Wasmannia auropunctata (Little Fire Ant or Electric Ant)

Order: Hymenoptera (Ants, Wasps and Bees)
Class: Insecta (Insects)
Phylum: Arthropoda (Arthropods)

Fig. 1. Little fire ant, *Wasmannia auropunctata*.

[http://www.ens-newswire.com/ens/oct2010/20101025_littlefireant.jpg, downloaded 12 March 2015]

TRAITS. An individual little fire ant can be a fertile male, sterile female worker, or fertile female queen. Colonies of little fire ants are monomorphic, with a single type of worker (Meer et al., 1990), and unicolonial, referring to its formation of super colonies that have little or no behavioural boundaries among separate nests (Helanterä et al., 2009). Approximately 1.5mm in length, the worker ants are reddish in colour (Fig. 1). They have a thorax with a pair of spines, a pedicel (waist) consisting of two nodes, a gaster (abdomen) which is darker than the rest of the ant, and antennae with eleven segments. The body of the ant is sparsely covered in setae (hairs) (Meer et al., 1990).

DISTRIBUTION. The little fire ant originated from South and Central America and from there, has successfully spread worldwide. It can be found in most Caribbean islands including Trinidad and Tobago, as well as West Africa, Pacific islands (Melanesia and Polynesia) and recently the Mediterranean zone in Israel (Foucaud et al., 2010). Other areas where the ant can be found include: Florida and California of the USA, Bermuda and the Bahamas (Wetterer, 2013).

HABITAT AND ACTIVITY. Low density populations that reproduce sexually can be found in natural forest habitats, including floodplains along creeks while high density populations are found in habitats that have been influenced by humans (Foucaud et al., 2010). The ants are sensitive to cold environments, disappearing at the beginning of fall and coming back in the warm spring (Fernald, 1947). Usually nests are established at ground level areas, found near plant roots, decaying logs, inside previously formed cavities and inside hollow branches (Meer et al., 1990). In city areas, nests can be found under stones or rocks that are partially covered with grass, in crevices or under fallen leaves. Being an exceptionally adaptable species, the electric ant is able to nest in both open and shaded areas and thrives in both moist and dry conditions. These nests however are not easily located (Fernald, 1947).

FOOD AND FEEDING. As omnivores, these ants feed on dead animals, small invertebrates, plants and the exudates of insects. An important feature that helps in the attainment of food is the venomous sting of the little fire ant. This provides an advantage when compared to other ants as it aids in the capture of vertebrate and invertebrate prey (Fernald, 1947). Honeydew, peanut butter, dried sugar and fatty or oily materials are also food sources for the ant. Honeydew is derived from mealybugs, white flies and scales (Meer et al., 1990).

POPULATION ECOLOGY. Little fire ants are organized into a unicolonial structure, co-operating not as just a single nest, but a population, lending to their ecological dominance (Helanterä et al., 2009).

REPRODUCTION. Reproduction of *Wasmannia auropunctata* is different for each type of ant, meaning offspring are created through different mechanisms. Queens are produced through ameiotic parthenogenesis from other queens, that is by clonal development of embryos without fertilization. Worker females are produced through sexual reproduction, but are themselves infertile. Males are also produced after sexual reproduction, but the female genetic material is then lost so that male offspring are also clones, of their fathers, but through the maternal egg (Rey et al., 2013). Although not much is known about male clonality, it appears to be closely linked to queen parthenogenesis and is likely to be controlled by the queen (Foucaud et al. 2007). The eggs, which are laid only by queens, are white, have an elliptical shape and are approximately 0.22 x 0.15mm. The larva and pupa are approximately 1.2mm and 1mm respectively. Workers take approximately 37 days to develop (9 days for incubation, 17 for larval period and 11 days for pupal stage (Meer et al., 1990).

BEHAVIOUR. The little fire ant is considered a pest worldwide as it adversely affects both agriculture and natural ecosystems. Although their sting is quite painful and has many negative effects, the ants are not aggressive, stinging only when provoked or pressed upon (Smith, 1965). Being active during both the day and the night, allows the ants to maintain their large numbers. Food is attained through finding food on their own or taking food from other ants. The little fire ant, being an invasive ant, indirectly competes with native ants via exploitative competition. Large colonies lend to exploitative ability as a large number of workers would be available to search for food. Unlike native ants, the little fire ant is able to find food quickly, being excellent at the discovery of resources and resource dominance (Holway et al., 2002).

APPLIED ECOLOGY. Because of their painful stings, which may last for several days, the ants are considered a pest worldwide (Smith, 1965). Not only is it a pest agriculturally, but it infests human houses and competes with local fauna. Agricultural workers are frequently stung by this ant affecting the efficiency at which work is completed. Also, the ant increases the abundance of Homoptera (plant hoppers), a suborder which the ant shares a symbiotic relationship with. The ants protect the homopterans from predators and in turn, feed on honeydew that is excreted from them. Homoptera damage plants by feeding on their nutrients and increasing diseases present in that ecosystem (Meer et al., 1990). People who are allergic may turn pale or shaky if several stings were received (Smith 1965). Other negative effects that have been reportedly due to the sting of *W. auropunctata* is blindness in mammals. Certain populations such as, the reptile population of New Caledonia and the scorpion population of Galapagos had been greatly reduced due to the effects of the little fire ant. Control measures include the application of ant poisons, poisoning baits with toxic products, fire and clearing of vegetation (Holway et al., 2002).

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Author: Reanna Dookie

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