

## Secondary Screwworm, *Cochliomyia macellaria* (Fabricius)<sup>1</sup>

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### Introduction

Insects in the family Calliphoridae are generally referred to as "blow flies" or "bottle flies". Blow flies can be found in almost every known terrestrial habitat, and they are found in association with human civilization throughout the world. Most species are of considerable economic importance to both humans and livestock, and due to its distribution and abundance the secondary screwworm, *Cochliomyia macellaria*, is of particular importance in the United States.

### Distribution

The secondary screwworm ranges throughout the United States and the American tropics. It also is found in parts of southern Canada during the summer months. It is especially common in the southeastern United States where it is present throughout the year.

### Description

Adults (Figure 1) are variable in size with most ranging from 5 to 8 mm in length. The body is metallic greenish-blue and characterized by the

presence of three dark green longitudinal stripes on the dorsal thorax. The eyes are large, covering most of the head, and appear orange-red in color.



**Figure 1.** Adult secondary screwworm, *Cochliomyia macellaria* (Fabricius). Credits: James Castner, University of Florida

Larvae are cream colored, without legs, and feed on carrion. A mature maggot can reach lengths up to 17 mm.

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The puparium is the hardened and shrunken outer skin of the mature maggot. The pupa develops entirely within this hardened shell which looks similar to a rat dropping or a cockroach egg case.

### Life Cycle

The fly life cycle passes through four life stages: egg, larva, pupa, adult. The eggs are approximately 1 mm long and are laid in a loose mass consisting of 50 to 200 eggs. Group oviposition by several females results in large masses of thousands of eggs which may completely cover the decomposing carcass. The eggs hatch in about 24 hours (depending on air temperature) and the larvae feed on the carrion until they reach maturity. Larvae can reach the mature or postfeeding stage in as little as four days. Upon maturity, they migrate away from the carrion to search for a suitable pupation site. Pupation usually occurs within the first inch of topsoil or under leaf litter, rocks, or fallen limbs. During this time, the larval skin shrinks and hardens to form the puparium, which is dark brown in color. This stage may last from seven to ten days depending on temperature. The adults can live up to six weeks.

### Medical and Economic Importance

When fly larvae (maggots) infest the tissues of living animals or humans the resulting condition is termed "myiasis" and is of great medical and veterinary importance. The livestock industry considers the secondary screwworm an important pest because of the enormous economic losses inflicted on the industry through both myiasis cases and disease transmission. Fortunately this species does not feed on actual living tissue as does the primary screwworm. They invade only after an injury occurred, with the larvae scavenging on the dead tissues. Thus they can be controlled through proper animal management and wound care. Although this species has been noted in conjunction with sheep strike, it is not considered of great economic importance within the sheep industry. Disease transmission linked to this species include limberneck (botulism in birds), 12 different *Salmonella* types including *Salmonella typhimurium*, poliomyelitis, and swine influenza. The secondary screwworm is considered to be very beneficial as a decomposer.

### Forensic Importance

Recently this species has gained recognition in the field of forensic entomology as a principal species on which to base postmortem interval estimations. This blow fly is a valuable forensic tool because its succession and occurrence on decomposing remains has been well defined. In the southeastern United States, the adults are attracted to carrion only minutes after death, but a 24-hour colonization delay may occur in other parts of the United States. This is one of the most common species of blow flies found on decomposing remains in the southern United States.

### Management

This species must have access to decomposing carcasses, carrion or rotten meat in order to complete its life cycle. Therefore, the proper removal of garbage and carcasses will disrupt the life cycle. The removal of vegetative refuse will reduce the annoyance of resident adult populations and risk of recontamination.

Insect Management Guide for Filth-breeding Flies

Insect Management Guide for Livestock

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