

# South Florida Ecosystem Restoration Task Force

## Invasive Exotic Species Strategic Action Framework

### Prevention Case Study: Tropical Bont Ticks & Heartwater Disease

**Heartwater** is a tick-borne disease of domesticated (cattle, sheep, goats) and wild (deer) ruminants caused by a bacteria transmitted by ticks belonging to the genus *Amblyomma*. The most important of these vectors is the tropical bont tick (*Amblyomma variegatum*) due to its widespread distribution. Heartwater is historically endemic to sub-Saharan Africa, Madagascar, and more recently several islands in the Caribbean. If heartwater is introduced to the South Florida Ecosystem, this often fatal disease could cause devastating impacts on native ruminants and the agricultural industry.

#### Case Presentation

In countries where heartwater is established, indigenous wild and domestic ruminants have had many years of exposure to the disease therefore gaining resistance to its effects. The concern lies in geographic areas in which heartwater was never before present.

Species that contract heartwater experience symptoms that include prolonged high fever, listlessness, diarrhea, shortness of breath, and death. Heartwater disease is often fatal with mortality rates of up to 80% in non-African cattle, sheep, and goats. The white-tail deer population has also been shown to be very susceptible to the disease in laboratory settings and can also serve as a reservoir in the wild. If the disease becomes established in the United States, there are two species of *Amblyomma* tick (*A. maculatum* and *A. cajennense*) that are native and have proven to be able to transmit the disease in laboratory settings.

The potential for heartwater gaining a foothold in South Florida Ecosystem is further increased due to the favorable climate for the vector (*Amblyomma* ticks) and the large volume of African reptiles that are imported weekly into Miami International Airport. The reptiles prone to carrying the ticks include land tortoises, monitor lizards, and snakes (pythons and old world boas). Another risk of introduction comes from the proximity of the Caribbean islands and the migration patterns of cattle egrets.

#### Management Actions and Outcome

In 2000, the U.S. Department of Agriculture (USDA) passed two emergency rules banning the import (9 CFR 93.701(c)) and the interstate movement (9 CFR 74.1) of three species of African land tortoises: African spurred tortoise, leopard tortoise, and Bell's hingeback tortoise. The interstate movement rule was later amended to allow these tortoises to travel between states with a health certificate endorsed by an accredited veterinarian. These emergency rulings were in response to the discovery that there was evi-

#### A Deadly Hitchhiker

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Photo: USDA.

dence of the causative agent for heartwater disease in a tick collected from a leopard tortoise and the interstate movement of leopard tortoises from infested premises to noninfested premises. The African spurred and Bell's hingeback tortoises were included in these rulings due to the prevalence of *Amblyomma* ticks found on them upon importation.

The USDA received appropriated funds to create two positions that would be responsible for inspecting reptile shipments imported into the U.S. In 2003, USDA's Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) created the Pest Management Officer (PMO) position. There is currently only one PMO in the country (stationed at Miami International Airport). The PMO relies on the U.S. Fish and Wildlife Service (USFWS) for notification and inspections of reptile shipments imported into the airport (with an emphasis on inspections for shipments of African origin).

This officer collaborates with USFWS Wildlife inspectors on reptile shipment inspections. Upon discovery of a tick infestation in a reptile shipment, the USDA PMO places the importer's facility under USDA Quarantine and notifies the Florida Department of Agricultural and Consumer Services (FDACS) of the infestation so that the quarantine can be enforced until all ticks have been identified. If the identification of the tick comes back as a heartwater carrier species, FDACS directs the importer to treat the reptiles for ectoparasites and follows up with site inspections.

To date there have been two recent importations of reptiles from Africa (Ghana) that have had tropical bont ticks identified in the shipment. Both times the same reptile importer's facility was quarantined and the animals were treated for ectoparasites. In both cases the wildlife infested were savannah monitor lizards. In both situations the quarantines were lifted after confirmation by FDACS that the facility was tick free.



The USDA APHIS VS has had several workshops/meetings with the reptile industry in light of the two infested shipments. The reptile industry has expressed concern over possible future bans on imports of specific species and has taken a constructive approach by becoming proactive. Several reptile importers have traveled to Africa and have put pressure on their suppliers to treat their stock for ectoparasites and improve their animal husbandry practices to prevent tick infestations in their facilities.

## Key Recommendations

- Hire more Pest Management Officers.
- Amend current regulations to add inspection authority for USDA Pest Management Officers. Currently they can only inspect reptile shipment when USFWS is present.
- Continue to engage and include the reptile industry. They can exert influence overseas to correct the issue before it arrives in the U.S.
- Continue to monitor cattle egret populations and expand efforts by conducting random trapping and sampling of ectoparasites.