the median tooth, but has the lateral ones so reduced in size that they are barely perceptible. At this point it may perhaps be pertinent to point out an inconsistency in regard to Smith's treatment of the clypeal dentition. In his key to the *Myrmecina* species he says ". . . anterior border of clypeal lobe *distinctly* tridentate . . ." (Italics mine), while his description on the same page states that the median tooth is ". . . small and *indistinct*." (Italics mine). It is difficult to reconcile these two contradictory statements. The fact that a feebly tridentate condition is known to occur in *M. americana* (as well as the opposite condition; almost total reduction of all teeth) would seem to indicate caution in relying very heavily on a feature known to be highly variable.

Little mention has been made thus far of color, since this is a notoriously poor indicator of specificity. However, it seems worthwhile to point out that all California specimens seen thus far are consistently lighter colored than are any individuals I have seen of either *M. a. americana* or *M. a. brevispinosa.* The majority of the specimens referred to *M. californica* have the head, thorax, petiole and postpetiole light yellowish-red, with the gaster light reddish-brown, or at least somewhat darker. The one Arizona specimen has

the head and thorax reddish-brown, the gaster somewhat darker. This is in rather strong contrast to the uniformly dark brownish color seen in the other forms.

As outlined above, the features by which *M. californica* has been separated from *M. americana* are highly variable, and tend to emphasize the close relationship of the two. Since it seems probable that the former is no more than a morphologically distinct form of the latter, I propose to reduce *M. californica* to the level of a subspecies of *M. americana.* The nearly complete breakdown of the distinctive characteristics of *M. californica* has shown that continued recognition of this form as a full species is no longer tenable. Furthermore, reducing it to the level of a subspecies is in keeping with the presently established treatment afforded morphological races in other genera.

In the key presented below I have attempted to facilitate the identification of the various forms now known to occur in the United States. Because it apparently is known only from the original specimens, *M. a. texana* Wheeler is included on the basis of the description only. This key is based on workers only.

Key to Subspecies of *Myrmecina americana*

1. Base of first gastric segment smooth and shining, with only scattered piligerous punctures; epinotal spines usually without recurved tips; thoracic sculpturing variable 2
Base of first gastric segment shagreened, subopaque; epinotal spines well developed, stout, tips strongly recurved; longitudinal thoracic rugulae unusually coarse (Texas) ..... subsp. *texana* Wheeler.

2. Thoracic dorsum smooth and shining, with scattered piligerous punctures, longitudinal rugulae obsolete or absent; top of head usually smooth and shining, sometimes surface roughened by indistinct rugulae; epinotal spines less than twice as long as basal width of spines; head and thorax yellowish to reddish brown, gaster darker (California, Arizona) ..... subsp. *californica* M. Smith.
Thoracic dorsum with prominent longitudinal rugulae; top of head with distinct longitudinal rugulae; epinotal spines variable; body concolorous, or very nearly so 3

3. Epinotal spines long, usually turned upward apically; cephalic rugulae heavy; occipital border with pronounced median impression; length 3.5 mm. (Atlantic states south to Georgia and Alabama, west to Iowa; Colorado) ..... subsp. *americana* Emery.

Epinotal spines shorter, dentiform; cephalic rugulae weak, sometime absent medially; occipital border feebly impressed; length 2.5 mm. (southeastern states to New York, west to Arizona) . . . . . subsp. *brevispinosa* Emery.

Literature Cited

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