You Ain't From Around Here! Exotic Invasive of the Quarter: Red Imported Fire Ant (*Solenopsis richteri*)

By: Jennifer Gagnon, Virginia Tech

Many years ago, my parents moved our family from Massachusetts to central Florida. Upon arrival, we proceeded to participate in typical touristy activities (things long-time residents would never even consider doing!). These activities included: purchasing 3-season passes to Disney; swimming in our pool on Christmas Day; and visiting sinkholes (there is no karst topography in eastern MA). Our first sinkhole viewing trip entailed a drive to Winter Park in July (the irony of the name wasn't lost on us, as we sweltered in the 105 degree heat). After five minutes of admiring the grass-filled depression, my brother began to jump around line a lunatic, screaming and slapping at his feet. As he frantically removed his shoes and socks, some helpful locals laughingly informed us he had been standing in a fire ant mound. Hence, our introduction to these vile critters (the ants, not the locals). From then on, the Gagnon family was much more aware of where they put their feet.

There are actually two native and two invasive fire ant species in the United States. The two native species are the tropical and the southern fire ant. The two invasive species are the black imported fire ant and the red imported fire ant (RIFA). I can't tell you which ones are responsible for the attack on my poor brother, but the most common species is the RIFA. In fact, it has eliminated the two native species from most of their range, and has displaced the black imported fire ant in some areas. And, in Virginia, the RIFA is the only fire ant species that has been identified.

The RIFA arrived in Mobile, Alabama from South America around 1930. In those days, soil, which probably housed RIFA's, was used as ballast for cargo ships. Since then, RIFA's have spread to Texas and Florida, and up to Oklahoma and Virginia, and over to New Mexico and California. The first RIFA's were identified in Hampton, Virginia in 1989, and are now established throughout Hampton Roads. Individual colonies have been found as far west as Montgomery County. Fortunately, here in Virginia, we are not yet inundated by these critters. Yet. In the southern U.S., as many as 97,000 queens may be produced per acre of infested land per year. A mature queen can produce 1,500 eggs per day.

Like most invasive species, RIFA's have a variety of reproductive methods. These include

1. Mating flights: This is the primary means of colony propagation. Male and female reproductives fly out of the nest and mate. The newly formed queens start their own colonies.
2. Budding: One or more queens and a group of workers will move out of the colony to form a new one.
3. Flooding: In areas prone to flooding, groups of workers will form rafts of workers and place the queen and her brood on top, and float to safety. I have witnessed this ~~terrifying~~ amazing adaptation in a seasonally flooded pond. The worker ants which form the raft constantly rotated, so any one ant was only under water for a short time, allowing them to survive in the flooded conditions.

4. Humans: Moving infested sod, nursery plants and mulch. In fact, this method has been the most effective means of dispersal.

Now, aside from forcing people to rip off their footwear, fire ants cause a number of other problems. Most people find their mounds unsightly, especially in the middle of their lawns, they make picnicking rather unpleasant, as they both bite AND sting (one of my favorite things to do when I first moved to Virginia was to lie in the middle of my yard and watch the plump friendly black ants working. Lying in the lawn in areas with fire ants is not a wise move). RIFA's are aggressive and respond quickly to any disturbance. Their bites do not hurt, but their stings cause small painful wounds that develop into pustules within 48 hours. Some people may have severe reactions, and in some rare cases, may die.

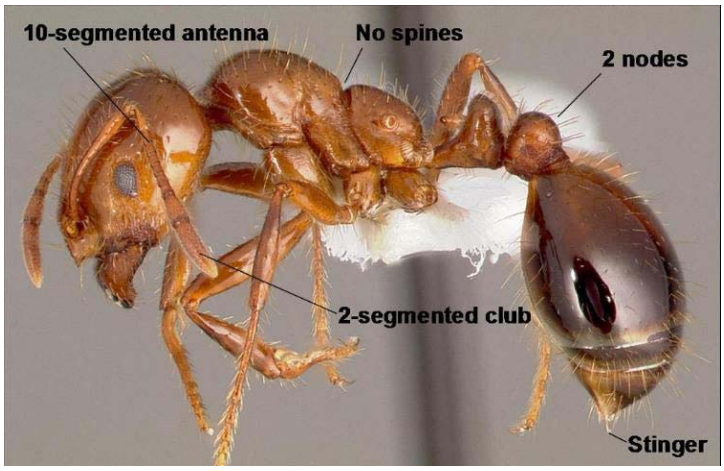
RIFA's are omnivores and will eat almost any species of plant or animal, dead or alive. They feed on seeds, shoots, fruits, and seedlings of many native plant species, reducing their abundance. They can also displace native ants, which can be important seed dispersers, and native pollinators. Additionally, RIFA's nurse other plant-damaging insects such as scale, mealy bugs, and aphids – these insects produce honeydew on which the RIFA's feed.

As far as animals are concerned, RIFA's are bad news. They can have a serious negative impact on ground nesting animals such as snakes, turtles, birds, reptiles, rodents and amphibians. They can also cause serious harm to young livestock, and grazing animals are subject to stings on their mouths.

RIFA's are typically not found deep in the forest. They usually build their mounds in lawns, sidewalks or roadways, or near dumpsters, trash cans and kitchen gardens. However, they can also be found in younger, more open forest stands.

How to Identify RIFA's

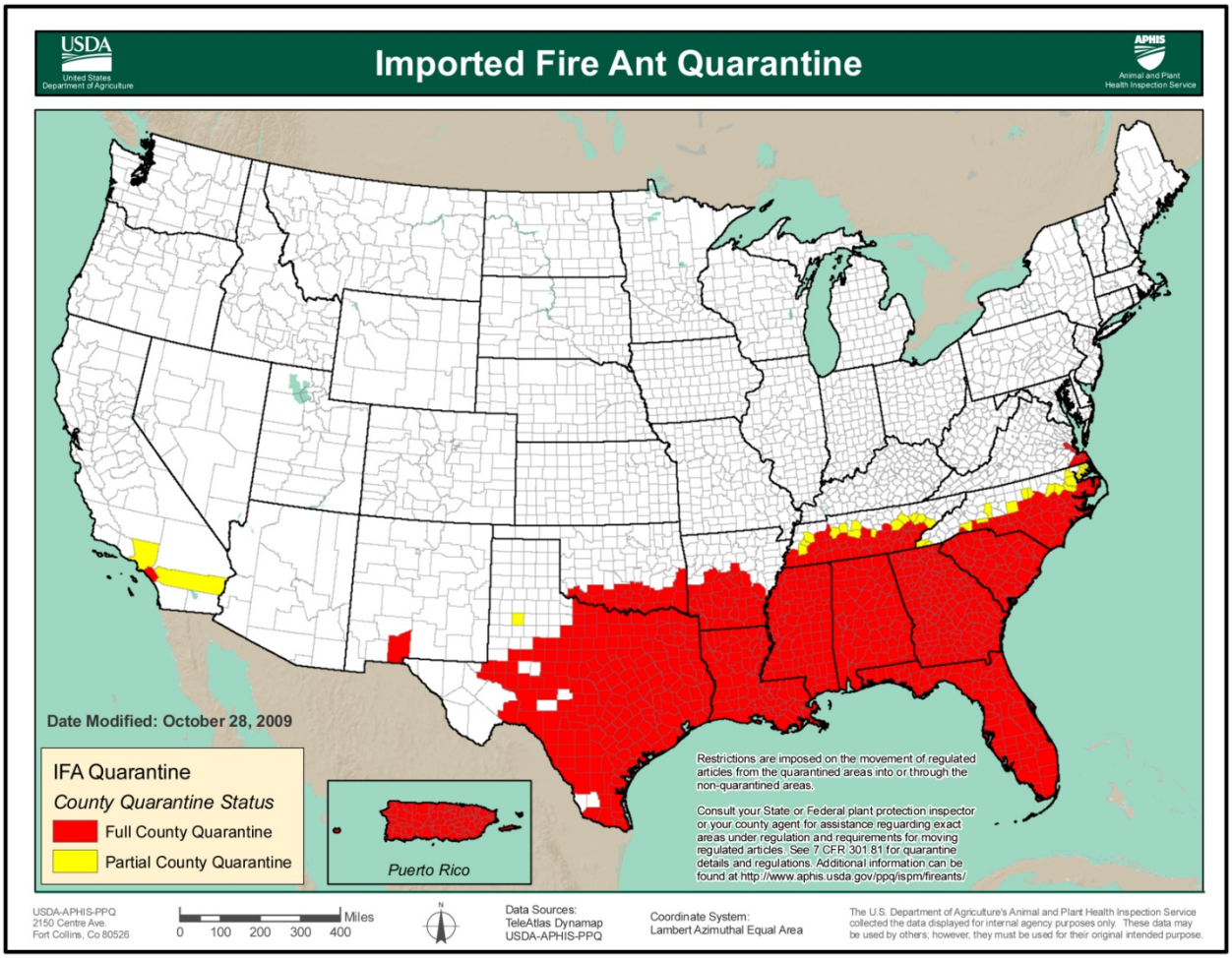
If you're not an entomologist, RIFA's are tough to identify – they look like ants. Their size can vary from 1/8 to 1/4 inch, and their color can vary from brown to red. If you have a microscope on hand, and are familiar with ant anatomy, you can look for the following characteristics: the pedicel or waist contains two nodes; the antennae are 10-segmented ending in a 2-segmented club; the end of the gaster has a stinger. For the rest of us, just look for the mounds. The mounds are cone-shaped, 12-15" wide, and 10" tall. They have hard rain-resistant crusts.



Ant anatomy.
Photo by: USDA APHIS PPQ Archives.

Control

If you find what you think is a fire ant mound, first check and see if you are in the quarantine area. If you are NOT in the quarantine area, please call the Virginia Department of Agriculture and Consumer Services at 804/786-3515 to report your sighting. If you ARE in the quarantine area, you may either call a qualified professional, or attempt to treat the infestation yourself.



If you want to attempt control on your own, there are two common methods which can be used. You can either treat the mound directly, or broadly treat a larger area.

Treating a mound

There are several ways to treat a mound. For effective control using any of these methods, it is important to not disturb the mound prior to treatment. Disturbances may result in the queen being moved – which will displace the infestation, but not eliminate it. And potentially cause harm to the disturber. (From personal experience, I know that push mowing through the mounds in your backyard is a satisfying experience, however, about 50% of the time your mower will get bogged down, leaving you in the middle of a shower of displaced fire ants, raining from the sky).

- **Drenching:** This method of control requires the entire mound to be flooded with a large volume of liquid insecticide. However, the queen may be deep inside the mound and the insecticide may not reach her.
- **Surface application of dust/granular insecticide:** For this method, insecticide is spread directly on or around the mound. Some formulations may need to be watered in.
- **Mound injections:** An insecticide is injected directly into the mound, helping ensure the poison penetrated the mound deeply enough to reach the queen. Best if done by a professional.
- **Gas/boiling water**: These home remedies are generally not very effective and can be dangerous to the humans using them. In some cases they may even be illegal. Not recommended.

Overhead view of a typical RIFA mound. Photo by: Chris Evans, River to River CWMA.

When using a mound application, all the individual mounds must be identified and treated.

Treating a Yard

For treating large areas, such as your entire yard, a broadcast application of bait can be used. Baiting is typically a slower control method than direct mound treatments, but it is usually safer and more effective. Baits are insecticides suspended in oil and injected into a carrier, such as a corn kernel. The bait should be placed in areas where the ants forage, and at times when the ants are foraging. Ants typically forage in temperatures above 65°C and below 85°C. Also, the bait should be applied sparingly –too much will repel the ants. And the bait should not be applied directly on the mounds. The ants will not eat it. Also, keep in mind the oils are typically water soluble, so check the radar before putting out your ant bait.

From my experience living and working as a forester in Florida and SW Georgia, I have approximately one million great fire ant stories. Thank you for allowing me to share some of them with you. It's been therapeutic.

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