

STUDIES OF NEW MEXICO ANTS. X. THE GENUS LEPTOTHORAX (HYMENOPTERA: FORMICIDAE)¹

A. C. COLE

The University of Tennessee, Knoxville, Tennessee

Leptothorax (Leptothorax) rugatulus Emery. This species was taken at only two localities, namely 5 mi. E. of Taos, 7,350 ft., and Bandelier National Monument, 6,050-6,200 ft., but at both places nests were common beneath stones on shaded grassy slopes with pines. A number of the colonies was very populous and multiple queens were present. I can find no significant differences between the components of these rather widely separated distributional patterns.

Leptothorax (L.) tricarinatus neomexicanus Wheeler. An inhabitant of open, rather dry, grassy places this ant was taken at elevations from 6,500 to 7,200 feet. The nests were marked by a hole in the ground and occasionally with a light asymmetrical scattering of fine soil. The colonies at Gallup and Mountainair were in sandy, clayey semidesert with rabbitbrush and scattered juniper while those in Cimarron Canyon occupied less xeric habitats. All colonies were rather small.

Leptothorax (L.) obliquicanthus Cole. This species was described (Cole, 1953, p. 28) from workers taken 10 mi. S. of Santa Fe, 6,500 ft., in a dry, level, gravelly, grassy roadside, in 1951. Intensive collecting at the type locality in the summer of 1952 failed to reveal additional specimens.

Leptothorax (Mychothorax) canadensis Provancher. I have made a considerable study of my New Mexico collections representing complete colonies of this species and *crassipilis* Wheeler. Brought into the study were numerous collections of *canadensis* from both northwestern and northeastern United States and elsewhere. Through the kindness of Dr. Brown, of the Museum of Comparative Zoology, I was able to examine specimens of *crassipilis* collected in July, 1903, by W. M. Wheeler, at Manitou, Colorado. This series was in the tray beside types of *crassipilis* and probably represents part of the type series. From the same source I also obtained specimens of *crassipilis* collected July 26, 1917, by W. M. Wheeler at Mt. Lemmon, S. Catalina Mountains, 8,000-9,100 feet, Arizona.

My first impression after a rather superficial study of some of the material was that *canadensis* and *crassipilis* were possibly synonymous. The characteristics which seemed best for separating the two species were thoracic pilosity of the worker and epinotal and petiolar sculpturing of the male. The worker of *canadensis* has sparse, short, and usually clavate hairs while that of *crassipilis* possesses numerous, long, and usually pointed (at least not clavate) hairs. The male of *crassipilis* is characterized by possessing a smooth and shining epinotum and petiolar node as contrasted with a sculptured epinotum and petiolar node of *canadensis*. The first series of about thirty complete colonies which I examined came from Tesuque Canyon, 8,500-8,700 feet, Santa Fe National Forest, near Santa Fe. From among this material I was able to sort out colonies which, in both castes mentioned, had the characteristics of *canadensis*, others which could be assigned readily to *crassipilis*, and still others (including the queen) which had characteristics intermediate of the two forms. Among the latter were workers and queens with rather sparse, medium short, blunt, clavate and nonclavate hairs and males with lightly sculptured (rugulose) but still quite shining epinotum and petiolar node.

Tesuque Canyon extends to an elevation of about 10,000 feet and ends at Aspen Basin, the surrounding slopes of which abound in colonies of *Leptothorax*. My collections from 9,500 to 10,000 feet were next checked. All

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of these represented distinctly *canadensis* there being no significant deviation in worker or queen pilosity or in male sculpture. Working with a descending elevational gradient I found that intermediate populations first occurred at 8,800 feet and that they apparently ended at 8,300 feet. Below 8,300 feet I had taken colonies which can be assigned only to *crassipilis*.

My Cimarron Canyon collections were studied next. Cimarron Canyon extends from about 6,700 to 8,700 feet. From 6,700 to 7,800 feet the colonies all represent the typical *crassipilis*. Colonies collected from 7,800 to 8,200 feet consist of hybrids of *crassipilis* and *canadensis* but not of those which can be assigned to either one. Between the canyon source and the town of Eagle Nest is a somewhat level stretch of dry open country with semidesert vegetation from which colonies of *Leptothorax* are apparently absent. In the forested area between Eagle Nest and Taos, where elevations range from about 7,000 to 7,400 feet, only colonies with characteristics of *crassipilis* were taken, but on the Red River road, north of Eagle Nest, I began to find hybrid populations at 8,000 feet. From 8,500 to 9,600 feet none but definite *canadensis* turned up.

In all of the cases mentioned colonies of *crassipilis* extended throughout the hybridization zone, but I was unable to find nests of *canadensis* at the southern limits of the zone. Furthermore *crassipilis* colonies were more numerous than *canadensis* colonies at all elevations within the zone. These facts would indicate that *crassipilis* has more tolerance for the higher elevations than *canadensis* has for the lower ones.

Thus there would seem to be a definite zone of hybridization between the two populations. In the extreme northern part of New Mexico this zone appears to be between approximately 8,000 and 8,500 feet and farther south (Tesuque Canyon and Sapello Canyon) between 8,500 and 8,700 feet. Because of this zone of fertile hybrids two species cannot be represented, I believe. The nature of the populations makes it necessary to recognize subspeciation. I propose therefore that *crassipilis* be considered a subspecies of *canadensis*. It might be asked what has prevented the hybrids from backcrossing into both the *canadensis* and *crassipilis* populations. It is conceivable that the characteristics of the two forms are such that there tends to be a stabilization of the hybrid population. Otherwise the condition must be a very recent one.

Leptothorax (M.) canadensis crassipilis Wheeler. Nests were beneath stones at the following localities: Cimarron Canyon, 6,700-7,800 ft.; 12 mi. E. of Taos, 7,000-7,400 ft.; Sapello Canyon, Beulah area, 7,500-7,900 ft.; Bandelier Natl. Monument, 6,050-6,200 ft.; Sandia Mts., on route 44, 6,900-7,500 ft. Like the typical *canadensis*, *crassipilis* inhabits moist, shaded slopes as well as grassy level areas beside streams.

Leptothorax (M.) provancheri Emery. A number of colonies was taken under stones in a moist, shaded, grassy area near a stream, 11 mi. N. of Eagle Nest, 9,000 ft., on the Red River road. At first I assigned the series to the subspecies *glacialis* Wheeler. However there appears to be no difference between the two forms and *glacialis* should be relegated to the synonymy of *provancheri*. This also is the opinion of Dr. Brown, of the Museum of Comparative Zoology, who made careful comparisons of types.

LITERATURE CITED

- Cole, A. C. 1953. Notes on the genus *Leptothorax* in New Mexico and a description of a new species (Hymenoptera: Formicidae). *Proc. Ent. Soc. Wash.*, 55:28-30.