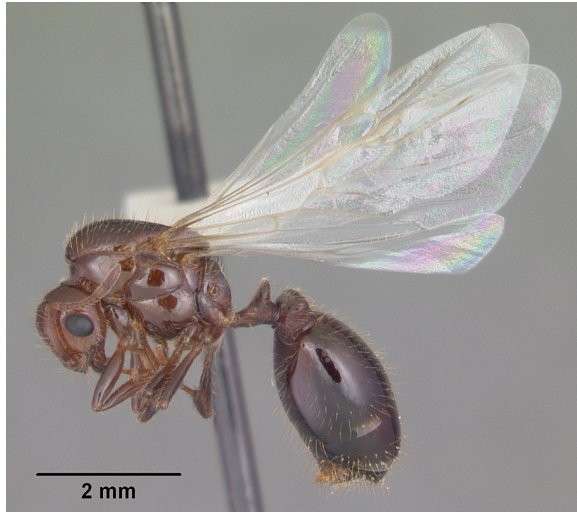


FIRE ANT

(*Solenopsis invicta*)



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There are over two hundred species of ants in the genus *Solenopsis* but only about twenty are true fire ants. Four species are native to the United States: *S. geminata*, a tropical fire ant most commonly found in open spaces; *S. xyloni*, a southern fire ant found from North Carolina to central California; *S. aurea*, found in the western states; and *S. amblychila*, found in the desert areas of western Texas. There are also two non-native fire ants in the United States: *S. richteri*, a black imported ant confined to northeast Mississippi and

northwest Alabama, and *S. invicta*, an invasive red ant imported and common throughout most of the southern states from Maryland through Texas and, since the 1990s, in parts of New Mexico, Arizona, and California. According to the University of Florida, Florida is home to two of these species, the native *S. geminata* and *S. invicta*, the red imported fire ant (RIFA). *S. geminata* is not common; most of the fire ants we encounter in our gardens are *S. invicta* so I am going to concentrate this report on *S. invicta* (RIFA).

S. invicta fire ants are native to South America. They first appeared around the seaport of Mobile, Alabama in the 1930s. It was believed they were transported there on cargo ships from Brazil. However, recent DNA research has confirmed that the strain in the US comes from Argentina. In the past 20 years, the RIFA has also spread through all of Puerto Rico and has been found in Australia, New Zealand, and several Asian, European, and Caribbean

countries, likely also transported by cargo ships.

RIFA are red to dark brown with their abdomen often being darker than their head and thorax. They are 1/8" to 1/4" in length and composed of a head, thorax, and an abdomen with a stinger. They can be distinguished from other ant species by the two bumps between their abdomen and thorax. These fire ants have a noticeable waist, six legs, and segmented clubbed or bent antennae. Worker RIFA have rounded heads with mandibles and three teeth. They are polymorphic, having different sizes and shapes depending on their function. Worker's lifespan is determined by their size and the importance of their job. Those with the most important job can live 90 -180 days while those of medium importance can live 60 - 90 days and those of least importance live only 30 - 60 days. Queens live 2 - 7 years. Queens have large heads and thoraxes. Males and mating queens have wings and mate during flight. After mating the males die

and the queens drop to the ground, snap their wings off by rubbing their legs forward and search for a suitable place to start a nest.

Once the new queen has chosen a site, she tunnels into the ground, seals herself in, and lays a dozen or more eggs. She feeds and tends to this first brood of sterile worker ants herself. The muscles that had controlled her wings break down to provide food.

The eggs hatch in 7 - 10 days and larvae develop over the next 20 - 25 days. Larvae go through four developmental stages before molting into pupae. Only 4th stage larvae can digest solid food. They have a pocket below their mouth where they digest food externally. The fluid produced from digestion is fed to the queen and worker ants. The pupa stage lasts about two weeks. After this first brood, the queen's only job is to lay eggs. She can lay 1500 eggs a day. Thus, her colony can grow to contain between 100,000 and 500,000 workers. Subsequent broods are fed and cared for by the

adult worker ants who also care for the queen, construct, and maintain the nest, forage for food, and defend the colony. Most eggs develop into worker ants, but a few develop into winged adults called reproductives who become future queens. They live in the mound until embarking on their own nuptial flight. Unfertilized eggs develop into winged males.

Fire ants are social insects. Besides having a hierarchy and defined tasks within the colony, they cooperate, defend, and communicate with each other. If the colony is under attack, the adult workers will aggressively fight off the intruders and defend the queen while the immature ants whose stingers and exoskeletons are not fully developed yet play dead. RIFA display necrophobia behavior by discarding dead ants onto a refuse pile outside their nest. They have been known to build rafts when they sense the water level is rising. RIFA communicate with each other through chemical secretions and sounds produced by rubbing or

drumming one body part against another.

Estimates of RIFA mound sizes vary substantially. Mounds can be as small as a few inches high and wide in well-manicured lawns or as large as 24 inches tall and over a yard wide at the base in undisturbed fields. However, the mound comprises only a small portion of the nest. Under the mound is an extensive network of tunnels that can, but rarely does, go as deep as six feet. Unlike native fire ant mounds which have a single center opening, RIFA mounds do **NOT** have a noticeable opening except after the reproductives emerge for their nuptial flight. Then the mound will temporarily have multiple openings.

Fire ants prefer to build their mounds in sunny areas, but they are also attracted to electronic equipment. They are notorious for building their mounds near/in air-conditioning and traffic light wiring, causing them to short out. Fire ants are the leading cause of traffic light

shorts in Texas, causing more than \$140,000,000 in damage each year. They are also attracted to moisture, often choosing sites with stagnant water, irrigation, and leaking pipes. The FDA estimates that more than five **billion** is spent annually on medical treatment, damage, and control in RIFA infested areas. Fire ants cause about \$750 million in damage to agricultural assets such as loss and damage to young livestock and crops like corn, okra, sorghum, soybeans, potato tubers, and citrus. Although fire ants do prey on pests like sugar borers, beet army worms, ticks, stink bugs, chinch bugs, scorpions, cockroach and mosquito eggs, the benefit does not outweigh the damage and expense they cause!

RIFA are notorious for their aggressive behavior and painful stings. If a mound is disturbed, worker ants pour out and attack the offending party. They attach to the skin with their jaw and swivel their bodies to sting multiple times, often leaving a semicircle pattern. Even

though RIFA stings are only rated a 1.2 on the Schmidt Sting Pain Index, most people develop itchy bumps that frequently progress to small blisters which fill with a pus-like substance that can last for up to ten days. A large number of stings or being allergic to them can be a serious emergency. If you have difficulty breathing, tightness in your chest, or light headedness, seek emergency treatment. If you are stung, some recommendations are to wash the area gently, use cold compresses to reduce swelling, take an antihistamine, and use a topical hydrocortisone cream. Other suggestions include calamine lotion, oatmeal baths, aloe vera gel, or lotion, lavender oil, cold green tea bags, cucumber slices, Vick's Vapor Rub, a small dab of non-gel toothpaste, or a baking soda or meat tenderizer paste. Do not use hydrogen peroxide or alcohol because they slow healing.

Fire ants are omnivorous! They eat both plants and animals and they are not finicky! They eat grains, seeds, oils, sugars, fruit, cheese, peanut butter,

eggs, birds, reptiles, mammals, other insects, and even their own eggs! They use their strong jaws and teeth to hold prey and their stinger to immobilize and kill it. They dismantle larger food to carry it back to their nest. RIFA have very few natural enemies in the US. Armadillo, dragon flies, earwigs, antlions, spiders, beetles, horned lizards, and some birds of prey will occasionally prey on fire ants but not often enough to impact the species.

There are three main ways used to control fire ants: granular baits, mound by mound treatment, and broadcast insecticide treatment. Most RIFA control focuses on sterilizing the queen. After mating, the queen never leaves the tunnels below the mound, therefore, a common method is to treat the mound and let the workers carry the bait to the queen. Once the queen takes the bait, she will be sterilized, stop producing eggs, and the colony will eventually die. However, since the nests often contain multiple reproductives, some of these can survive, emerge, mate, and revive

the nest even if the queen is killed or sterilized. Since 1973 there have been frequently more reports of polygyne colonies, colonies with more than one queen. Polygyne colony mounds are often closer together with smaller queens, smaller workers, and fewer major workers. Even though the smaller queens produce fewer eggs, polygyne colonies have more eggs because they have more queens. Another difference between polygyne and monogyne colonies is that polygyne colonies aren't aggressive toward their neighbors.

Besides commercial treatments, there are some household products that have been suggested. Baking soda may gradually disrupt their digestive system and kill them. Because RIFA breathe through their exoskeletons, they hate walking over powdery substances. Sprinkling powder heavily around their mound will discourage them from escaping and pouring cayenne water onto the hill will kill many of them and make the mound uninhabitable. Other recommendations include dish soap,

white vinegar, peppermint essential oil,
orange oil or a combination of these.