

EXOTIC ANTS IN WINNIPEG¹

G. L. AYRE

Agriculture Canada, Research Station, 195 Dafoe Road,
Winnipeg, Manitoba, Canada. R 3T 2M 9

ABSTRACT: Nine species of tropical or sub-tropical ants, *Monomorium pharaonis* (Linnaeus), *Paratrechina fulva* (Myr.), *Pheidole anastasii* Emery, *Solenopsis geminata* (Fabricius), *Solenopsis texana* Emery, *Strumigenys rogeri* Emery, *Tetramorium guineense* (Fabricius), *T. simillimum* (F. Smith), and *Wasmannia auropunctata* (Roger), were found in the Tropical House, Assiniboine Park, and one, *Tapinoma melanocephalum* (Fabricius), in an apartment building in Winnipeg, Manitoba. Brief comments on each species are given. These species are unlikely to become serious pests in Winnipeg as none are cold hardy and most cannot tolerate the low humidity of heated buildings in winter.

INTRODUCTION

The Tropical House, Assiniboine Park, Winnipeg, Manitoba was built to provide the public with an example of a natural tropical environment. An attempt was made to develop a natural ecosystem and in addition to the many plants, animals such as fish, reptiles, birds and mammals form a part of the scene. Inadvertently, the setting has become more natural than originally planned in that many species of insects, including some pests, have apparently been brought in with the plants. Control of the insects with fumigants or insecticide sprays is not possible because of the presence of the other animals. Consequently, some pest species have become well established. Among the ants, one species has increased to the point where maintenance workers have complained of being stung. Following are brief comments on nine species of exotic ants found in the Tropical House and on one species taken from an apartment block in Winnipeg.

MATERIALS AND METHODS

Wherever possible, ants for study were obtained in nest series. In the Tropical House, foraging ants were followed to their nests. For soil-nesting species, soil samples were taken with a small trowel, placed in plastic bags, and later sorted in the laboratory; for plant-nesting species, ants were collected individually with forceps at the nest openings and placed directly in 70% alcohol. The species found in the apartment building were reported to the author by a pest control operator; a number of stray foraging worker ants were collected and preserved in alcohol after the main colony was destroyed.

RESULTS

Monomorium pharaonis (Linnaeus). Pharaoh's ant. This ant is one of the most common and best known of all house-infesting ants and probably occurs in every town or city of commercial importance in the United States (Smith 1965). It has been in Winnipeg at least 35 years as evidenced by preserved specimens dated 1943 in the insect collection of the University of Manitoba. This species is thought to be native of India but has been distributed so widely by commerce that its origin is now uncertain. In North America, it is found under field conditions in southern Florida only.

These ants are omnivorous, but show a slight preference for grease, fats and meat (Smith 1965). Consequently, very large populations can develop in areas where food is handled or prepared, such as in kitchens of restaurants and cafeterias or in bakeries and other similar places. In Winnipeg, though this species has been present for many years, it

¹Contribution No. 885, Agriculture Canada, Research Station, Winnipeg, Manitoba.

has not become a major pest. It requires a relative humidity of 90% or more for nesting (Peacock *et al.* 1950); it is unlikely that these conditions are common in buildings heated in winter in Winnipeg. In the Tropical House, ants of this species are particularly numerous in the work areas where food is prepared for the animals, but they are also found in lesser numbers throughout the greenhouse area.

Paratrechina fulva (Mayr.). This species has sometimes been referred to as the sugar ant. Creighton (1950) lists nine species of *Paratrechina* in the United States of which five, including *P. fulva* from South America, are introduced. These species are established outdoors in the extreme southern United States, but most are found sporadically in greenhouses throughout the country.

In the Tropical House, this species was found under rocks or stepping stones in the greenhouse area and although no complete nests or queens were found the presence of winged females would indicate that it is established. Smith (1965) states that in this genus the newly fertilized females are capable of establishing new colonies unassisted. These ants undoubtedly eat some of the food supplied for other animals, but since the worker ants neither bite nor sting and as they do no harm to plants, animals or structural materials they can only be considered a nuisance, at most, in the Tropical House.

Pheidole anastasioi Emery. Originally described from Costa Rica this species was recorded as established in Florida, in 1933, but had previously been seen in greenhouses in Washington D.C., New Jersey and Illinois (Smith 1933). Obviously it has been present in North America for some time and it appears easily transported by commerce. However, this species is not mentioned in any of the references on pest ants and is unlikely to be a serious problem. It was not abundant in the Tropical House. Only one collection of workers was obtained from the soil in the greenhouse and no evidence of queens or brood could be found.

Solenopsis geminata (Fabricius). Fire ants. This species is native to the southern United States although its main range lies in Central America and the Antilles (Creighton 1950). It is distributed throughout Florida and in an area up to 150 miles from the coast extending from Texas to South Carolina. Until the introduction of the imported fire ants, *S. richteri* Forel in the 1920's and *S. invicta* Buren in the 1930's, *S. geminata* was the most common and noxious of the fire ants in Florida (Buren 1972).

The degree to which *S. geminata* is established in the Tropical House is questionable. Normally this species is extremely polymorphic with the head of the major workers being disproportionately large. In these collections only minor workers were found in the soil suggesting that either the colonies were young or conditions were adverse and prevented the full development of the colonies.

Solenopsis texana Emery. The main distribution of *S. texana* is in the southeastern United States, but it is found under natural conditions as far north as southern Ontario (Creighton 1950). There are no reports of this species as a pest in buildings. Only one specimen of this species was found in the soil of the Tropical House and, therefore, it is not certain whether it is established as a breeding colony or if a few stray workers were brought in with plant material.

Strumigenys rogeri Emery. This species was originally described from West Indian material but is believed to be of West African origin. Creighton (1950) does not list this species, even as an introduction, in the ant fauna of North America, and Brown (1962) cites greenhouses in England and Scotland as the only temperate zone records. Since practically all the plants in the Tropical House have been imported from Florida it appears that *S. rogeri*, if not fully established, is at least present in that state.

The status of this species in the Tropical House is not known. Only two specimens were obtained and these were in soil with other collections.

Tapinoma melanocephalum (Fabricius). This species, which has been introduced to Florida, is thought to be of African or Oriental origin (Smith 1965). It is not a noted pest, but is occasionally found in greenhouses and other heated buildings in the northern

parts of the United States (Smith 1965). In Winnipeg, the only record of this species is from an apartment block situated along the Assiniboine River. The nest was in a steam iron. When the iron was preheated, hundreds of the ants carrying "eggs" (probably larvae and pupae) streamed out the steam holes in the bottom of the iron. Measures were taken to control the ants, but for several weeks afterwards isolated worker ants were found in the kitchen sink, presumably in search of water. However, as the ants were reported to have disappeared it is assumed the main colony was destroyed.

The origin of this colony remains a mystery. According to the tenant no one from the apartment in which the ants were found had been on any trips where these ants might have been picked up and no items such as tropical plants or other material from the tropics had been brought in. The colony appeared mature and since the steam iron was used regularly, the ant colony obviously moved there after developing elsewhere.

Tetramorium quinecse (Fabricius) and *T. simillimum* (F. Smith). Both species are noted as "tramp" species and are now so widely distributed that their exact area of origin is questionable. It is generally thought that both are of African origin (Creighton 1950).

T. quinecse is more common than *T. simillimum* in North America and is established in the southern United States. It ranges from southern Florida to Texas and is particularly common in the Gulf Coast region (Smith 1965). This area of naturalization is a source of infestation for greenhouse populations which have been reported from many parts of the United States. *T. simillimum* appears limited to the most southern parts of Florida. Creighton (1950) questions if it truly has become established as it requires some degree of winter protection even in that part of the state.

Both these species are well established in the greenhouse area of the Tropical House. Numerous colonies were found nesting under stones and in the soil and most had brood and/or many winged sexuals in the nest.

Wasmannia auropunctata (Roger). The little fire ant. This species is neotropical in origin and is extremely common throughout Central and northern South America, the West Indies and the warmer parts of Mexico (Wheeler 1929). Unlike most species of ants, this species does not build a definitive nest: slight shelter and the presence of moisture seem to be the only requirements for nesting. Colonies are often established in spaces between plants and soil, under leaf stalks of palms and other plants with petiole leaf sheaths, or in any natural cavity or confined space in plants (Spencer 1941). For this reason, they are readily dispersed with commercial shipments of tropical plants. As early as 1907, *W. auropunctata* was reported as being one of the most abundant of all species of ants in the greenhouses at Kew Gardens, England (Wheeler 1929). The first outdoor infestation of this species in Florida was found in 1924 (Wheeler 1929) and by 1935 it had become a pest in citrus groves in the southern part of the state (Spencer 1941). However, the species appears strictly tropical and its natural distribution in North America has not extended beyond southern Florida.

The common name, little fire ant, is taxonomically misleading as all other "fire ants" belong to the genus *Solenopsis* to which the genus *Wasmannia* is only distantly related (Smith 1965). The sting of the little fire ant, however, is very similar to that of the true fire ants. Spencer (1941) reports that for many people the sting is very painful at first and later itches intensely for a period of up to 3 days. Numerous stings (12 or more) over a short period may cause the victim to become pale and shaky. For this reason, premium wages are often paid to workers in fruit groves where infestations of this ant are present. However, unlike ants of the genus *Solenopsis*, those of *Wasmannia* do not usually sting unless pressed against the skin by constrictions in clothing such as collars or belts.

W. auropunctata was the most numerous of the ant species in the greenhouse area of the Tropical House. The workers foraged on most of the plants and foraging trails indicated that many colonies were probably present in the petiole sheaths of palms. Colonies found under stones and in the soil had brood and many winged sexuals.

DISCUSSION

This investigation was made approximately 2½ years after the Tropical House was established and it is unlikely that a balance in the ant population had been reached at that time. On the basis of these observations, however, it would seem that the two most troublesome species, *M. pharaonis* and *W. auropunctata*, will be a part of the final species complex. *M. pharaonis*, which can be a serious problem in establishments processing food for human consumption, is likely to be only a nuisance in these surroundings. It does not damage plant or structural materials and its infestation of the animal food does not render the food unusable. Because of its sting, *W. auropunctata* is probably a more serious problem, but again, this species causes no plant or structural damage and is not likely to cause any upsets in the ecological system as designed for public display. The public, being limited to walkways in the Tropical House, is unlikely to encounter this ant and therefore the problem is basically internal, affecting the maintenance personnel only. Unless a person shows a severe allergic reaction to the sting of this ant, as with any native insect, it is merely an annoyance.

The possibility that the Tropical House could be a source of infestation for other buildings in Winnipeg is considered minimal. *M. pharaonis*, the most adaptable of the species found, has not become a serious pest. The species discussed are unlikely to survive in buildings heated in winter because of the low humidity levels that generally prevail. Commercial greenhouses, which could provide suitable environmental conditions for many of these ants, are generally fumigated on a regular basis thereby preventing the development of permanent populations.

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LITERATURE CITED

- Brown, W. L. 1962. The neotropical species of the ant genus *Strumigenys* Fr. Smith: Synopsis and Keys to species. *Psyche* 69: 238-267.
- Buren, W. F. 1972. Revisionary studies on the taxonomy of the imported fire ants. *J. Georgia Entomol. Soc.* 7: 1-26.
- Creighton, W. S. 1950. The ants of North America. *Bul. Mus. Comp. Zoo.*, Vol. 104. 585 pp.
- Peacock, A. D., D. W. Hall, I. C. Smith and A. Goodfellow. 1950. The ant pest *Monomorium pharaonis* (L.). Dept. Agri. for Scotland, Misc. Pub. No. 17. 51 pp.
- Smith, M. R. 1933. Additional species of Florida ants, with remarks. *Florida Entomol.* 17: 21-26.
- Smith, M. R. 1965. House-infesting ants of the Eastern United States. U.S.D.A., A.R.S. Techn. Bul. No. 1326. 105 pp.
- Spencer, H. 1941. The small fire ant *Wasmannia* in citrus groves — a preliminary report. *Florida Entomol.* 24: 6-14.
- Wheeler, W. M. 1929. Two neotropical ants established in the United States. *Psyche* 36: 89-90.

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