



UNIVERSITY OF
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IFAS EXTENSION

Horsehair Worms, Hairworms, Gordian Worms, Nematomorphs, *Gordius* spp. (Nematomorpha: Gordioidea)¹

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Distribution

This relatively small group of large worms is found throughout world, but usually is restricted to areas near water. About 11 species occur in the United States. They are commonly confused with mermithid nematodes. Poinar (1991) provides a key to genera found in North America. Baker and Capinera (1997) provide a summary with emphasis on nematomorphs affecting grasshoppers.

Description and Life Cycle

The adults are free-living but the juveniles are parasitic. The preparasitic worms are minute, and infect their host when they are accidentally ingested. They cannot penetrate hosts from the outside. Nematomorphs infect insects, including crickets, cockroaches, beetles, mantids, and grasshoppers, but also spiders and woodlice (sowbugs).

The species most commonly encountered, and perhaps the best studied species, is *Gordius robustus*.

It occasionally attains high densities in its tettigoniid host *Anabrus simplex* Haldeman, also known as the Mormon cricket. The following information is based on *G. robustus*.

Egg

The minute, ovate eggs are only about 40 microns wide and 50 microns long. They are deposited in water, in slender strips held together with gelatinous material. The number of eggs produced per female is enormous; Thorne (1940) estimated 27 million eggs form a single female. The eggs are deposited in the spring after the adults move from their overwintering sites in soil, under rocks, and in organic debris. Shallow water, including swamps, pools and streams, are acceptable oviposition sites.

Larvae

Apparently larvae swim about freely in the water after hatching, and are ingested with water when insects drink. Once inside a host insect, the larva

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penetrate the insect's gut and enter its body cavity. They mature and escape from the host in two to three months. Thorne (1940) suggests that emergence from the adult occurs only in the presence of water, though the mechanism for detection of water is unknown. Thomas et al. (2002) showed that infected hosts are more likely to enter water than non-infected hosts.

Adults

These worms resemble nematodes, but are very long, usually 30 to 40 cm but sometimes 120 cm in length, and quite narrow in diameter, often only 1 mm. The adults are featureless, with a blunt head and slightly swollen tail. The color is usually mauve-brown to black. The sexes are separate.

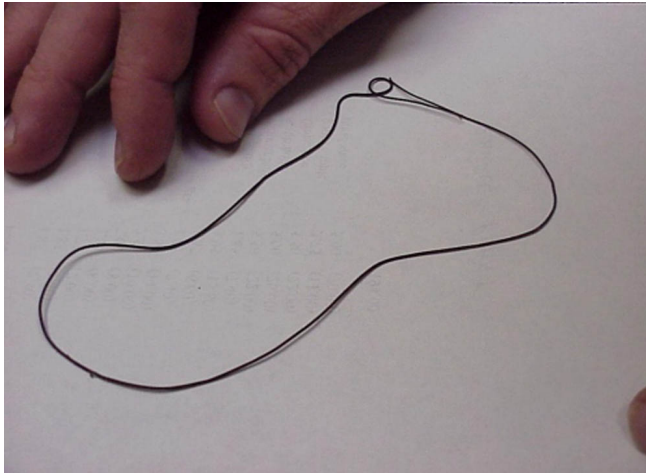


Figure 1. Adult of horsehair worm (nematomorph). Credits: Sharon LaPlante

Importance

The impact of horsehair worms is highly variable, but usually slight. Because insects must drink from free water in order to be infected, few seem to acquire these parasites. Also, they must be long-lived in order for the worms to complete their development. However, Thorne (1940) reported an infection level of 99% at one site, so the potential effect is great. Insects infected by nematomorphs rarely produce eggs. Even a single worm is large relative to hosts, so sexual development is eliminated. Horsehair worms are mostly a curiosity and come to people's attention because of their large size and sinister appearance. Their common name, horsehair worm, is derived both from their long thin appearance and the fact that they sometimes occur in livestock

watering tanks, where they emerge from drowned grasshoppers that carelessly landed upon water.

Selected References

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