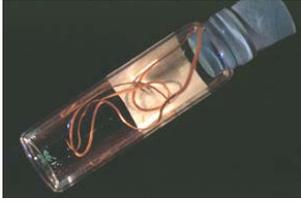


# Horsehair or Gordian worm

Phylum Nematomorpha, Family Gordiidae, Genus *Gordius*

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## Photo Gallery



Horsehair worm, *Gordius* sp., an internal parasite of crickets, cockroaches, grasshoppers, and others

## Description:

The phylum Nematomorpha (*from the Greek nema, "thread," and morphe, "shape"*), is a group of invertebrates called horsehair or gordian worms. The name horsehair is derived from the worm's hair or threadlike appearance in its adult stage.

The horsehair worms are interesting threadlike roundworms that resemble the "hair of a horse's tail or mane." These long, active worms may be observed during late summer or fall in streams and ponds, but are more commonly noticed in domestic water containers such as bird baths, swimming pools, water troughs, pet dishes, sinks, bathtubs and toilets. They may also be found on damp garden soil or vegetable plants after a rain (another common name is the cabbagehair, however, this may be a parasitic nematode affecting the same insects . . . see comments).

Horsehair worms are no bigger around than kite string (1/25 to 1/16 inch wide) and very long (4 to 14 inches). Amazingly, the entire horsehair worm grows and develops as a parasite inside the body cavity of crickets and other large insects such as grasshoppers, katydids, beetles and cockroaches. This internal parasite of insects does not harm humans, animals or plants. Horsehair worms are white when they first emerge from the host's body. They turn yellowish-tan to brownish-black after a short period of time. The worms often squirm and twist in the water, knotting themselves into a loose, ball-like shape, resembling the "Gordian Knot."

## Life Cycle:

Horsehair worms reproduce sexually, in spring, early summer, or autumn. Eggs are laid in long gelatinous strings where eggs may number in the millions. After hatching, some experts suggest that the larvae encyst on vegetation or other surfaces along the water's edge. Eventually, some of these cysts are ingested by hosts feeding on these items. The cyst degenerates in the digestive tract of the new host, and the larva burrows its way through the intestinal wall into the host's body cavity to continue its development. If ingested by an inappropriate host, the cyst may degenerate and then reencyst in the tissues of the host. If this inappropriate host is then ingested by a predator which is a host, the cyst may again disintegrate and continue its life cycle in this new host. Other researchers suggest that after the larva emerges from the egg, it penetrates the body wall of just about any animal, though normal development occurs only in suitable hosts.

After entering the body cavity of an appropriate host, the larva grows to a juvenile stage, then emerges from the host to mature. During the larval stage of development, the horsehair worm digests and absorbs surrounding tissue. This period of metamorphosis occurs over a period

of several weeks to several months; eventually the larval form develops into a tightly coiled mass in the host. One to several horsehair worms may occur in a single host. The parasite uses the important nutrients of the host, probably impairing its reproductive system. One interesting habit of infected insects is that their behavior changes as the horsehair worm matures. Parasitized crickets are thirsty and go to water to drink. While there the horsehair worm emerges from the insect's body and swims away in the water, an essential step in the life cycle of this internal parasite. Insects infected with horsehair worms die as a result of the parasite.

### **Comments:**

Horsehair worms are completely harmless. They do not infest people, livestock, pets or plants. They are beneficial because of the small percentage of crickets, and other insects that they kill. No control measures are needed when this interesting worm is found.

There also is a very long species of nematode, *Mermis nigrescens* which is a parasite of grasshoppers. The large adult nematodes, 4 to 8 inches in length, overwinter in the soil and under sheltering debris, emerging in late spring during periods of overcast, humid weather. At that time they may be seen crawling about plants as they lay eggs. Grasshoppers that ingest these eggs become infected as the nematodes develop internally. By late summer, it is not uncommon to find the abdomen of many grasshoppers to be packed with these parasites. Such infections seriously stress and sterilize infected grasshoppers.

### **Origin of the common names:**

One common name of nematomorphs is "Gordian worm", which originated from its similarity in appearance to a knot, specifically one created by Gordius, King of Phrygia around 330 B.C. As the mythical story goes, Gordius used this knot to bind a chariot to a pole. He declared that whoever could undo the knot would be ruler of all Asia. The challenge ended when Alexander the Great, when not able to untie the knot, cut it apart with his sword.

The "horsehair worm" name likely originates from what ancient observers perceived as the spontaneous transformation of hairs from horses that, having fallen into watering troughs, developed into living worms.