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MULTIPLE FERTILE QUEENS IN COLONIES OF THE IMPORTED FIRE ANT, *SOLENOPISIS INVICTA*

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ABSTRACT

Mated multiple queens were found in field colonies of the imported fire ant, *Solenopsis invicta* Buren. Fertilization was established by examination of the spermathecae and by allowing queens to oviposit and rear brood. This report is the first of polygyny in the imported fire ant.

Key Words: Insect, Formicidae, polygyny, insemination.

Although it has long been known that queens of some ant species will come together to found a colony, multiple mated queens in a single well-established colony are the exception. For example, newly mated queens of the imported fire ant *Solenopsis invicta* Buren (Buren 1972) (formerly included in the *Solenopsis saevissima richteri* Forel complex) often cluster immediately after a nuptial flight under such objects as pieces of wood or brick. However, once the colony becomes established, only one fertile queen has ever been detected (Wilson 1971). Green (1952) reported that he found as many as 25 dealated females of *S. richteri* in a single colony, but lack of wings is not evidence of insemination. On many occasions, when colonies have been brought into the laboratory, the alate females shed their wings; however, spermathecal examinations have always proved these to be virgin females. Recently, Banks *et al.* (1973) reported that they found two fertile queens in a single colony of a related fire ant species, *Solenopsis geminata* (F.). Both queens produced minor workers in 27 days.

In late 1971, we observed and collected dealate queens from two colonies in an area north of Jackson, Mississippi. Twenty dealate female queens were taken from one colony and two dealate from a second colony. The mounds of both colonies were about 6 in. high and 6 in. wide, and the colonies were estimated to be about 6-8 months old. The queens were taken to the laboratory, and their spermathecae were removed. All the queens were mated.

About a month after this discovery, we examined 35 mature colonies near Gulport, Mississippi. Two dealated females were taken from each of three colonies, three dealated females from each of two colonies, and four dealated females from one colony. The queens were moved to the laboratory and placed individually with about 50 workers from the same colony in plexiglass ant nests. The artificial ant diet of Bhatkar and Whitcomb (1970) was offered to them. Temperature of the rearing laboratory was maintained at about 27C.

All the queens (16) laid eggs after 4-11 days. Larvae were obtained from eggs of 10 queens and pupae from five of these queens. All the pupae were of the worker form. Adult minor workers were obtained from the progeny of three queens. The production of identifiable workers forms by the five queens definitely indicates that they were fertile since only male sex forms develop from unfertilized eggs. Of these five queens, two

were from a single colony from which two dealated queens were collected, and two were from a single colony from which we collected three dealated queens.

Our results indicate that mature colonies of the fire ant, *S. invicta,* may contain more than one fertile queen. We do not know whether more than one of the queens in the colony is functional at any given time.

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