

New World Screwworm



College of
Veterinary Medicine

BASICS

The New World screwworm (NWS), *Cochliomyia hominivorax*, is a parasitic fly whose larvae feed on live tissues, causing harm to and potentially death of the host.

The female fly is attracted to the scent of open wounds or other orifices (e.g., mouth, genitalia, umbilicus) and lays its eggs at that site.

NWS may infest any bird or mammal species, including **HUMANS**. Wild animals, livestock, and pets are susceptible. Open wounds and injuries are preferred locations for infestation, but NWS is also attracted to animals that have recently given birth or undergone surgery.

CLINICAL SIGNS in affected animals include lethargy, depression, head shaking, and biting at the wound. Collections of fly eggs or larvae may be observed near a wound or body opening and are often associated with a foul odor.

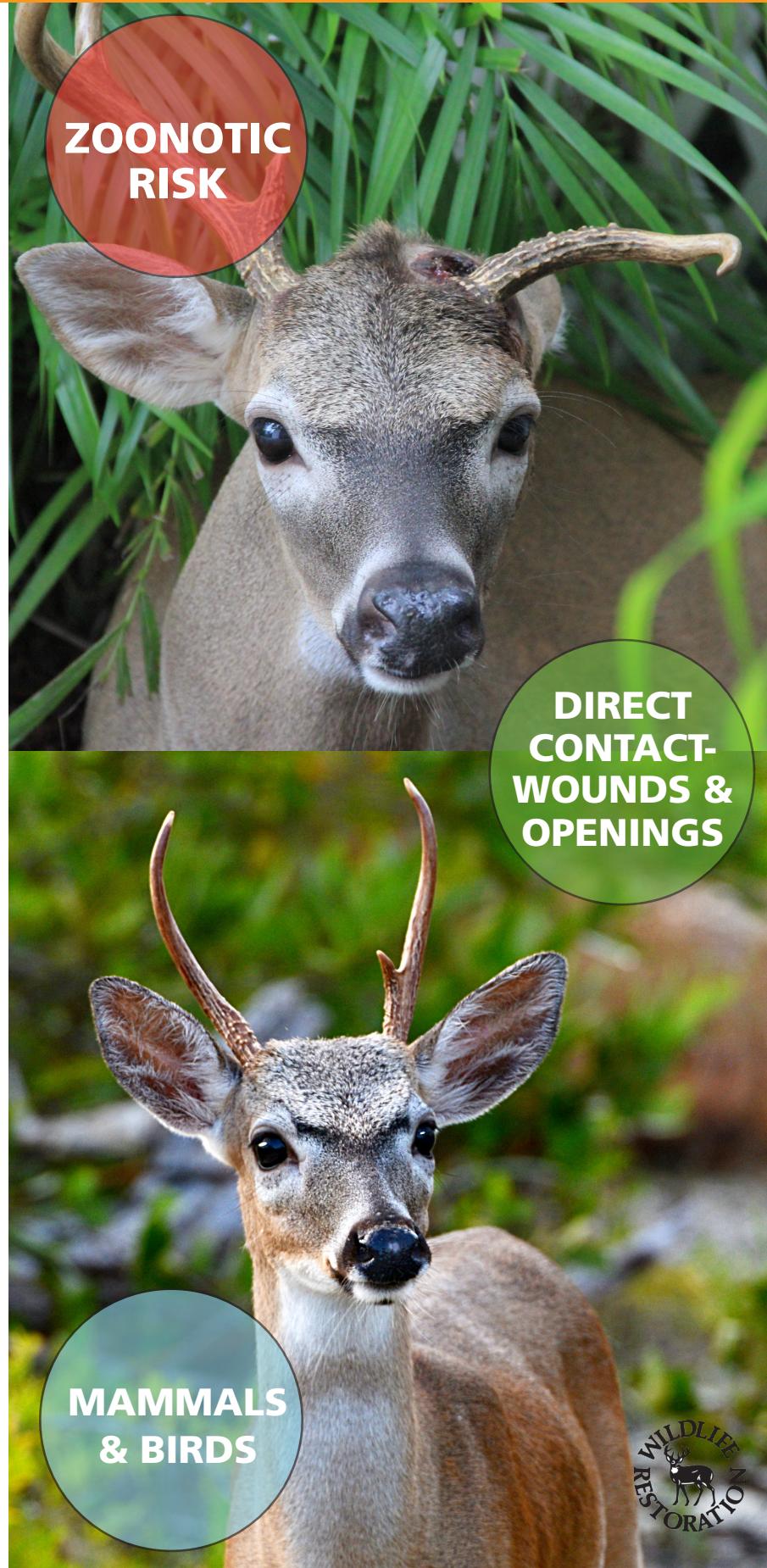
Secondary infections can occur after NWS infestation, potentially leading to **DEATH**.

TRANSMISSION occurs when a female fly lays eggs in a wound or body orifice. The eggs develop into larvae that feed on live tissue and cause extensive damage. Those larvae fall off the host and then develop into adults that continue the cycle.

DIAGNOSIS is confirmed by parasite experts by identifying specific morphological characteristics. Typically, the larvae are assessed, but eggs or adult flies may also be useful in diagnosis.

TREATMENT includes removing larvae, wound care, analgesics, and local or systemic antiparasitic medications. The environment should also be decontaminated when appropriate.

NWS is a **REPORTABLE** disease. Veterinarians should contact their State Animal Health Official and USDA if NWS is suspected in an animal. Suspect human cases should be reported to the local or state health department.



DETAILS

The New World screwworm can cause harm or death by feeding on a host's live tissues. NWS is endemic in South America, the Dominican Republic, Cuba, and Haiti. In 1957, an eradication program using the [Sterile Insect Technique](#) (SIT) was implemented in the U.S. to control NWS with eradication declared in 1966.

In the U.S., NWS has been detected sporadically in individual wild and domestic animals, most often horses and dogs. In 2016, NWS was detected in the endangered **KEY DEER** in the Florida Keys, in addition to four dogs, two cats, two pet pigs, and a raccoon. As a result of infection, 135 Key deer, representing 15% of the population, died. The incursion occurred during breeding season (rut); males were impacted via wounds they obtained during sparring. Wildlife officials responded by providing medicated feeding stations with additional topical treatment applicators. The SIT was implemented, and flies were successfully eradicated by 2017. More recently, areas in Central America and Mexico, where NWS had previously been controlled, are experiencing a resurgence of cases. There is concern NWS will spread north into the U.S. NWS has been reported in humans in the U.S. after travel to affected countries.

CLINICAL SIGNS Once the larvae develop, they use their hook-like mouthparts to tear into and feed on the host's tissue, which causes severe damage and is very painful. Affected animals become lethargic, depressed, irritated, and inappetent. Untreated wounds grow larger, other fly species may infest the area, and secondary infections can occur.

TRANSMISSION CYCLE One female fly can lay up to 200-300 eggs at a time into a wound or opening, and the resulting larvae feed on the host's live tissues. After 5-7 days, the larvae will drop and burrow into the ground to pupate. The adult screwworm fly emerges 7-54 days later depending on environmental factors (e.g., temperature, humidity) and can mate within days. Those new flies then go on to infest other wounds.

IDENTIFICATION The National Veterinary Services Laboratory (NVSL) and the Centers for Disease Control and Prevention (CDC) use both larvae and adult flies for morphological confirmation, and also employ techniques such as PCR and ELISA. The third instar larva is typically used to differentiate NWS from other species visually; these larvae are 6.5-17 mm long, pointed anteriorly and blunted posteriorly, and contain dark, spined, complete rings along their bodies. In contrast to other blow flies, the NWS feeds exclusively on live tissue as opposed to dead tissue. The eggs are white and well-organized along the edges of openings or wounds. All suspect specimens collected from animals or from the environment must be forwarded/submitted to NVSL within 24 hours for investigation.



TREATMENT must adhere to state and federal guidelines. Generally, [treatment](#) involves removing larvae, cleaning the wound, applying antiseptics to prevent infection, and administering analgesics to reduce pain. Topical or systemic antiparasitic medications should also be administered. The US Food and Drug Administration has recently authorized the use of [certain medications](#) for the prevention and treatment of this condition.

When applicable, the environment should also be decontaminated. Larvae not saved for identification should be placed in alcohol to kill them and then be discarded. Any holding areas for animals should be cleaned with an appropriate larvical insecticide, followed by soap and water. The area should be monitored for additional flies following decontamination.

PREVENTION of NWS into the U.S. is essential. The public and individuals that work with animals should be aware of clinical signs of NWS infestation and report any concerns. If an animal is suspected to have NWS, the animal should not be touched and should be immediately reported.

Front top right: Key deer with a New World screwworm infestation at a wound on its antler.

Front bottom right: Normal Key deer (Shutterstock)

Above right: New World screwworm larvae infesting a Key deer's skull.

NWS photos courtesy of Mark Cunningham, Florida Fish and Wildlife Conservation Commission