**The Problem**

Screwworms are serious pests of warm-blooded vertebrates (mammals and birds) including humans and their livestock. Screwworms infest wounds of these animals which may die unless the wound is treated.

Two species of screwworm flies are of importance - the New World screwworm fly, Cochliomyia hominivorax (Coquerel) and the Old World screwworm fly, Chrysomya bezziana (Villeneuve). Screwworms are the larvae of true flies belonging to the family Calliphoridae. Both species are included in the list of diseases or pests notifiable to the World Organisation for Animal Health (OIE).

There are other flies associated with wounds, however, only screwworm larvae feed on healthy living tissues, whereas larvae of other fly species generally feed on dead tissues and fluids found in the wound. The term ‘myiasis’ is used to refer to the infestation of wounds by fly larvae.

The name ‘screwworm’ comes from the appearance of the larva or maggot which has a series of rings of backwardly protruding spines, around the tapered body of the larva, giving a screw-like appearance.

**Wounds**

Screwworm flies are attracted to and lay their eggs on all types of wounds, ranging from tiny bites or scratches from thorns to much larger wounds such as those caused during dehorning or castration of cattle and shearing of sheep. The need for new-born mammals is also a favoured site.

Wounds produce odours that attract adult female screwworm flies which lay their eggs. The wounds increase in size through the activity of increasing numbers of larvae.

**Life Cycle**

The New World and Old World screwworm flies are similar in appearance and biology. The length of the lifecycle depends on temperatures, with the adult and pupal stages lasting longer when temperatures are cooler.

**Copulation**

- **Males** and **females** mate soon after emerging from the pupal case.
- **Males** have a short slender abdomen with three cerci. **Females** have a cilium on the abdomen and a pair of cerci.
- **Females** use their cerci to grasp the male's cerci as they copulate.
- **Copulation** takes place in the wound.

**Oviposition**

- **Eggs** are laid in two or three rows on the surface of the wound.
- **Young larvae** emerge from the **egg** mass 1 to 2 days after oviposition. **Eggs** are light yellow and are 2 mm in diameter.

**Eggs**

- **Larval period** is approximately 6 weeks.
- **Mature larva** is 2 cm long. **Egg mass** is 2 cm in diameter.

**Larvae**

- **New World Screwworms** are darkly pigmented to segment 1, gradually losing pigmentation along the thorax.
- **Old World Screwworms** are not darkly pigmented.

- **Third instar**
  - Head dark, legs yellow
  - Body elongated

**New World Screwworm Fly**

- **Anterior spiracle**
  - 1 to 1.5 mm long

**Old World Screwworm Fly**

- **Tracheal trunk**
  - Not darkly pigmented.

- **Anterior spiracle**
  - 1 to 1.5 mm long

**Tracheal trunk**

- Not darkly pigmented.

**DISTRIBUTION AND IDENTIFICATION**

**Distribution**

Screwworm flies are expected in tropical and subtropical areas as indicated on the maps above. Their distribution is naturally limited by geographical barriers such as oceans and high mountain ranges as well as by the climate. Screwworm flies thrive under warm moist conditions and do not tolerate prolonged very dry hot or permanently cold weather.

Screwworm adults can fly long distances and in warm weather may spread outside their overwintering limits. For example, the New World screwworm fly was regularly entering central North America each year in summer from overwintering sites in Texas, Mexico and Florida before it was eradicated from these areas. Human activities such as the movement of infected livestock can also lead to the long-distance spread of screwworm flies.

**Larval Identification**

The identification of screwworm adults and larvae is the job of a specialist. Some key larval features are given here as a guide for people who have collected larvae from wounds. For official identification, however, larvae should be sent to a specialist.

Characteristic differences between third instar larvae of New World and Old World screwworm include the number of tufts of the anterior spiracles and the branching structure of larvae and removal of epigastric fat tissues, the contour of pigmentation on the tracheae from the posterior spiracles.

**Further Information**

For further information on screwworms and how to manage them, contact your local state or federal entomologist. In the U.S., contact the National Animal Health Laboratory, USDA, ARS, 8801 Backlick Rd., Beltsville, MD 20705 or the National Animal Health Laboratory, USDA, ARS, 1715 Braddock Rd., Beltsville, MD 20705. In Canada, contact the Animal Health Laboratory, Canadian Food Inspection Agency, 315 Clarke Rd., Suite 101, Brandon, MB R7A 0S4. For general information about screwworms, contact the Pan American Surveys, Inc., 2240 36th St. NW, Suite 130, Washington, DC 20007.