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IN THE UNITED STATES
(Hymenoptera: Formicidae)

By ROY R. SNELLING

CONTRIBUTIONS IN SCIENCE



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THE ANT GENUS *CONOMYRMA* IN THE UNITED STATES
(HYMENOPTERA: FORMICIDAE)¹

By ROY R. SNELLING²

ABSTRACT: The generic name *Conomyrma* Forel is recognized as a valid genus and all United States species formerly assigned to *Dorymyrmex* are placed in *Conomyrma*. The subgenus *Biconomyrma* = *Conomyrma* (N. SYN.). The specific and varietal names applied to North American forms are considered and the following species are recognized: *bicolor* (Wheeler), *flavopecta* (M. Smith) and *insana* (Buckley) (= *pyramicus* of North American literature = *flavus* McCook = *nigra* Pergande = *antillana* Forel = *smithi* Cole = *brunnea* of North American literature = *wheeleri* Kusnezov, all N. SYN.).

Conomyrma was established by Forel (1913) as a subgenus of *Dorymyrmex*. Santschi (1922) designated *Prenolepis pyramica* Roger, one of the originally included species, as the type species of *Conomyrma*; Donisthorpe (1943) designated the same species as the type. The subgeneric name was rejected by Creighton (1950) on the grounds that *Conomyrma* was coextensive with *Dorymyrmex*, once those species lacking a propodeal tooth were removed to *Araucomyrmex*, as was done by Gallardo (1916).

Kusnezov (1952) restudied the problem and proposed to divide *Dorymyrmex* into two genera, *Dorymyrmex* and *Conomyrma*. Within *Dorymyrmex* five subgenera, including *Araucomyrmex*, were recognized. *Conomyrma* was divided into two subgenera: *Biconomyrma* and *Conomyrma*, s. str. The genus *Conomyrma* was separated from *Dorymyrmex* in the worker caste by the lack of a psammophore and in the female caste by the presence of a single, versus two, cubital cells in the forewing. Eisner (1957) noted that the proventriculi of the workers of *Dorymyrmex* and *Conomyrma* were different. Larvae were described by G. C. and J. Wheeler (1951) for "*Dorymyrmex pyramicus*" (= *Conomyrma pyramica*, sensu Kusnezov) and "*Araucomyrmex tener*" and differences between them were noted. The two were separated in the key by means of the posterior projection: a postero-ventrally directed cone in *pyramicus* and a knob in *tener*.

Kusnezov (1952) failed to designate type species for the new subgenera proposed, but corrected his oversight in a subsequent paper (1959). In this latter paper he proposed elevation of several of the subgenera recognized in 1952 to full generic status. Thus, *Biconomyrma* was elevated to generic level.

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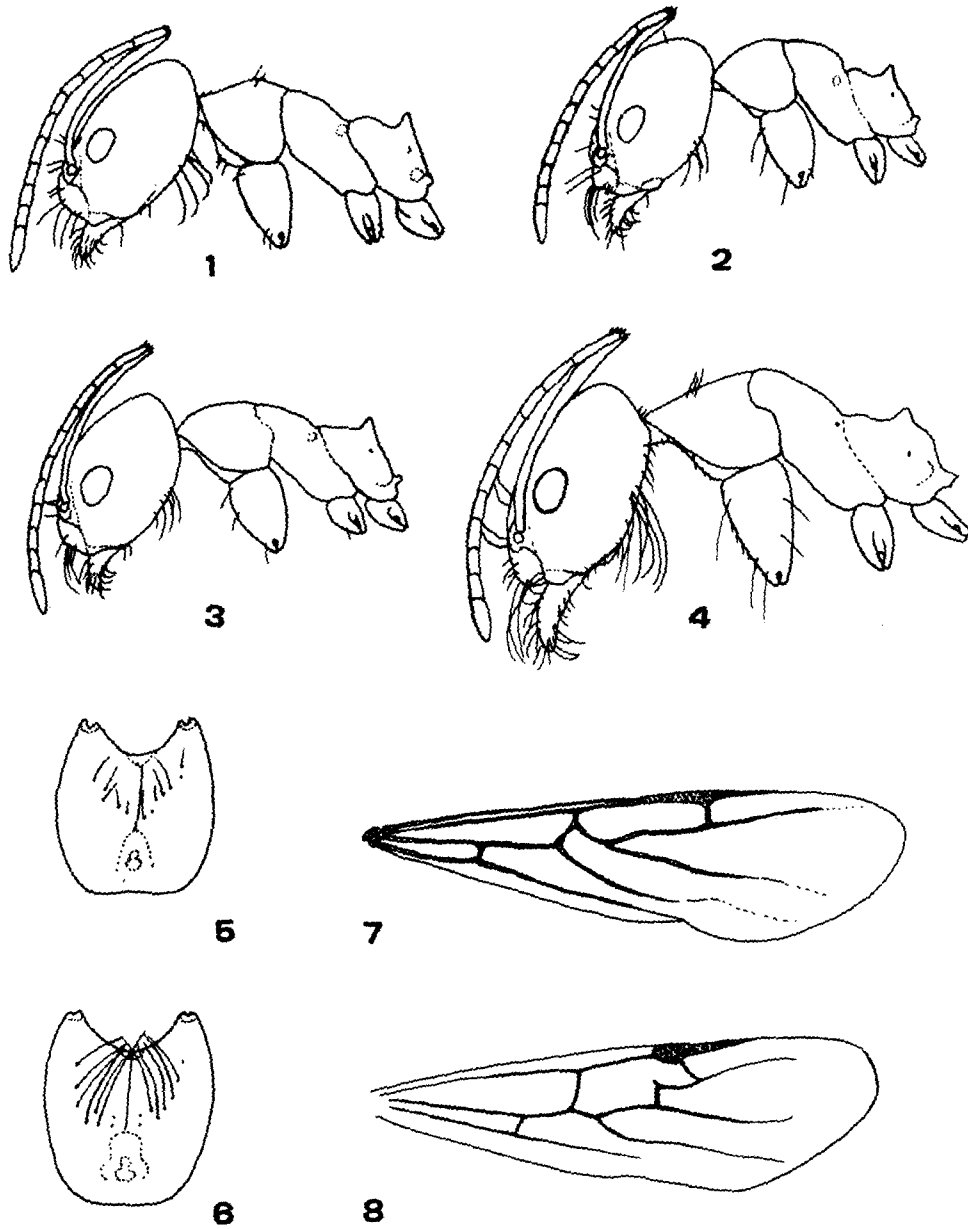


FIGURE 1-4, profile of head and thorax of: 1, *Conomyrma pyramicus* (Brazil); 2, *C. insana* (Texas); 3, *C. flavopectus* (Florida); 4, *Dorymyrmex* sp. (Chile). Figures 5-6, underside of head of: 5, *C. bicolor* (Arizona); 6, *Dorymyrmex* sp. (Chile). Figures 7-8, forewing of female: 7, *C. insana* (Texas); 8, *C. pyramicus* (after Kusnezov, 1952). Figures by Ruth A. DeNicola.

The separation of *Biconomyrma* from *Conomyrma* depends upon slight differences in wing venation of the female and thoracic profile of the worker. Since one species (*flavopectus* M. Sm.) possesses worker characteristics of *Conomyrma*, s. str., and female characteristics of *Biconomyrma*, it is obvious that the attempted segregation of *Conomyrma* species into subgenera is untenable. Hence, *Biconomyrma* = *Conomyrma* (NEW SYNONYMY). *Conomyrma*, as a genus, is sufficiently defensible in the characteristic wing venation of the female, the reduced psammophore, and structure of the proventriculus in the worker that it may be recognized as a genus apart from *Dorymyrmex*.

I differ with Kusnezov and prior authors with respect to their use of the word psammophore. These workers claim that a psammophore is present in ants now assigned to *Dorymyrmex* but absent in those placed in *Conomyrma*. I believe that the setalike hairs on the ventral head surface must be considered a psammophore. In those ants which truly lack a psammophore, the hairs present are short, usually irregular in length, and randomly distributed. A psammophore is said to be present when there is a discrete group of elongate hairs, uniform in length, arranged in a definite pattern, the result of which is the presence of a discrete "basket" on the cephalic venter. These hairs are typically flattened and distinctly curved or even curled. Such is the case in both *Conomyrma* (Fig. 5) and *Dorymyrmex* (Fig. 6). The only appreciable difference is that in the latter genus the hairs extend forward over the oral cavity; they are half, or more, as long as the head is wide. In *Conomyrma* the hairs are quite short, much less than half the head width, and end far short of the oral cavity.

Dorymyrmex, with its related subgenera and/or genera, was restricted to South America by Kusnezov (1952). *Conomyrma*, together with *Biconomyrma*, was distributed from Argentina and Chile north to the United States and the Caribbean. Kusnezov (1952) listed the species in *Conomyrma-Biconomyrma*. Half of these are South American species and have no direct bearing on our problems, hence are not considered.

Roger (1863) described *Prenolepis pyramica* from a single specimen from Corrientes, State of Bahia, Brazil. The name was transferred to *Dorymyrmex* by Mayr (1866). By 1900 *pyramicus* was assumed to range from Argentina to the southern United States and over the entire Caribbean area. It had acquired a number of varieties and subspecies and had also received a wholly different identity. Wheeler (1902) recognized that *Formica insana* Buckley, 1866, described from central Texas, belonged to *Dorymyrmex* and stated that *insana* was undoubtedly a synonym of *pyramicus*. Buckley's *insana* was uniformly black or brownish black; Roger stated that *pyramicus* possessed a yellowish red head and thorax and brownish gaster. It may be seen from this, then, that *pyramicus* as described by Roger agreed closely with the description of the new variety, *bicolor*, of Wheeler (1906). In 1912 Emery listed four subspecies and five varieties of *pyramicus* throughout its range.

The first attempt to classify our forms was that of Creighton who considered that within the United States there existed the species *pyramicus*, represented by three subspecies:

- pyramicus pyramicus* (Roger, 1863)
= *insana* Buckley, 1866
= *flavus* McCook, 1879
= *nigra* Pergande, 1895
= *smithi* Cole, 1936
pyramicus bicolor Wheeler, 1906
pyramicus flavopectus M. Smith, 1944

Creighton's most important contribution was that morphological characters were used, for the first time, in differentiating our forms. Kusnezov (1952) removed these taxa from *Dorymyrmex* to *Conomyrma*, dividing them between his two subgenera in the following manner:

- subg. *Biconomyrma*
bicolor (Wheeler)
brunnea (Forel)
wheeleri Kusnezov
subg. *Conomyrma*
flavopectus (M. Smith)
pyramica (Roger)

All these were treated as species occurring in the United States; the new species *wheeleri* was added from Tucson, Arizona, and *brunnea*, originally described from Argentina was tentatively thought by Kusnezov to occur here. Since these five were divided between subgenera established on morphological characters, it follows that the species were separable into two groups and that *bicolor* was thus severed from *pyramicus*. It is evident in reading Kusnezov's paper that his concept of *pyramicus* was based on material from South America and that the inclusion of the United States and Mexico in its range was based largely on the literature. Presumably, too, *pyramicus* in this interpretation continued to carry the various synonyms assigned to it by Creighton. The inclusion of *brunnea* as a part of our fauna was based on a series of specimens from Colorado Springs, Colorado, and determined as that form by Wheeler; Kusnezov wisely accepted this determination with reservation.

As indicated above, I do not consider the subgenus *Biconomyrma* worthy of recognition since it is based on minor characters, but these characters are useful in separating species. The workers of *flavopecta* and *pyramica* both possess a mesonotum which in profile slopes evenly into the mesopropodeal suture, there being no abrupt declivity behind. In *bicolor*, *brunnea*, and *wheeleri*, the mesonotum in profile is abruptly declivitous behind, often descending vertically, or nearly so, into the mesopropodeal suture. Based on Brazilian material, *pyramica* is a bicolored ant, as noted above, and always seems to possess a pair of moderately long, fully erect hairs on the pronotal dorsum. The forewing of the females has a characteristic venation (Fig. 8), as noted and figured by Kusnezov (1952). No known North American form possesses the mesonotal and venation characters of *Conomyrma*, s. str. of Kusnezov. Although Kusnezov assigned *flavopecta*

to *Conomyrma*, s. str., the venation of the female forewing is the same as that of *bicolor* and *insana* (Fig. 7). No specimens fulfilling the criteria here established for *pyramicus* have been seen from North America and I feel this name should be removed from our lists.

The ant long referred to *pyramicus* in North American literature has a mesonotum which is sharply declivitous behind; the venation of the forewing of the female is that which Kusnezov attributed to his subgenus *Biconomyrma* and the insect is uniformly brownish to blackish, the lower part of the head lighter. This ant clearly is not the same entity as the South American *pyramicus*. The earliest available name for this ant is *insana*. The record for *brunnea* from Colorado, cited above, must also be referred to *insana*. The synonymy for this name is as follows:

insana (Buckley, 1866)

= *pyramicus*, sensu Wheeler, 1902; Creighton, 1950, etc., not of Roger, 1863

= *flavus* McCook, 1879. NEW SYNONYMY.

= *nigra* Pergande, 1895. NEW SYNONYMY.

= *antillana* Forel, 1911. NEW SYNONYMY.

= *smithi* Cole, 1936. NEW SYNONYMY.

= *brunnea*, Kusnezov, 1952. Misidentification

= *wheeleri* Kusnezov, 1952. NEW SYNONYMY.

Kusnezov's *wheeleri* is known only from the two type specimens from Tucson, Arizona. They should be in his collection at the Instituto Miguel Lillo, Tucuman, but efforts to locate them have not been successful. There is nothing in the description to indicate that this ant is anything other than *insana*, a common ant in the Tucson area. I am sure Kusnezov described it solely because it seemed to belong to his *Biconomyrma* and could not, therefore, be "*pyramicus*."

Because *bicolor* is consistent in its color pattern and because it is broadly sympatric with *insana* and does not intergrade with it, I agree with Cole (1957) that this species must be accorded specific recognition. The form of the mesonotum and the wing venation of the female ally *bicolor* with *insana*. The pronotum lacks erect hairs and this, together with the shape of the mesonotum, will separate it from the true *pyramicus* of South America.

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