Case Definition

New World and Old World Screwworm Myiasis
(Notifiable) **October 2023**

1. **Disease Information**
   - **1.1 General Disease and Pathogen Information:** Screwworm myiasis is caused by the infestation of living animal tissues by either of two species of fly larvae (both in the dipteran family *Calliphoridae*): *Chrysomya bezziana* (Old World screwworm) and *Cochliomyia hominivorax* (New World screwworm). New World screwworms are found in the Western Hemisphere, in the tropical and semitropical regions of South America and the Caribbean. Old World screwworm is found in parts of Asia, tropical and sub–Saharan Africa, and some countries in the Middle East. All mammals, and in rare instances birds, can be infested by screwworms. Screwworm myiasis is often associated with pre-existing wounds, though infestation can also occur on mucous membranes, such as nostrils, eye orbits, ears, mouth, and genitalia. Nearly any wound is susceptible to screwworm infestation. This includes natural wounds received from arthropod bites, fighting, and disease, or wounds resulting from management procedures such as barbed wire fencing, dehorning, castration, and ear tagging. Navels of newborn mammals are also common sites for screwworm infestation.
   - **1.2 Clinical Signs:** Characteristics of infested wounds include drainage, suppuration, discharge of blood and serum, and a distinctive odor. Secondary bacterial infections are also common. Close examination may show “shingle-like” deposition of fly eggs in marginal or peripheral masses. Larvae are visible by the third day of infestation and are positioned head-down with their posterior ends at the surface of the wound. In cases where the wound is deep, pocket-like, and the opening small, minor movement within the wound may be the only indicator of infestation. Animals with screwworm infestations often display discomfort, lethargy, and depression, and they may separate from the herd. Anorexia and decreased milk production may also be observed.
2. **Laboratory Criteria**
   - **2.1 Agent Isolation and Identification:** Laboratory diagnosis is by identification of the parasites under the microscope. Use forceps to collect larvae of different sizes and appearances from all parts of the wound, focusing on the deepest part to reduce the possibility of collecting non-screwworm fly species. Living specimens may tentatively be examined for diagnostic dark pigmentation of the postero-dorsal tracheal trunks, then preserved in at least 70 percent alcohol (ethyl or isopropyl) for further examination. Do not place larvae into other preservative solutions because the larvae may contract and darken. Larvae are best preserved when they are killed in boiling water before placing in alcohol, though this ideal preservation method is not necessary. Killing larvae by brief immersion in water previously heated to boiling but no longer on a heat source has no negative effect on potential subsequent extraction

of mitochondrial DNA or amplification by polymerase chain reaction, but it might affect other molecular techniques.

2.2 Agent Characterization: N/A

2.3 Serology: At this time, there are no applicable serological tests, nor are they indicated in the identification of this disease.

3. Case Classification

3.1 Suspect Case: An animal with clinical signs consistent with blow fly or screwworm myiasis.

3.2 Presumptive Positive Case:

3.2.1 Imported case: A suspect case that has travel history outside the United States to any screwworm-infested country within the previous 10 days.

3.2.2 Autochthonous case: A suspect case that has no travel history outside the United States within the previous 10 days, **AND**

3.2.2.1 located near a previous confirmed positive case, **OR**

3.2.2.2 identified as screwworm by any laboratory, **OR**

3.2.2.3 identified as screwworm by a collector with screwworm experience.

3.3 Confirmed Positive Case:

3.3.1 Imported case: A presumptive positive case in which the National Veterinary Services Laboratories (NVSL) confirms the presence of screwworm by morphological identification of the egg mass, larvae (first, second, or third instars), or adult fly.

3.3.2 Autochthonous case: A presumptive positive case in which the NVSL confirms the presence of screwworm by morphological identification of the egg mass, larvae (first, second, or third instars), or adult fly.

4. Reporting Criteria: New World and Old World screwworm myiasis are U.S. foreign animal disease (FAD) conditions that are immediately reportable under the APHIS National List of Reportable Animal Diseases (NLRAD).

4.1 NLRAD reporting in accordance with the NLRAD Standards for notifiable diseases; and by APHIS to the World Organisation for Animal Health (WOAH); **AND**

4.2 For FAD or Emerging Disease Incidents also follow standard procedures according to the Policy for the Investigation of Potential Foreign Animal Disease/Emerging Disease Incidents.