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A STUDY OF THE SUBSPECIES OF *ODONTOMACHUS*
HÆMATODA (L.) OF THE UNITED STATES
(HYMENOPTERA: FORMICIDÆ)

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Few ponerine ants are as easily recognized as are the species of the genus *Odontomachus*. The linear mandibles attached very near each other at the middle of the oral margin of the head, the oblique antennal fossa on each side of the head between the eye and the frontal carina, and another impression posterior to the eye, and the petiole usually terminating dorsally in a spine or acute point above readily distinguish these ants from all other closely related forms.

The hundred or more species, subspecies, and varieties are widely distributed over the warmer regions of the earth. One of the species, *Odontomachus haematoda* (L.), is noted for its innumerable variants, which include among them the subspecies treated in this paper. *O. haematoda* (L.), according to Emery, occurs in Central and South America, Africa, Madagascar, Ceylon, India, Oceania, New Guinea, and the Malaysian Islands.

These ants form small or moderate-sized colonies in the ground or in rotten wood. They are especially noted for their flesh-eating habits. Wheeler, however, found that workers of *Odontomachus haematoda clarus* Roger, when confined in an artificial nest, were omnivorous, feeding on sugar, cake, bread, and egg yolk.

The workers have the peculiar habit of leaping backward several inches when their mandibles are closed suddenly and forcibly. The closing of the mandibles in such manner causes an audible clicking noise.

The various castes of *Odontomachus* are characterized by Emery in *Genera Insectorum*, Fascicule 118, pp. 88-89 (1911), as follows:

WORKER: Antennal fossæ confluent in a depression behind the frontal carinæ; an oblique ridge from the eye separating the antennal fossa from an equally oblique and marked impression on

the side of the head. The apical and subapical teeth of the mandibles sharp, medial border of each mandible covered with small teeth, which scarcely enlarge from the base to the apex, and remain much smaller than the terminal teeth. Maxillary palpi 4-segmented, labial palpi 3-segmented. Eyes well developed. Petiole surmounted by a conical node, terminated by a sharp spine.

FEMALE: Winged. Eyes larger than with the worker. Possessing ocelli. Otherwise similar to the worker.

MALE: Mandibles very small. Maxillary palpi 6-segmented. Antennæ very long; scape very short, thicker than long. Petiole surmounted by a node usually pointed at the apex, but not terminated by a spine. A very distinct constriction following the postpetiole. Pygidium terminated by a spine.

The material forming the basis of this study has been obtained from the following sources: Museum of Comparative Zoology of Harvard University, United States National Museum, and the private collections of Drs. W. M. Mann, W. S. Creighton, A. C. Cole, and L. G. Wesson. The writer wishes to express his appreciation to these friends and the museums for the loan of the specimens.

A study of numerous specimens of the subspecies of *Odontomachus haematoda* (L.) shows high variability in many characters such as pilosity, color, and the length and shape of the petiolar spine. This leaves but few stable characters on which to base the redescriptions and keys here given. Of the four subspecies treated in this article, the two that are most easily confused are *clarus* and *coninodis*. Wheeler no doubt recognized this when he stated that he considered *coninodis* a depauperate mountain species derived from *clarus*. Should one have a single specimen of either of these to identify, he may have some difficulty in determining to which of the two forms the specimen belongs; with numerous specimens from a single colony, however, identification is not so difficult. For the latter reason the writer has hesitated to synonymize one of the forms.

KEY TO THE SUBSPECIES OF *ODONTOMACHUS HAEMATODA* (L.) OF THE UNITED STATES (FOR THE IDENTIFICATION OF THE WORKERS)

1. The posterior third or more of the prothoracic disk with distinct longitudinal striæ; color ranging from brown to deep brownish black; 7.5-9 mm. long; Florida and Georgia *O. h. subsp. insularis* Guérin

- The posterior third of the prothoracic disk with distinct transverse striæ; color lighter, ranging from pale yellowish brown to very dark reddish brown; principally the Southwestern States 2
2. Petiolar node conical, without a well pronounced spine; color pale yellowish brown; 6-8 mm. long *O. h. subsp. coninodis* Wheeler
- Petiolar node with a distinct, acuminate spine; color darker, ranging from reddish brown to dark reddish brown 3
3. Large, robust, 9-10 mm. long; color very dark reddish brown; head of the larger workers with distinct posterior ocellar pits, and usually an erect hair near each *O. h. subsp. desertorum* Wheeler
- Smaller, less robust, 7-8 mm. long; color a lighter reddish brown; posterior ocellar pits indistinct or absent *O. h. subsp. clarus* Roger

✓ ***Odontomachus haematoda* (L.) subsp. *insularis* Guérin**

Odontomachus insularis Guérin, Icon. Regne Anim. Ins., pt. 7, p. 423 (1845), worker.

WORKER: Length 7.5-9 mm. Larger than *clarus* or *coninodis*. Striæ on the prothoracic disk, although concentric, with a distinct longitudinal trend posteriorly. Dorsal border of petiole bearing a well defined, slightly curved, acuminate spine, whose tip is usually directed posteriorly. Erect hairs on the under surface of the mandibles, head, and base of femora; on the dorsal surface of the head and prothorax; and on the gaster and coxæ. Piligerous punctures of head discernible with artificial light even at low magnification with the binocular microscope. Color ranging from brown to deep brownish black.

TYPE LOCALITY: Cuba, no specific locality designated by Guérin.

Other distribution records as follows:

FLORIDA: Royal Palm Park (W. S. Blatchley); Lake Worth (P. J. Schmitt); Enterprise (W. M. Beutenmueller); Biscayne Bay (A. T. Slosson); Coconut Grove, Lower Matacombe Key, Paradise Key (W. M. Wheeler); Tallahassee, Gainesville, Miami, Monticello, Lakeland, Deep Lake (A. E. Wight); St. Petersburg (H. Raster); Wildwood (J. B. Hull); Rock Springs (S. O. Hill); Polk County (G. R. Vanderford); Haw Creek, Fort George, Crescent City, Hanover, Sand Point (Collector unknown).

GEORGIA: Bainbridge, Ducker, Spring Creek, Billy's Island, Okefenokee Swamp (J. C. Bradley); Thomasville (H. S. Peters); Savannah (collector?); Valdosta (H. T. Vanderford).

The above redescription is based on numerous workers from various localities in Florida and Georgia.

The most outstanding characters of this subspecies are the nature of the sculpturing of the prothorax, the size, the color, and the distribution in the United States.

This subspecies is widely distributed throughout Florida, probably occurring in every section of the State. It is known also from the extreme southern part of Georgia. There is reason to believe that *insularis* may eventually be found in that section of Alabama contiguous to Florida, especially extreme southeastern Alabama. Outside of the United States *insularis* has been reported from a number of the West Indian Islands.

✓ ***Odontomachus haematoda* (L.) subsp. *coninodis* Wheeler**

Odontomachus haematoda coninodis Wheeler, Bull. Amer. Mus. Nat. Hist., vol. 34, p. 391 (1915), worker, female.

WORKER: Length 6-8 mm. Closely related to *clarus*, and of somewhat similar appearance but differing in the following characters: Smaller average size, paler, more yellowish-brown color, and shape of the petiole, which is conical above and without a distinct, acuminate spine. Posterior third of the prothoracic disk with distinct transverse striæ.

TYPE LOCALITIES: Miller and Hunter's Canyons (W. M. Wheeler), Ramsey Canyon (W. M. Mann) Huachuca Mountains, Arizona. Altitude 5,000-7,000 feet.

This redescription is based on five cotype workers collected by W. M. Wheeler in Hunter's Canyon, and seven workers collected by W. S. Creighton in Ramsey Canyon.

The most outstanding characters of *coninodis* are the shape of the petiolar node, general color, and direction of the striæ on the posterior third of the prothoracic disk.

There is scarcely any doubt that *coninodis* was derived from *clarus*.

Wheeler states that this subspecies "forms small colonies and nests under stones."

✓ ***Odontomachus haematoda* (L.) subsp. *desertorum* Wheeler**

Odontomachus haematoda desertorum Wheeler, Bull. Amer. Mus. Nat. Hist., vol. 34, p. 391 (1915), worker.

WORKER: Length 9-10 mm. Strikingly large and robust.

Color a highly characteristic deep reddish brown. Petiole with a distinct, curved, acuminate spine, the tip of which is slightly directed posteriorly. Posterior third of the prothoracic disk with definite transverse striæ. Head with a well defined pair of posterior ocellar pits, each of which usually has an erect hair near it.

TYPE LOCALITY: "Dry arroyo back of Carnegie Desert Laboratory, near Tucson, Arizona" (W. M. Wheeler).

Other distribution records as follows:

ARIZONA: Phoenix (L. C. Murphree) (A. C. Cole); University of Arizona campus, Tucson (Robt. Wesson); and Tempe (L. C. Murphree) (A. M. Calaway).

Redescribed from two cotype workers collected by Wheeler near Tucson, and from numerous other workers taken at Tucson, Phoenix, and Tempe by the above-mentioned collectors.

This subspecies is especially characterized by its large and robust size, rich reddish brown color, acuminate petiole, transverse striæ on the posterior third of the prothoracic disk, and distinct posterior ocellar pits on the head.

Robert Wesson stated in a letter to the writer that he believes this subspecies to be rather common at Tucson but not often seen. He also inferred that the ants may forage more at night and the very early morning than during the warmer and brighter parts of the day.



***Odontomachus haematoda* (L.) subsp. *clarus* Roger**

Odontomachus clarus Roger, Berl. Ent. Zeitschr., vol. 5, p. 26 (1861), worker.

WORKER: Length 7-8 mm. Very similar to *coninodis* but differing in its average larger size, darker color (reddish brown), and the well developed, acuminate spine on the superior border of the petiole. Posterior part of the prothorax with distinct transverse striæ.

TYPE LOCALITY: Texas, no specific locality mentioned by Roger.

Other distribution records as follows:

TEXAS: Austin, San Antonio, Marble Falls, Fort Davis, San Angelo, Milano, Alpine (W. M. Wheeler); Marathon and Fort Davis (W. S. Creighton); Meridian (W. H. Long).

LOUISIANA: Provencal (M. R. Smith).

The above redescription based on numerous workers from Milano, Ft. Davis, Marathon, and Austin, Tex., and San Miguel, Mexico.

Odontomachus haematoda clarus is distinguished from the other subspecies here mentioned by its size, color, petiolar spine, and transverse striæ on the posterior third of the prothoracic disk.

This subspecies and *coninodis* are strikingly similar in general appearance. The writer has seen workers (presumably from the same colony) of *clarus* with considerable variation in the length and form of the petiolar spine. Had the specimens with very blunt spines been stray or single specimens it would have been almost impossible to distinguish them from *coninodis* on the strength of this character alone.

This subspecies ranges from Mexico through Texas into western Louisiana. Wheeler has recorded the species from the Huachuca Mountains of Arizona. As the writer has some doubt about the validity of the determination on which this record is based, he has not listed the locality above.