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# Diagnosing and Treating Animals for Red Imported Fire Ant Injury

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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 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 (see *Geographic Distribution of Fire Ants*). The red imported fire ant reached Texas during the 1950s and has spread steadily across the state.

## Diagnosing and Treating Domestic Animals

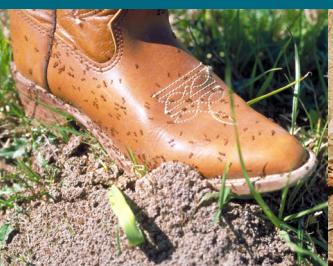
### Clinical signs of fire ant stings

Red imported fire ants may sting an animal, particularly in areas with little or no hair such as the ears, eyes, muzzle, perineum, and ventral abdomen. Although fire ants occasionally attack healthy animals, the very young (neonates) are certainly more susceptible. Animals that are weak and/or sick are easy victims. Since clinical signs of a debilitating problem may also be present, examine animals for possible serious underlying diseases such as septicemia.

After the sting, the necrotizing toxin causes a 2 to 5 millimeter red papule with mild swelling. A pustule (vesicopustule) with a red halo develops over the next 24 to 48 hours. Usually there are bites. If the ants sting the eyes, there will be excessive tearing, spasmodic winking of the eyelids, and a discharge on the lid margins and at the corners of the eye. The cornea and conjunctiva will have many 2 to 4 millimeter focal necrotic ulcers.

### Treating fire ant stings

To prevent further stings and damage, remove the animal from the fire ants source (the mound) and remove any ants from the victim. This may be all





that is necessary with milder attacks. More severe attacks may require local treatment. Use ointments containing corticosteroids with or without antibacterial agents to treat the skin bites and pustules that develop. After gently cleansing the skin with a damp cloth or paper towel, apply ointments once or twice daily. If the inflammation is severe or extensive, treatment for several days may help.

The eyes and eyelids are often damaged. Gently clean the eyelids of pus and dirt. In cattle, goats, and sheep, carefully apply a combination ophthalmic ointment containing an antibiotic and a corticosteroid to the eye without scratching the cornea. Treat the eye 2 to 4 times per day for 3 to 7 days, depending on the amount of damage and response to therapy. You can use eye drops containing these same medications, but increase the frequency of administration to 4 to 6 times per day.

Do not use medications containing a cortico-steroid on horses' eyes with acute fire ant bites because the corticosteroid occasionally causes other eye problems. Instead, for the first 3 to 5 days, use ophthalmic ointments or drops containing only an antibiotic. After the corneal ulcers caused by the bites have begun to heal (epithelialized), a corticosteroid may be added to hasten healing. To check if this has occurred, apply a fluroscein dye to the cornea to see if the epithelial damage has healed.

Nutrition and supportive nursing care are important, especially in sick or weak newborns. Evaluate vital signs and passive transfer of maternal antibody, and administer appropriate therapy for any problems present (such as fluid therapy, nutrition, and systemic antimicrobials).

**Figure 1.** Red imported fire ant stings, cloudy spots, on the cornea of a calf, left (Photo courtesy of TVMDL). Fawn with fire ant stings on its muzzle and eyes, right (Photo courtesy of B. Drees).

## Diagnosing and Treating Nondomestic and Exotic Animals

### Occurrence and clinical signs of fire ant injury

Infestation of nondomestic species by the red imported fire ant is well documented at the Texas A&M University College of Veterinary Medicine. In an 8-year period from May 1986 to January 1995, 78 cases of fire ant stings were seen in exotic animal species. Affected animals included cottontail rabbits, a ferret, a lizard, a mole, a newborn blackbuck, screech owl nestlings, a squirrel, and white-tailed deer. The majority of fire ant clinical cases were neonatal white-tailed deer. Sixty-nine white-tailed deer fawns had significant fire ant lesions. This constituted 25 percent of the 276 fawns brought to the teaching hospital during this period.

The clinical signs of fire ant stings in exotic species are like those in domestic animals. Infested animals usually have multiple sting sites that immediately swell and become inflamed. The diameter of a sting wound is normally 2 to 4 millimeters. Within 24 to 48 hours, pustules may appear in these areas. Cytotoxins and hemolytics in the fire ant venom cause necrosis of the skin and underlying connective tissue, creating a characteristic sterile pustule. Fire ant stings can destroy hair follicles since injection sites often do not grow hair after the epithelium has recovered.

Fire ant wounds are often found on the eyes, inguinal region, legs, muzzle, perineal region (anus, vulva), and ventral abdomen. The hairless or poorly haired areas of the body normally have the most sting sites. Lesions around the anus, eyes, lips, nostrils, and vulva can be very serious and obviously cause great discomfort. Fire ants may be attracted to these orifices while searching for moisture. Multiple bites in these areas can be inflamed and dramatically necrotized.

The eye is the most critical site for fire ant damage. The eyelids may slough along their margins when enough sting sites are present. Fire ants can also sting the corneal surface. This causes 1 to 2 millimeter areas of cloudy edema that can be seen with direct illumination. Multiple stings on the cornea can create a coalescing ulcer. This may progress from a large, melting ulcer to protrusion of the Descemet's membrane and rupture of the anterior chamber of the eye.

Of the 69 cases of ant stings in white-tailed deer fawns, 25 (36.2 percent) had appreciable corneal injuries.

The red imported fire ant is of particular medical concern because many ants can sting an infested animal simultaneously. Fire ants infest vertebrates as foragers for food and moisture rather than as warriors set on destruction. In larger animals, they do not intend to kill nor is their toxin strong enough to do so.

When the host animal moves and that irritates or injures ants on its body, it triggers a stinging episode in which all the ants participate. This combined attack is probably prompted by chemical signals. The results may be dramatic when hundreds of fire ants are on the creature. This explains why animals often have hundreds of fire ant bites. It is suspected that the victims suffering from numerous bites may actually be depressed from the systemic effects of the toxin.

Animals often swallow fire ants as they lick or bite at the painful sting sites. This gives the ants an opportunity to cause more injury in the upper gastrointestinal tract of the affected animal. Multiple sting sites have been observed at necropsy in the esophagus and abomasum of suckling white-tailed deer fawns. They appear markedly similar to the external wounds caused by this insect. The internal lesions inevitably compound these animals' discomfort. It is possible that the toxins from many ingested ants may also cause a generalized inflammation of the gastrointestinal lining.

**Figure 2. Rumen content from a calf that suffered a fire ant attack. (Photo courtesy of TVMDL)**

## Treating fire ant stings:

- Direct medical attention for fire ant victims toward both the immediate effects of intoxication and the serious secondary effects of the sting injuries. Immediate care may include spraying the victim with a low toxicity insecticide (such as permethrin) or with soapy water to kill any surviving fire ants.
- Administer IV fluids (such as Lactated Ringer's solution) for rehydration—white-tailed deer fawns usually have 5 to 8 percent dehydration when presented.
- Give nonsteroidal anti-inflammatory therapy (such as flunixin) to counteract shock, provide analgesic relief, and reduce swelling.
- Use fast-acting steroids (such as methyl prednisolone succinate) intravenously to treat severe shock—longer-acting steroids may retard healing of damaged epithelium (such as the cornea).
- Begin systemic antihistamine therapy to counteract the histamine reaction at sting sites—this therapy may be of little use if the insect stings are over 30 minutes old.
- Topically treat the eyes every 4 hours with antibiotic solutions. Use steroids only when there is no evidence of corneal ulceration.
- Remove remaining ants with gastric lavage with warmed isotonic fluids—up to 200 fire ants and ant fragments have been removed from white-tailed deer fawns with this method.

## Continuing care for fire ant victims may include:

- Systemic antibiotic therapy to control bacteremia that often results from multiple stings
- Gastric protectants such as kaolin pectin solutions to mollify internal irritation
- Orogastric tube feeding if the victim remains depressed or if muzzle lesions are advanced
- Intensive eye therapy if melting ulcers develop. This frequently requires the use of antibiotic/acetycystine solutions every 2 to 3 hours around the clock.

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## References

*Geographic Distribution of Fire Ants*
www.extension.org/pages/9725/geographic-distribution-of-fire-ants

*Managing Red Imported Fire Ants in Urban Areas*
www.extension.org/pages/11004/managing-imported-fire-ants-in-urban-areas-printable-version

*Broadcast Baits for Fire Ant Control*
www.agrilifebookstore.org/product-p/e-628.htm

*Fire Ant Control: The Two-Step Method and Other Approaches*
www.agrilifebookstore.org/product-p/ento-034.htm

**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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