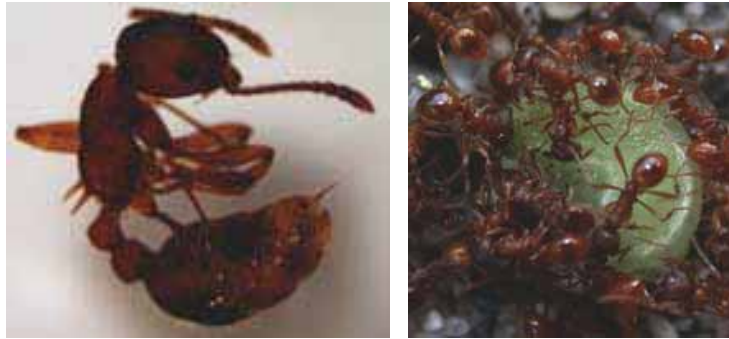

EUROPEAN FIRE ANT: MANAGEMENT PLAN



Above Left: Adult ant. Above Right: Adults tending larvae and pupae in nest. Below: Adult European fire ant on branch.



In Europe, it is believed that competition with other native ants prevents the European fire ant from becoming a serious problem. But North America's native ants did not co-evolve with this insect, and may not be able to defend their food and nesting resources against it. European fire ants could displace them if allowed to spread uncontrolled. Many other insects become displaced also.

Town of Richmond Hill,
Parks Recreation & Culture Department

Natural Heritage Section

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1.0 Background

Why are they a problem?

European fire ants are a nuisance pest for people and a potential threat to the environment. They aggressively defend their territory and readily sting humans, pets and livestock that have the misfortune to move slowly or rest within the ants' large foraging areas.



The severity of reaction to the European fire ant sting varies from one individual to another, and with the location of the sting. Usually a sting results in an inflamed red area from one to four inches in diameter, sometimes with a raised white area in the center. The sting causes an initial burning sensation and the affected area can remain sore for just a few hours, or a day or more.

Where this insect has established nests, homeowners have reported that they are unable to use their yards and gardens because of repeated stings by the ants. If European fire ants move into new places, they may threaten native species of ants.

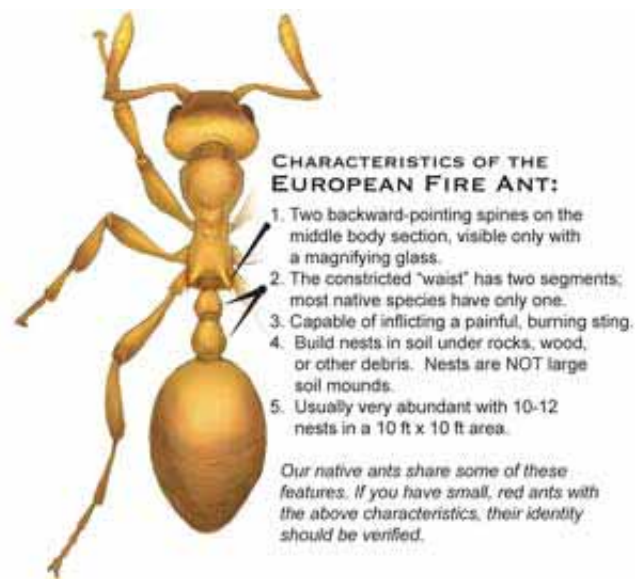
Where do European fire ants live?

European fire ants live in decaying logs or soil, under rocks and human debris, and even in thick clumps of grass or under leaves.

Their nests vary in size, from a few hundred to ten thousand workers. Nests usually have multiple queens that lay eggs.

The habitats in which these ants are found varies in different parts of their native range, from conifer forests in Russia to pasture edges in England.

However in Richmond Hill, this ant appears to take advantage of habitats, including old fields, scrub/shrub and ravine settings. The ants do not nest in large mounds, but rather, nest in smaller communities in the root zone of vegetation.



How do European fire ants move to new places?

European fire ants move in two ways. First, people move ants from one location to another, sometimes across long distances. Since European fire ants develop their colonies in soil and similar materials, they can be moved in potted plants and mulch from nurseries, and in soil moved to or from building sites. And, since egg-laying queens move with the individuals forming new colonies, the new nests have all the components to establish a viable population in their new site. Second, is a process called “colony budding,” a group of ants takes a queen and moves away from their original colony to establish a new nest in a nearby site. In this way, infestations spread outward over time. Mating flights and colony founding by new winged queens, common in other ant species, does not appear to be a frequent mechanism of spread for these ants in their invasive range. The European fire ant was first discovered in the early half of the 20th century along the coast of Maine. It is likely that they were imported to North America via infested containerized plants brought from Europe to plant in gardens estate homes. The date of the ant’s arrival is not certain. The University of Maine has confirmed that European fire ants were established in two locations in Maine before the 1950s and have reported that population densities and the number of infestation sites have increased considerably over the past decade. Since this ant is native to cold regions of Europe and Asia, climate has not prevented their spread into other areas and as a result they have steadily established themselves northwards. The discovery of the European fire ant in Canada is a very recent phenomenon, with only one other confirmed case in Scarborough besides Richmond Hill.

2.0 Management

Controlling populations of invasive exotic species in natural areas is always a very difficult task. Due to the fact that the European fire ant is a newly arrived species in Canada the availability of proven management and control tactics/programs is non-existent. As a result, this management plan is the Town’s first attempt at dealing with this species and is based, in part, on methods that are being developed at the University of Maine where the European fire ant has been a known pest for quite some time.

The Management Plan takes into account recommendations made by both the University of Guelph Pest Diagnostic Clinic and the University of Maine Cooperative Extension’s Pest Management Office and focuses on continued control attempts with boric acid and/or diatomaceous earth while communicating the issue and recommended personal protection measures to nearby residents and people using the open space area, as well as to Town staff and contractors that will be working in the area.

Identification

In the spring of 2006 Natural Heritage Section staff collected and sent samples to the Guelph Pest Diagnostic Clinic for identification and verification. Based on their identification and the information provided, Natural Heritage staff can now in future confidently identify European fire ants.

Control Tactics

The University of Maine has been researching methods of management for *Myrmica* populations; however, there is no known way to eradicate this species completely. Several experiments with pesticides, conducted out of the University of Maine, have found that chemicals often exacerbate the problem, and the only pesticide that has shown some promise which is known as Andro (hydramethylnon), is not registered for outdoor use in Canada. The following provides an outline of several substances and methods recommended for controlling the European fire ant in the Town's open spaces, where excessive populations are causing negative impacts to the natural area users and adjacent property owners.

Boric Acid

Boric acid is produced by reacting naturally occurring borate minerals with sulphuric acid. Boric acid and borates are considered to be preferred pesticides because they have relatively low toxicity to mammals and other vertebrates (including fish) and a low environmental impact. Although the mode of action of boric acid in ants is not fully understood, it is believed to disrupt the digestion process causing the insect to starve. Evidence of success with boric acid traps in natural areas tends to vary with noticeable reductions, if any, between 3 to 5 weeks after first placing the bait.

Boric acid traps will be set out in natural areas where infestations of the European fire ants are posing a nuisance to abutting property owners during the months of June, July and August, when fire ant activity is the most severe. Distance between the dispersal of traps will be determined by the severity of infestation and will be changed bi-weekly, or as needed.

Diatomaceous Earth

Diatomaceous earth is a non-toxic powder substance made of crushed fossils of freshwater organisms and marine life. It is composed primarily of silicon dioxide, therefore the active ingredient on pest control product labels may list only silicon dioxide. It is a substance that is very deadly to any insect, however, completely harmless to animals, fish, fowl or food. Most insects have a waxy outer shell covering their bodies; diatomaceous earth scratches through this shell causing the insect to dehydrate leading to eventual death.

Diatomaceous earth will be placed in concentrated areas along trails, walkways and along property lines in cases where the European fire ants are posing a nuisance to abutting property owners and open space users or in instances where work or activities are scheduled in areas where the ants are present. The placement of diatomaceous earth will act to create a barrier or buffer between infested areas and areas where there is potential of human contact. Although diatomaceous earth has the potential to kill all insects, one can assume that fire ant infestations have almost certainly displaced all other insects. Consequently, the potential for any other insects to be affected by the substance will be minimal.

Strategies to Minimize Impact

In order to reduce impacts of the European fire ant to humans, the Parks, Recreation and Culture Department will, where possible, implement strategies to minimize the chances of human contact with ants. Such strategies will include, but are not limited to, providing safe passage for people to access the natural areas through the installation of trails and boardwalks. The ants tend not to go on the trails/boardwalks as they are not familiar with the surfaces and feel vulnerable without the protective cover of the vegetation. The chances of human contact with the ants on paths or paved trails is less likely compared to walking in grass or shrubby vegetation. The use of paths and/or trails in combination with signs, warning natural area users of the ants and to stay on the trail, will help to ensure people take necessary precautions while in the open space. In extreme cases where ant populations are

very high, which usually occurs in the dry summer months of July and August, Parks staff may have to post signs restricting entry into infested areas.

Monitoring

European fire ants are known for their ability to relocate populations and expand very quickly. Sites where the European fire ant have been confirmed will be monitored to determine changes in the distribution of the population and data will be stored in the Natural Heritage Strategy Area Specific database. Monitoring will also involve assessment of the surrounding built environment to determine any potential impact to abutting community.

3.0 Communication Strategy

As part of the Town's communication strategy, a fact sheet will be created to inform targeted audiences about the European fire ant, how they can avoid contact with the ants and how to reduce their spread. The fact sheet will be posted on the Town website and will also be distributed at community centers in the vicinity of the affected areas.

Targeted audience: Trail users, property owners abutting natural areas with ant infestations, contractors and Town staff.

References

University of Maine Cooperative Extension. European Fire Ant*: A New Invasive Insect in Maine, 2004 <http://www.umext.maine.edu/onlinepubs/htmpubs/2550.htm>

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