

surrounding untreated area made posttreatment evaluations impossible after 12 weeks in Series 1 and after 4 weeks in Series 2.

#### LITERATURE CITED

- Lofgren, C. S., F. J. Bartlett, and C. E. Stringer. 1963. Imported fire ant and toxic bait studies: evaluation of carriers for oil baits, *J. Econ. Entomol.* 56(1): 62-6.
- Lofgren, C. S., F. J. Bartlett, C. E. Stringer, and W. A. Banks. 1964. Imported fire ant toxic bait studies: further tests with granulated mirex-soybean oil bait. *Ibid.* 57(5): 695-8.
- Stringer, C. E., C. S. Lofgren, and F. J. Bartlett. 1964. Imported fire ant toxic bait studies: evaluation of toxicants. *Ibid.* 57(6): 941-5.
- J. Georgia Entomol. Soc. 6(4), October, 1971 pp. 205-07.

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### NEW DATA ON THE DISTRIBUTION AND HABITS OF *LEPTOTHORAX (NESOMYRMEX) WILDA* (HYMENOPTERA: FORMICIDAE)

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#### ABSTRACT

Field studies show that the range of *L. wilda* extends from the Lower Rio Grande Valley in Texas at least as far south as Tamazunchale, Mexico. The incidence is highest at the northern end of the range. This ant is arboreal and probably nocturnal. Most colonies are pleometrotic and brood is produced throughout the year. The responses shown by captive colonies are also discussed.

Key Words: Range, behavior, habitat, laboratory culture.

Although *L. (Nesomyrmex) wilda* M. R. Smith was described more than a quarter of a century ago, remarkably little information about this species has appeared since its description. In 1942, Mrs. Wilda Ross found specimens of a *Leptothorax* running on vines near the old plantation of Southmost, about five miles southeast of Brownsville, Texas. These specimens were given the specific name *wilda* by M. R. Smith in 1943. This description had a special significance for those interested in distribution for, up to that time, it had been assumed that the northern limit of the range of the subgenus *Nesomyrmex* lay within the tropics. After *wilda* was described, this view was no longer tenable. Moreover, it seemed virtually certain that *wilda* must occur in northeastern Mexico, but attempts to confirm this have met with scant success. When W. W. Kempf dealt with the range of *wilda* in the excellent monograph on *Nesomyrmex*, which he published in 1959, he lacked dependable records from Mexico. Kempf had been able to examine specimens

of *wilda* intercepted on orchid shipments at two plant quarantine stations. The interception made at San Francisco was of no value in determining the range of *wilda*, since nothing was known about the shipment except that it had come from Mexico. The second interception, made at Laredo, was more useful, for the shipment was known to have originated at Vera Cruz. But Kempf wisely allowed for the possibility that the record might not be "trustworthy," as there was no certainty that the orchids had been taken in the Vera Cruz area. Kempf was much less cautious in his summary of the range of *wilda*. He stated that its range extends "from southern Texas in the United States, to at least the southern limit of the Neotropical region in Central Mexico." This premise appears to have been based on the fact that the incidence of *Nesomyrmex* in Central America is notably higher than in areas further to the north. But it is well to remember that at present there are no records for *wilda* south of Vera Cruz and that the Vera Cruz record itself is by no means beyond question.

The data given in this paper show that *wilda* occurs on the coastal plain in northeastern Mexico and at elevations up to 2500 feet in the mountains which rise at its western edge. The range extends southward at least as far as Tamazunchale in the state of San Luis Potosi. If the range of *wilda* extends to Vera Cruz, the southern end of its range overlaps the northern end of the range of *L. (N.) echinatinodis* Forel. In 1953, E. O. Wilson took a colony of *echinatinodis* at Vera Cruz and I took one at Tamazunchale. It may be added that "firm" records for *echinatinodis* from Mexico have been nearly as scarce as those for *wilda*.

The new records for *wilda* are given below. One of the colonies found on the Boca Chica road was taken by R. R. Snelling. The rest were secured by the writer: Texas; 10 miles west of Boca Chica (two colonies), La Feria, 2 miles east of La Feria (six colonies); Tamaulipas; 9 miles south of Victoria at 1100 feet; Nuevo Leon; El Pastor near Montemorelos at 2200 feet, Iturbide Canyon west of Linares at 2400 feet; San Luis Potosi; El Salto at 1400 feet, Tamazunchale at 800 feet.

The above records show that the incidence of *wilda* in the Lower Rio Grande Valley is greater than the earlier records indicate. Twelve colonies of *wilda* have now been taken at six stations lying between Weslaco and Boca Chica, a stretch about sixty miles long. Moreover, it has been possible to find more than one colony at two of these stations. This contrasts sharply with what was encountered in Mexico. There, the distance between stations is much greater and, as yet, no more than one colony has been found at any station. Since the total number of colonies of *wilda* taken in the field is seventeen, it is risky to generalize from such a small figure. Nevertheless, I believe that the incidence of *wilda* decreases as its range runs southward. In 1954 I was able to show a similar distributional pattern for two other arboreal ants (*Cryptocerus texanus* and *Pseudomyrmex apache*) which range into Mexico from the southern United States. In both these species the area of greatest abundance is at the northern end of the range. Whatever the reason for this distributional pattern may be, it is obvious that species which show it cannot be considered as Neotropical fringes, for the fringe runs toward or into the tropics from a northern base. At the same time it is clear that before they acquired this distributional pattern such species must have

come from tropical sources. As to why they are now more abundant out of the tropics than in them is a problem that should interest the chorologist.

All of the colonies of *wilda* secured to date have been small. There are rarely more than one hundred workers in a nest. Some colonies have a surprisingly large number of queens. One of the colonies taken near La Feria consisted of twenty-one queens and fifty-eight workers, another of seven queens and twenty workers. The colonies of *wilda* are not always pleometrotic but in most of them more than one queen is present. The female of *wilda* varies in size and the smallest ones may be very little larger than the workers. As far as could be determined these miniature queens function exactly as do the full-sized ones.

In 1959 Kempf observed that in the subgenus *Nesomyrmex* the species show little preference for nesting in a particular plant but will nest in any convenient plant cavity. The nesting responses of *wilda* strongly support this view. In addition to nests found in the pseudobulbs of orchids, colonies of *wilda* have been found in the following trees:

- Grapefruit (*Citrus paradisi*) seven colonies
- Texas ebony (*Zygia flexicaule*) three colonies
- Rio Grande ash (*Fraxinus berlandierana*) one colony
- Live oak (*Quercus fusiformis*) one colony

Most of the colonies taken in Mexico came from trees which were not identified but it was clear that several other species of trees are acceptable as nest sites. The flexible nesting responses of *wilda* are shown in other ways. Neither the size of the branch nor its position have much to do with the ant's selection of it as a nest site. Nests may be established in large limb stubs, well down on the trunk of the tree, or in small branches, scarcely larger than twigs, at the periphery of the crown. It also makes no difference to the ants whether a branch is sound or decayed. Nests are frequently discovered in sound wood but they also have been found in branches so rotten that the wood barely held together. Such branches are often blown out of the crown and since the ants do not leave them immediately, it pays to examine downed branches after a windstorm.

Colonies of *wilda* installed in Janet nests proved to be easy to maintain. The ants prefer very dry nest chambers and this eliminates the problems which arise from condensation and mold formation. About the only difficulty with the captive colonies was their sensitivity to light. Even moderate illumination would induce an avoidance reaction and to prevent this the light had to be kept so low that it was often hard to see what the ants were doing. Many ants show this reaction when they are first placed in an artificial nest but they usually get over it after they have become accustomed to their new surroundings. The colonies of *wilda* never became accustomed to the light during the five months that they were under observation. I believe that this is because *wilda* is a crepuscular or nocturnal forager. Except when a nest has been broken open I have never seen a worker of *wilda* outside the nest in the daytime. It seems probable that the original discovery of *wilda* resulted from the fact that the nest had been disturbed sufficiently to drive the ants out of it.

The captive colonies were easy to feed, for they would eat various sorts of insect tissues and sweet fluids. They were especially fond of honeysuckle nectar, which they ingested in such quantities that they frequently lost some of it before it could be fed to the larvae. When given this nectar both the workers and the queens would feed on it and regurgitate it to the larvae. Oddly enough the colonies paid little attention to aphids (*A. fabi*) when these were placed in the nests. The ants made no attempt to milk the aphids or to utilize the honey dew which had fallen onto the leaves on which the aphids were feeding. Their reaction to termites was considerably more spectacular. At first I hesitated to introduce living termites into the nests, for *wilda* is a delicate ant and it seemed probable that the termites might disrupt the colonies. I need not have worried. When termites were put into the artificial nests the workers of *wilda* promptly attacked and stung them. The sting was driven in at any point on the body wall where the workers of *wilda* could close their jaws on it. The sting of *wilda* is only about 0.3 mm in length but the poison it injects is highly lethal to a termite. Quite often when a termite was stung its reaction was so violent that the contents of the intestine were discharged. The termite then went into a series of tremors and spasmodic movements of the appendages which lasted from forty-five to fifty seconds. Thereafter all movements ceased and the victim was cut to pieces and eaten. When termites were available as food the larvae were often fed with bits of tissue as well as by regurgitation. When tending the brood the workers often closed their jaws on the larvae with enough force to push in the body wall. While the larva was being pinched the gaster of the worker pinching it would be moved rapidly up and down. This stimulation produced no visible effect on the larva but it seems likely that it may increase exudate production. It appears that, even at the northern limit of its range, *wilda* matures brood all winter long. Colonies taken near La Feria in early February contained well-developed larvae.

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#### LITERATURE CITED

- Creighton, W. S. 1954. Additional studies on *Pseudomyrmes apache* Creighton, Psyche. 61: 9-15.
- Creighton, W. S. and Gregg, R. E. 1954. Studies on the habits and distribution of *Cryptocerus texanus* Santschi, Psyche. 61: 41-57.
- Kempf, W. W. 1959. A synopsis of the New World species belonging to the *Nesomyrmex* group of the ant genus *Leptothorax* Mayr, Studia Entomologica. 2: 391-432.
- Smith, M. R. 1943. The first record of *Leptothorax* subgenus *Goniothorax* Emery, in the United States, with the description of a new species, Proc. Ent. Soc. Wash. 45: 154-6.