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## An Extraordinary Case of Polygyny in the Red Imported Fire Ant<sup>1,2</sup>

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In 1972, we reported the 1st observation of polygyny in colonies of the red imported fire ant, *Solenopsis invicta* Buren. As many as 20 mated queens were found in a single mound. Banks et al. (1973) subsequently reported finding 2 mated queens in a single mound of the native fire ant species, *Solenopsis geminata* (F.).

In January 1973, we detected an extreme case of polygyny in *S. invicta* in a series of 36 mounds on a ditch bank alongside a garbage dump 3 miles east of Hurlley, Miss., on Highway 614. The ditch bank was 2.5 ft high, 135 ft long, and 2.5 ft wide. The mounds were 12–18 in. high and 2–3 ft apart. Figure 1 is a schematic of the area.

On our 1st visit in January, we sampled 3 mounds and found 22 queens in 1 mound and 16 queens in each of the other 2 mounds. The technique used in finding the queens was to remove a shovelful of soil from the top of the mound and scatter it over the paved road. When the workers immediately surrounded the dealated females, we collected the dealates, returned them to the laboratory, and checked them for insemination; all were positive for sperm.

On our 2nd visit a week later, we sampled 3 different mounds and captured 7, 8, and 12 queens, all positive for sperm.

On our 3rd visit 3 wk later, we collected 7, 677, 59, and 659 queens from 4 different mounds; all that we dissected (7, 204, 59, and 200) were inseminated. We also set up 318 of the queens each with 25 of their workers in petri dishes containing moist cotton. All 318 oviposited and reared the brood to the minor worker stage.

We have since collected over 3000 dealated ♀ and examined over 25% for insemination. All have been positive for sperm.

As a result of these observations, we made a few simple experiments as follows:

1) Feeding stations consisting of bottle caps containing soybean oil + a 0.5% conc of red dye were set up at each end of the ditch bank and also at the middle point. After the ants had fed for 1 wk, ants from 10 mounds selected at random were collected and returned to the laboratory for examination. By using our standard crushing technique, we found red dye in the crops of ants from all 10 samples.

2) We have observed and Blum et al. (1969) have reported that laboratory colonies of *Solenopsis* do not tolerate more than one queen. However, we have stocked nests with as many as 50 queens from the dump area; in every case, all queens survived. We have maintained these multiple queen nests for over 5 months.

3) During the course of our collections, we took shovelfuls of ants from one mound and dumped them into another mound. We have never noted the characteristic

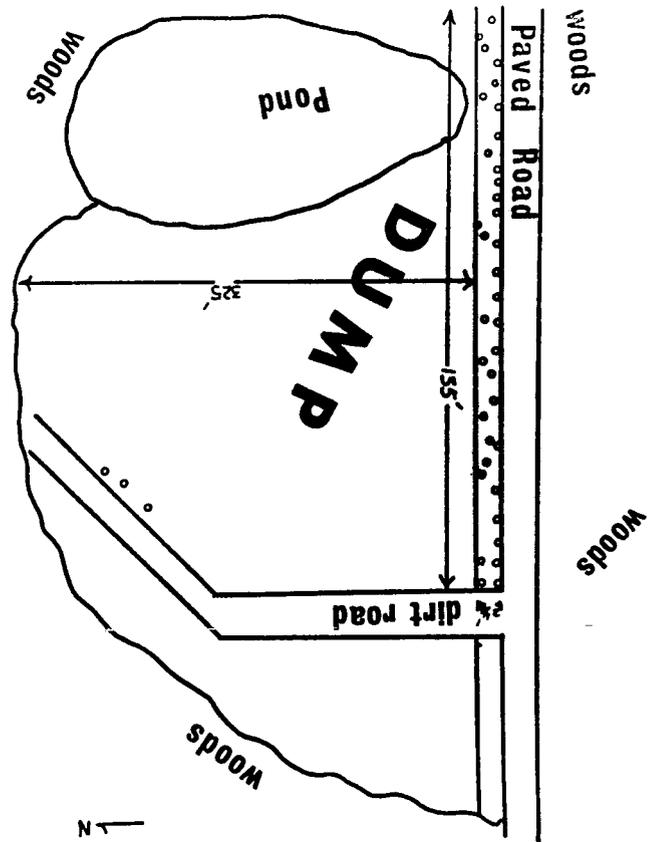


FIG. 1.—Schematic of collection area, a garbage dump. Hollow circles indicate sites of mounds with multiple queens; 3 on south side of dirt road had single queens.

hostile or aggressive behavior between workers of different colonies.

4) When we observed the crossing of foraging trails from different mounds, we never saw workers from different mounds showing hostile behavior. However, Wilson et al. (1971) stated that colonies of imported fire ants delineate foraging territories and "foraging ants from one mound did not mingle with ants from adjacent mounds."

Our observations led us to conclude that the series of mounds along the ditch bank are actually one large colony of the red imported fire ant. We cannot explain this atypical behavior. It is an extraordinary and intriguing case of polygyny.

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<sup>1</sup> Hymenoptera: Formicidae.

<sup>2</sup> Received for publication Oct. 3, 1974.