

Rethinking Livestock Management to Consider Screwworm

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New World Screwworm (NWS) in Texas is reportable to the Texas Animal Health Commission (TAHC) at 800-550-8242 for livestock and companion animals, and Texas Parks and Wildlife Department (TPWD) at 512-389-4505 for wildlife. Producers should also inform and follow up with their private veterinarian. It is critical to report these suspicions to proper authorities to minimize the spread and future threat of NWS.

I. Introduction

The northern migration from Central America of the New World screwworm (NWS), *Cochliomyia hominivorax*, poses a renewed threat to Texas and U.S. livestock producers. Although this devastating parasite was officially eradicated from the U.S. in 1966 with the sterile insect technique (SIT), the risk of reintroduction persists, particularly along the southern U.S. border. The NWS inflicts economic losses and serious animal health challenges by infesting wounds and causing rapidly expanding tissue damage. Proactive, management-focused strategies based on seasonal timing, geographic awareness and frequent herd and flock surveillance are critical for preventing NWS infestations. If this pest is found again in the U.S., SIT will be used here again, but it is important to recognize that neutralization of NWS by SIT will not be instantaneous. Given that many livestock operations plan their production schedules months, if not years in advance, this publication is intended to outline considerations that can be made in preparation for potential future detection of NWS in the U.S.

II. Screwworm Biology

The female NWS fly lays eggs in and around open wounds or sores within mucous membranes of warm-blooded animals. The term “screwworm” refers to how the newly hatched larvae burrow into live tissue, feeding aggressively and causing a condition known as myiasis. The odor of screwworm feeding on live flesh is notoriously distinct and often a first sign of detection. Livestock that have myiasis are immediately at risk of significant health and performance limitations and can die within a week or two of contracting the condition if not treated promptly. Once NWS have become established on an animal, the larvae will remain on that same animal (will not be transferred to other livestock), and will complete their feeding period in 5 to 7 days before dropping to the ground to pupate and complete the rest of the NWS life cycle. Geographic spread of NWS is mostly attributed to infected animals being transported by humans and to a lesser extent, adult fly mobility.



*Adult New World screwworm fly
(Michael Miller/Texas A&M AgriLife)*

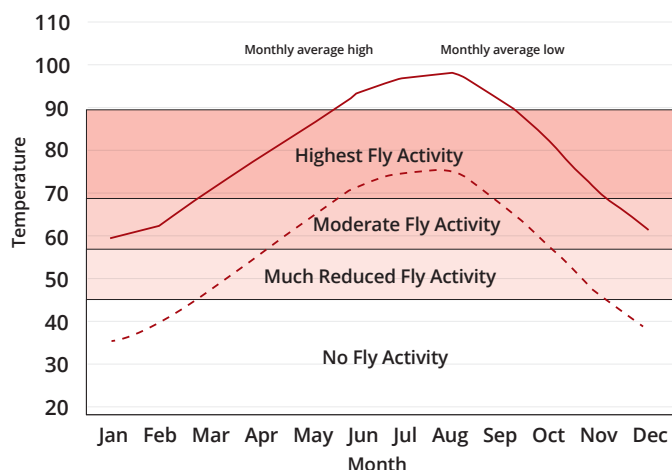
Detection of livestock with myiasis is critical; however due to the rapid progression of the condition, this may prove especially difficult for large, extensively managed livestock operations. Limiting management practices in these operations that create a higher NWS risk to times of the year when NWS flies are less active will be paramount. To plan a production schedule with the threat of NWS in mind, it is helpful to recognize the impact of temperature on fly activity and development.

The NWS fly life cycle is highly sensitive to temperature:

- In **warm (80+°F daytime highs) and tropical conditions** the full *C. hominivorax* life cycle may be complete in **2–3 weeks**.
- In more **temperate conditions**, the life cycle may take 3–4 weeks.
- In **cooler conditions**, the life cycle may take up to **2–3 months**.

Pupae are vulnerable to soil temperatures below 46°F, and there is limited activity of the adult NWS fly below 59°F. It is important to understand that flies do not die at these lower activity temperatures, but prolonged exposure to these temperatures can reduce populations or active infestations. The NWS ability to survive the winter is restricted to locations where low temperatures are regularly above freezing. Ideal adult fly activity occurs at 77–86°F and relative humidity of 30–70%. Producers should coordinate management practices with weather patterns expected for their region.

Average high and low temperatures (°F) across the year for Central TX, 2000-2024



III. Preventative Management by Season

Integrated pest management considers parasite life cycle, strategic use of treatment products, and limiting higher risk management practices during times when NWS could be active to reduce the impact of NWS to livestock operations.

Historically, screwworms have been especially lethal to newborn livestock, with wet navels being especially attractive egg-laying sites for NWS flies. The vulnerability of newborns to NWS almost always resulted in death if they became infected and went undetected and untreated, posing serious economic losses. For operations that birth in pastures, the timing of breeding and birthing may need to be adjusted to cooler times. Important to this effort is having defined birthing and breeding seasons, as opposed to leaving sires with females year-round.



While having livestock give birth during winter or early spring months limits the risk of NWS, it can pose challenges with seasonality of breeding, dam nutrition and predation (especially for sheep and goats). While this publication is not meant to be comprehensive with regard to cool-season birthing strategies, we encourage producers to include NWS as one of the factors when making production schedule decisions. Livestock producers can draw a positive, though, from rescheduling to a winter-focused birthing schedules as this may result in stronger market prices of offspring sold after weaning compared to the greater number of spring-born offspring, which can depress prices due to higher supply.

Table 1. Schedule Production Practices to Reduce NWS Threat

Cool Season (Low Fly activity)	Warmer Season (High Fly Activity)
Birth season (newborn navels very vulnerable)	Reconsider practices that create wounds
Castration	Frequent livestock checks
Dehorning	Prompt application of insecticide application
Branding, ear tagging and ear marking for ID	Ensure fly control measures are in place around livestock housing and working areas.
Implant placement	
Tail docking	
Shearing	
Planned surgical procedures	

While newborn livestock may be at the greatest risk, it is also important to consider the management procedures we often conduct in the first ~3 months of life that can create a suitable wound for NWS. Notably, castration, ear tagging, branding, dehorning and tail-docking of lambs are all procedures that should be timed during cooler seasons (Table 1.) This also means that rescheduling birthing to around the last frost date for a region may still put “spring works” during fly season. For producers with fiber-producing livestock (wool sheep and hair goats), potential nicks and cuts from shearing pose a NWS risk, enhancing the need for diligence in observation and treatment until recovery.

While some management practices can be confined to seasons with lower fly activity, it is not realistic that every operation can immediately reschedule management during these times. The important take-home message is that if flies are active and livestock have wounds of any size, diligence in monitoring for pests and utilizing best management practices to promote healing are critical.

IV. Identification of NWS

Screwworms differ from other blow fly maggots in that they feed only on live flesh. Resources for identifying screwworms can be found in the AgriLife Extension New World Screwworm Fact Sheet. It is only through rapid detection and reporting that an effective response can be implemented. If NWS become established in the U.S. again, it is important to be knowledgeable about

identification of suspected cases, and more specific collection recommendations will become available. Removal of suspected screwworm larvae from animals can occur with larvae placed into a secondary container and either frozen until solid or have the container filled with isopropyl alcohol to preserve the specimens for later identification when submitted to TAHC. This should occur before any treatment.

V. Potential Treatment of NWS

Always consult your private veterinarian. It is likely that new treatment strategies will be developed and recommended if NWS is found in the U.S. Current treatment option considerations include:



Topical - Permethrin sprays for immediate wound treatment and prevention of fly attraction. Some aerosol products for screwworm control do not require a prescription and can be found at animal health suppliers. Permethrin ear tags can also be useful.

Systemic - Coumaphos is an approved systemic treatment for NWS. Although applied topically, its actions are systemic and effects are longer than those of permethrin. Due to potential toxicity, the formulation used for NWS is sold as a Restricted Use Pesticide, thus a Certified Applicator license is required for its purchase and use.

Wound care: Clean thoroughly with an approved disinfectant and reapply as directed. Cover wounds if practical during higher risk seasons.

Consultation with your veterinarian is strongly encouraged to develop an operational herd or flock health management and biosecurity plan (see Table 2). Please do not be intimidated about reporting concerns to your veterinarian or any authority. While some may feel hesitant to report for fear of regulatory oversight of their operation if NWS is detected, it is important to remember that full-scale establishment of NWS in a region could have devastating impacts for many years.

Although early detections might result in livestock movement in and out of a region being temporarily restricted, quick detection allows rapid response to initiate control of NWS before these populations grow. If NWS is found in the U.S., specific animal protection and movement protocols will be provided.

VII. Conclusion

Effective screwworm prevention and control hinges on aligning livestock management practices with seasonal risk patterns, local climate conditions, diligent surveillance and following best management practices recommended by quality assurance programs. By scheduling higher-risk procedures during lower-risk fly activity periods, maintaining vigilant surveillance, and implementing rapid response protocols, producers can help protect their animals, minimize economic losses and help safeguard our livestock industries and supply chains from NWS. Ongoing collaboration with neighbors, local veterinarians, state Extension services, and regulatory partners such as state animal health commissions and the USDA-APHIS, ensures coordinated and informed responses to minimize risks from current and future threats from this historically persistent pest.

Livestock Producer Biosecurity Checklist			
	Identify a regional veterinarian you can contact.		Consider transportation schedules of animals relative to operation type.
	Build a relationship with your AgriLife Extension county agent.		Use best management practices from quality assurance programs.
	Analyze your risks and develop a plan of action.		Monitor wildlife populations, hunting and recreational activities.
	Surveillance: Be vigilant, stay alert and report abnormal or suspicious events.		Check the coats, ears and feet of livestock/guard dogs and companion animals.
	Build relationships with your neighbors for open conversations about suspicious events.		Observe animals regularly after castration or other surgical procedures, until completely healed.
	Monitor for ticks and other external parasites.		Keep squeeze chutes, alleys, etc. in good repair to prevent accidental wounds.

Additional Resources: USDA-APHIS, Texas Animal Health Commission

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