

Managing Red Imported Fire Ants in Wildlife Areas

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The red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae), is an introduced species that arrived in Mobile, Alabama, from South America around the 1930s. This ant species has had an enormous impact in the southeastern United States and continues to spread into areas of North America that have mild climates and adequate moisture and food. Over two-thirds of eastern Texas counties are infested (see [Geographic Distribution of Fire Ants](#)).

Fire ants can impact wildlife and dramatically reduce populations of certain species either directly by predation on certain life stages or indirectly by reducing critical food sources. For hunters, fire ants can be a threat because of their multiple stings and because they affect certain game species (see [Medical Problems and Treatment Considerations for the Red Imported Fire Ant](#)).

BIOLOGY OF THE RED IMPORTED FIRE ANT

Like other ants, the fire ant is a social insect. Fire ant colonies live in mounds of dirt, commonly in open, sunny areas, that can become more than 18 inches tall. There are two forms of fire ant colonies: single queen and multiple queen colonies. Multiple queen-infested areas can harbor 200 to 800 or more colonies per acre because worker ants are not territorial and move freely from mound to mound (see [Fire Ant Biology](#)).

Periodically, winged reproductive male and female ants leave the colonies on mating flights. Mated females (queens) can fly for miles, land, and start a new colony. Ants develop from egg to adult in about 30 days, progressing through four larval stages and a pupal stage. Worker ants (sterile female ants capable of stinging) can number in the hundreds of thousands in a mature colony.

Fire ant mound numbers can increase rapidly on lands disturbed by mechanical methods, pesticide use, or flooding. The ants disperse naturally through mating flights, mass movement of colonies, or by floating to new locations in floodwater (see [Red Imported Fire Ant Control around](#)



Bodies of Water). They can travel long distances when newly mated queens land in cars, trucks, or trains. Shipments of hay, nursery stock, or soil from an infested area may relocate entire colonies or nests. Quarantine regulations, enforced by the Texas Department of Agriculture, restrict the movement of infested articles such as bales of hay, pine straw, and sod from infested (quarantined) to noninfested areas (see [USDA APHIS Imported Fire Ant Program Manual](#)).

Fire ants feed primarily on other insects and arthropods (ticks, chiggers), although they “tend” (protect) some species of sucking insects (aphids), which provide them with a sugary solution (honeydew). This imported species has displaced many native ant species (see [Natural Enemies of Fire Ants](#)) and has eliminated food used by some wildlife such as young quail, which eat insects (they are insectivores) before they begin feeding on grain (they are *granivores*). Fire ants are attracted to newborn livestock and wildlife on the ground or those nesting in low trees, causing human and animal medical problems associated with their multiple stings and, occasionally, death (see [Diagnosing and Treating Animals for Red Imported Fire Ant Injury](#)).

IMPACT ON WILDLIFE

Ants especially affect certain types of wildlife, such as deer, ground-nesting birds, and reptiles during and soon after birth or hatching (see [What do fire ants eat?](#)). Fawns are vulnerable because they are born in June and they instinctively remain motionless in their hiding places. Ants also attack hatching quail and ground-nesting waterfowl chicks. The impact of fire ants on area-wide populations of wildlife has been documented by scientific studies (see [Red Imported Fire Ant Predation on Nestlings of Colonial Waterbirds](#)). A survey of Texas veterinarians about the impact of imported fire ants on livestock has demonstrated the seasonality of medically important stinging incidents (see [Results from the Texas Veterinarian Survey](#):



[Impact of Red Imported Fire Ants on Animal Health – Final Report](#)

In Texas, no endangered species has become extinct because of fire ants, although the ants can attack individuals of several threatened species. Insecticide-based fire ant control programs in wildlife areas are discouraged until the benefits from such treatments are known to justify the use of pesticides. Many pesticides are toxic to nontarget organisms (particularly aquatic organisms) and may directly or indirectly affect game species if not used properly. Below are some considerations when selecting management options:

1. In wildlife breeding areas that are considered nonagricultural lands, treat fire ants with insecticide products registered for this kind of usage site (nonagricultural lands, ornamental turfgrass, wayside areas). However, if these lands are agricultural lands or the game/wildlife or livestock is produced to be harvested and consumed, insecticide products selected to treat ants must be registered for use on those sites (see [Broadcast Baits for Fire Ant Control](#)).
2. Exotic game ranches are considered commercial agricultural areas. Treat breeding areas with products registered for use in wildlife or livestock areas, pastures, and rangeland.

MANAGEMENT STRATEGIES

Similar to cattle operations (see *Management of Imported Fire Ants in Cattle Production Systems*) nonchemical or cultural approaches can reduce problems caused by fire ants while maintaining stable ant populations that will help suppress filth-breeding flies, lone star ticks, and other pests. In operations that manage wildlife breeding, schedule breeding to assure that the young are born during cooler months of the year when fire ants are less active (soil temperature below 65° F) to reduce the probability of ant attacks. For hay pastures in wildlife management areas, nonchemical methods for avoiding fire ant problems include:

1. Using shallow discing or dragging heavy objects such as railroad ties across pastures, particularly after rotating livestock out of a pasture, to temporarily flatten tall, hardened mounds (although this practice seldom eliminates fire ants) and scatter manure. Manure can breed fly larvae that fire ants eat.
2. Using disc-type (Kountz) mowers to mow hay. These machines are designed to withstand the impact with a fire ant mound.
3. Using mechanized balers and bale movers such as those used in round bale production reduces human contact with infested bales.
4. Immediately removing hay bales from the field prevents ant invasion, particularly when rain is anticipated.
5. Storing bales off of the ground or in an area around which the ants have been treated (Note: A quarantine is in effect that prohibits the shipment of hay from infested to noninfested counties without certificates (see *Regulatory Information* or call the Texas Department of Agriculture personnel to certify that hay shipments are ant-free. Also see *Attention Baled Hay Producers—Don't Transport Imported Fire Ants.*)

MAINTAINING NATIVE ANT POPULATIONS

A number of ant species are native to Texas (see *Texas Pest Identification: An Illustrated Key to Common Pest Ants and Fire Ant Species*), including several other species of fire ants. Many of these ants compete for resources with the red imported fire ant, attack mated queen ants trying to establish new colonies, and invade weakened fire ant colonies (see *Ant Wars! Native and Exotic Competitor Ant Species*). Preserving and encouraging native ant species is the best defense against high populations of this imported pest invading an area. In areas with less than 20 red imported fire ant mounds per acre and where native ants are a concern, the broadcast application of a bait-formulated insecticide product is discouraged.

INSECTICIDE-BASED MANAGEMENT PROGRAM

Using currently available methods, fire ant populations can be suppressed in pastureland for \$10 to \$17 per acre per year application (see *Broadcast Baits for Fire Ant Control*). Because current methods are not capable of eradicating this species, treatments need to be reapplied periodically. Applications of some bait-formulated insecticides may affect some native ant species that compete with fire ants. However,



in fully infested areas (20 or more mounds per acre), the Two-Step Method of fire ant management may be justified (see *Fire Ant Control: The Two-Step Method and Other Approaches*). This program relies on the periodic (annual, semi-annual) broadcast application of an effective fire ant bait product. These treatments can reduce mound numbers by up to 90 percent, but achieving this much reduction can take several weeks to months, depending on the product.

Amdro (hydramethylnon), Extinguish (s-methoprene), Extinguish Plus (methoprene plus hydramethylnon), and Esteem (pyriproxyfen) ant bait products are the only bait products currently registered for use in cattle pastures. LogicAward (fenoxycarb) was registered only for nonagricultural lands and horse pastures.

Few individual mound treatments are registered for use in livestock or hay pastures. Mound treatments can treat “nuisance colonies” between bait applications. Sevin (carbaryl) formulations, applied as an individual mound drench, cost about \$0.10 per mound. A few other insecticides are being promoted for fire ant control in pastures, although the product labels may not specifically mention pastures as a use site.

Always closely follow the instructions provided for pesticide use on the product’s label. For large area treatments, bait application may be applied using aerial application methods, although crop dusters or helicopter application equipment may need to be modified and calibrated to ensure an even application of the proper rate (see *Fire Ant Bait Broadcast Application Guide* and *Control Imported Fire Ants Using Broadcast Applications of Bait Products*).

BIOLOGICAL CONTROL

Natural enemies are being established to provide sustainable suppression of imported fire ants through biological control (see *Potential*

Biological Control Agents for the Red Imported Fire Ant and *Natural Enemies of Fire Ants*).

However, their impact has yet to be determined and may not provide the level of suppression required to prevent the problems fire ants cause to wildlife.

CITATIONS

Drees, B. M. 1994. “Red Imported Fire Ant Predation on Nestlings of Colonial Waterbirds.” *Southwestern Entomol.* 19(4):355–360. http://sswe.tamu.edu/articles/PDF/SWE_V19_N4_P355-359.pdf.

Forbes, A. R., C. B. Dabbert, R. B. Mitchell, and J. M. Mueller. 2002. “Does Habitat Management for Northern Bobwhite Benefit the Red Imported Fire Ant?” pp. 135-140 in DeMaso et al., eds. *Quail V: Proceedings of the Fifth National Quail Symposium*, Texas Parks and Wildlife Department, Austin, TX.

ADDITIONAL INFORMATION

I am a Hunter. Why should I care about invasive species? <http://www.invasive.org/101/Hunter.html>

Invaders: Citizen Scientists Combat Invasive Species http://www.desertmuseum.org/invaders/invaders_fireant.php

ACKNOWLEDGMENTS

This article was originally issued as Fire Ant Plan Fact Sheet #006 in June 1998 and revised in May 2002. Charles Barr, Harlan Thorvilson, Marcus Peterson, and Kirby Brown reviewed the initial fact sheet.

REFERENCES

Geographic Distribution of Fire Ants
www.extension.org/pages/9725

Medical Problems and Treatment

Considerations for the Red Imported Fire Ant

u.tamu.edu/ento-005

Fire Ant Biology

www.extension.org/pages/60963/fire-ant-biology

Red Imported Fire Ant Control around Bodies of Water

u.tamu.edu/ento-024

USDA APHIS Imported Fire Ant Program Manual

www.aphis.usda.gov/import_export/plants/manuals/domestic/downloads/fire_ant.pdf

Natural Enemies of Fire Ants

www.extension.org/pages/30546/natural-enemies-of-fire-ants

Diagnosing and Treating Animals for Red Imported Fire Ant Injury

u.tamu.edu/ento-004

What do fire ants eat?

www.extension.org/pages/60922/what-do-fire-ants-eat

Red Imported Fire Ant Predation on Nestlings of Colonial Waterbirds

sswe.tamu.edu/articles/PDF/SWE_V19_N4_P355-359.pdf

Results from the Texas Veterinarian Survey: Impact of Red Imported Fire Ants on Animal Health—Final Report

bug.tamu.edu/fireant/research/projects/pdf/1993-1994_resdemos.pdf

Broadcast Baits for Fire Ant Control

www.agrilifebookstore.org/product-p/e-628.htm

Management of Imported Fire Ants in Cattle Production Systems

www.agrilifebookstore.org/product-p/sp-196.htm

Regulatory Information

www.extension.org/pages/14901/information-for-texas-residents

Attention Baled Hay Producers—Don't Transport Imported Fire Ants

www.aphis.usda.gov/plant_health/plant_pest_info/fireants/downloads/BaledHayProducers.pdf

Texas Pest Ant Identification: An Illustrated Key to Common Pest Ants and Fire Ant Species

u.tamu.edu/ento-001

Ant Wars! Native and Exotic Competitor Ant Species

www.extension.org/pages/30546/natural-enemies-of-fire-ants

Fire Ant Control: The Two-Step Method and Other Approaches

www.agrilifebookstore.org/product-p/ento-034.htm

Fire Ant Bait Broadcast Application Guide

fireant.tamu.edu/files/2014/01/broadcast.pdf

Control Imported Fire Ants Using Broadcast Applications of Bait Products

www.extension.org/pages/59882/control-imported-fire-ants-using-broadcast-applications-of-bait-products

Potential Biological Control Agents for the Red Imported Fire Ant

u.tamu.edu/ento-008

Managing Red Imported Fire Ants in Urban Areas

www.extension.org/pages/11004/managing-imported-fire-ants-in-urban-areas-printable-version

For more information regarding fire ant management, see Extension publications *Managing Red Imported Fire Ants in Urban Areas*, *Broadcast Baits for Fire Ant Control*, or *Fire Ant Control: The Two-Step Method and Other Approaches* posted on <http://AgriLifeBookstore.org>.

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