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A NEW SUBSPECIES OF TRACHYMYRMEX SMITHI  
(HYMENOPTERA: FORMICIDAE) FROM NEW MEXICO<sup>1</sup>

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TRACHYMYRMEX SMITHI subsp. **neomexicanus** n. subsp.

*Holotype*, worker (Cole Coll. No. N-341). Overall length, 5.3 mm.

Head, excluding mandibles, distinctly broader than long, wider behind than in front, broadest midway between eyes and posterior corners, the sides convex, the posterior border broadly sinuate and with a faint but distinct and rather broad median impression which is continued over the vertex as a median, broad, shallow, longitudinal trough. Clypeus flattened, its upper face distinctly elevated from the frontal area; anterior border broadly and semicircularly impressed. Frontal carinae with large, broad, thick, flattened, subtriangular lobes extending laterad, continued posteriolaterally and fading out before reaching posterior borders of head. Preorbital carinae prominent, extending to antennal scrobes but not joining frontal carinae. Antennal scrobes indistinct posteriorly. Antennal scapes scarcely surpassing posterior corners of head, distal half thickened. Joints of funiculus longer than broad. Each posterior corner of head elevated as a single blunt spine. Each posteriolateral margin of head very sharp along its upper half. Center of head when viewed from in front with a distinct, broad, shallow trough which appears to be the lower portion of the interrupted longitudinal trough over the vertex; this trough bordered by irregular longitudinal carinulae; just below the trough the central portion of the head is broadly elevated for as far as frontal area which appears to be decidedly impressed.

Thorax robust. Prothorax with three pairs of spines; inferior pair rather short, thick, rounded terminally, and directed forward, downward, and outward; median superior spines trifid apically, short, subtriangular, irregular in outline, rather blunt, broadened anterioposteriorly, and directed dorsad and ventrad; lateral superior pair long, thick, broad at base, height and basal breadth subequal, extended upward and outward. Mesonotum with three pairs of spines; anterior pair shorter than lateral superior pronotal spines, thick, blunt, and tuberculate; median pair much smaller than anterior pair, broad, blunt, and tuberculate; posterior pair very small, sharp, and indistinct, appearing somewhat as tubercles rather than spines. A short longitudinal row of tubercles each lateral surface of mesonotum beneath mesonotal spines appears as a broad, irregular carina. Mesoepinotal constriction prominent. Base of epinotum on each side with a distinct longitudinal carina composed of tubercles terminating posteriorly in a long, basally robust epinotal spine. Epinotal spines strongly divergent and directed upward and slightly backward; when viewed from above and in front the inner margin of the spines and the portion of the epinotum between them form an even curvature. Each epinotal spine has its anterior surface finely and irregularly tuberculate. Base of epinotum nearly flat and forming with the declivity nearly a right angle. The two faces of the epinotum of approximately the same length. Each lateral surface of the epinotum with a short oblique carina of tubercles cutting across the plane of the epinotal spines.

Petiole with a short peduncle; node viewed from above trapezoidal, a little broader in front than behind; with a dorsal, longitudinal, irregular, tuberculate

<sup>1</sup>Contribution No. 58, Department of Zoology and Entomology, University of Tennessee, Knoxville. The author's studies of ants of New Mexico, of which this paper represents a portion, were supported in part by a grant from the Penrose Fund of the American Philosophical Society.

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ridge on each side and with the dorsum appearing depressed mesally; each dorsolateral surface with an interrupted row of tubercles. Postpetiole nearly twice as broad as the petiole and about half again as long as the petiolar node, broadest across the middle; posterior margin with a broad, rather deep, crescentic impression; posterior margin when seen from behind with the mesal portion very thin and each end thick and subtriangular.

Gaster ovoid, with a broad, shallow, longitudinal impression along the anteriodorsal third of the first segment which is bordered on each side by a low carina composed of tubercles: mediolateral longitudinal sutures prominent.

Mandibles, anterior border of clypeus, occipital rim of head, and conjunctivae of gaster shining. Tarsi and antennal funiculi subopaque. Remainder of body opaque and, except for mandibles, antennal funiculi, and tarsi, densely and rather uniformly covered with rather large, opaque, gray granules<sup>2</sup>, the sur-

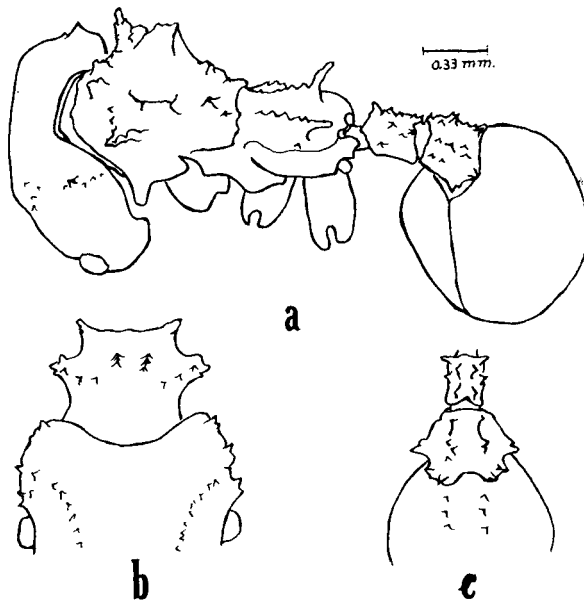


Fig. 1. *Trachymyrmex smithi* subsp. *neomexicanus* n. subsp. *a*, dorsolateral aspect showing spination; *b*, dorsum of head and pro- and mesonotum; *c*, dorsum of petiole, postpetiole, and gaster.

face between studded with minute shining, brown granules. Head and dorsum of gaster with numerous, variable, and somewhat pointed tubercles, larger on occipital lobes than elsewhere cephalically; those on the gastric dorsum scattered except for two straight dorsolateral longitudinal rows which form ridges; some of those on vertex of head arranged so that they form irregular longitudinal carinulae when viewed from above; those on the legs scarce, short, rounded. Mandibles with fine striae fanning out from the base to the musculatory border.

Hairs golden, numerous, scattered, robust, pointed, and for the most part curved apically; those on thorax posterior to last pair of mesonotal spines and as far as crest of postpetiole very prominently hooked; much less hooked elsewhere on body, those on venter of gaster and some of those on pronotum nearly straight; broadly curved to straight on tibiae and tarsi; suberect on all parts

<sup>2</sup>These granules are not to be considered as morphologically significant. They are probably composed of inorganic salts and are not cuticular in origin.

except antennal funiculi where they are fully appressed and on tibiae and tarsi subappressed; longest on gula, where they are for the most part not hooked, and mesonotum; short on pronotum anterior to median superior spines. Pubescence very fine, present only on antennal funiculi.

Ground color of body except mandibles, antennal funiculi, tarsi, coxotrochanteral articulations, epinotal spiracles, and sutures of gastric segments, very dark brown under magnification. Overall color of body to unaided eye a dull grayish black, the grayish tinge resulting from the gray granulations.

*Type locality*.—The nests were located 6 miles north of Las Cruces, New Mexico, along the east side of highway U. S. 85. Collections were made on September 15, 1951, from two nests, namely, N-341, holotype worker and 180 paratype workers, A. C. Cole, collector; and A-232, 22 paratype workers, M. H. Cole, collector.

*Habitat of the type material*.—The three nests observed and from which workers were collected were in pure sand in a flat, dry, greasewood area. Each nest was marked by a slit-shaped entrance approximately 1.2 cm. by 3.0 mm. and a flat semicircle of lightly scattered detritus at about 23.0 cm. from the entrance. In one nest a nonpendulant fungus garden was in a subterranean chamber about 50.0 cm. from the nest entrance. No activity outside of the nests was observed. When the nests were excavated the workers moved sluggishly on the sand.

*Disposition of types*.—The holotype and a large series of paratypes are in the writer's collection. Paratypes have been deposited in the U. S. National Museum, Museum of Comparative Zoology (Harvard), American Museum of Natural History, and in the collections of W. L. Brown, W. F. Buren, L. F. Byars, W. S. Creighton, R. E. Gregg, C. H. Kennedy, Mary Talbot, G. C. Wheeler, and E. O. Wilson.

*Variations in the paratype series*.—In the series of 202 paratype workers the total body length varies from 3.9 to 5.5 mm. There are some minor differences in epinotal spine length and in the number, size, shape, and arrangement of the scattered tubercles. Some specimens have one of the epinotal spines shorter than the other. The irregular, longitudinal, tuberculate ridges on the cephalic vertex are more prominent in some specimens than in others. A few specimens have the gray granulations less abundant on the apical one-half to two-thirds of the gaster.

*Affinities*.—The new subspecies is apparently most closely related to *T. smithi* Buren which was collected near La Rosa, Coahuila, Mexico. It differs from *smithi*, however, in the following respects; the spines are larger and more robust and bear fewer subspines, the excision of the posterior margin of the postpetiole is deeper and more pronounced, the body is longer (4.6-5.9 mm. instead of the 3.5-4.0 mm. of *smithi*) and stouter, the color is darker, and the gray granulations are much more abundant. *T. smithi* lacks the overall grayish cast of the new form. *T. smithi* nested in extremely compact soil whereas the new form nested in loose, sandy soil. In view of the close morphological similarity of the new form to *smithi* and the known geographic location, habitat, and type of nest of the two, I believe that the new form should be regarded as a subspecies of *smithi*. It is hoped that future collections will reveal intergradation. Comparisons were made with three paratypes of *smithi* from the U. S. National Museum.<sup>3</sup>

The new form appears to be rather closely related to *T. desertorum* Wheeler. The epinotal spines of the new form are, however, more acute and much more divergent than those of *desertorum*. The spination of the head, thorax, petiole, and postpetiole is very different in the two ants, the lateral superior pronotal spines being longer and more acute in the new form, for example. The posterior depression of the postpetiole of *desertorum* is deeper and meets a pronounced dorsal concavity which extends for nearly the entire length of the

<sup>3</sup>By correspondence, Mr. Buren informed me that his types of *smithi* are in storage and would not be available for study until he returned to the United States from Puerto Rico.

postpetiole. *T. desertorum* is smaller (2.5-3.5 mm.) than the new form and is medium to light reddish brown in color, while the new form is a very dark brown with grayish granulations and to the unaided eye appears to be dull grayish black.

The new form is similar in some respects to *T. papulatus* Santchi from Argentina, except that the latter has a deeply excised postpetiole, a much lighter body color (reddish brown), and tends to be smaller and more spinose. The thoracic spines of the new form are similar to those of *papulatus*.

In general conformation the new subspecies is similar to *T. septentrionalis obscurior* Wheeler but differs from it notably in spination, tuberculation, and color. Furthermore, the posterior margin of the postpetiole is much less deeply excised in the new form than in *obscurior*, the antennal scrobes of the new ant do not meet the posterior margin of the head, the preorbital carinae do not join the antennal scrobes, and the shape of the petiole and postpetiole is different from that of *obscurior*. The lobes of the frontal carinae are only finely carinate instead of strongly so as in *obscurior*. The nest of the new subspecies is quite different from that of *obscurior*.

It is of interest to note that Wheeler (1911, p. 247) established his variety *irrorata* of *T. septentrionalis obscurior* Wheeler on the basis of the workers' "having the surface of the body between the spines and tubercles covered with dense, gray granules." This variety has rightly been synonymized with the typical *obscurior* by Creighton (1950, p. 323). Wheeler (*ibid.*) believed that the gray granulation may be only a temporary physiological condition but Creighton (1950, p. 322) has largely proved that such granules as all paratypes of the new subspecies possess are depositions of salts on the tubercles and have resulted from desiccation of highly concentrated solutions which adhered during more moist seasons.

*Acknowledgements*—Through the kindness of Dr. M. R. Smith I have been able to examine the three paratypes of *T. smithi* which are in the U. S. National Museum. I am indebted to Dr. Smith for his cooperation in this respect and also for his having examined paratypes of the new subspecies and compared them with specimens of *Trachymyrmex* in the Museum. I am very grateful to Mr. E. O. Wilson who compared specimens of the new subspecies with type and other material (a total of 33 forms) in the genus at the Museum of Comparative Zoology. I wish also to express my appreciation to Mr. W. J. Cloyd for making the drawings of the new form.

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