

Colorado Annelid of Interest

Nightcrawler

Scientific Name: *Lumbricus terrestris* (L.)

Phylum: Annelida

Class: Clitellata

Order: Haplotaxida

Family: Lumbricidae



Figure 1. Nightcrawler, *Lumbricus terrestris*, the largest earthworm found in Colorado.

Identification and Descriptive Features: The nightcrawler is the largest earthworm present in Colorado, and may reach a length of 20-25 cm (8-10 inches). It is dark colored with the posterior end more pale colored and capable of flattening.

Distribution in Colorado: The nightcrawler is an introduced species, native to Europe and Asia. It is widespread in the state, particularly in association with lawns, with current distribution largely related to human movement of the nightcrawler to new locations. Once established at a site, nightcrawlers may spread on their own a distance of a few meters annually.

No species of earthworms, including the nightcrawler, are thought to be native to Colorado. The earthworms that currently are found in the state are those incidentally introduced from Europe or were native to other areas of North America and subsequently introduced into Colorado within the past 150 years.



Figure 2. Dead nightcrawler caught on a sidewalk following a rain.

Life History and Habits: The nightcrawler is an *anecic* species of earthworm that creates a permanent burrow and forages for food on the surface. This contrasts with other earthworm species present in the state that either continuously tunnel through soil (endogeic species) or develop under leaves and other surface debris and rarely enter soil (epigeic species).

The nightcrawler tunnel may extend a meter or more into the soil and will extend below frost line. Most of the time the nightcrawler will rest within the burrow at points where favorable temperatures and humidity exist. A temperature of about 20°C (68°F) and 30% soil moisture are about optimum. Temperatures

above 25⁰C (77⁰F) are harmful to nightcrawlers and they will die within two weeks if maintained at 30⁰C (86⁰F). Nightcrawlers do not go dormant but will remain inactive if conditions are unfavorable. Because of their sensitivity to high temperatures, nightcrawler activity tends to be greatest in spring and early fall.



Figure 3. Small twigs and other plant matter drawn to a nightcrawler burrow during evening foraging.

Foraging on the surface occurs on humid nights of moderate temperature. Greatest activity follows soaking rains or when drizzly conditions persist. As they forage the nightcrawler drags into the burrow bits of dead plant matter that serve as food. Larger and more solid materials, such as small twigs, may be seen protruding from the burrow entrance following a period of foraging. Foraging nightcrawlers rarely completely leave the burrow and forage the area around the burrow where their extended body can reach. When disturbed they will rapidly retreat below ground.

Nightcrawlers also deposit their excreted “castings” at the burrow entrance, producing small mounds. In lawns, nightcrawler-produced mounds can become noticeable and produce a bumpy surface texture, sometimes considered undesirable.

Unlike the endogeic species of earthworms, nightcrawlers do little soil mixing. However, their burrows can be important sites of soil aeration and points for water penetration. Nightcrawlers are also very important in managing surface residues in lawns, helping to reduce problems with excessive development of thatch.



Figure 4. Mating nightcrawlers.

Mating also occurs on the soil surface. Typical of other earthworms, the nightcrawler is a hermaphrodite, with both male and female sex organs. However, they can not self-fertilize and must pair with another nightcrawler. Mating nightcrawlers exchange sperm and fertilize eggs that are produced in the

part of the body known as the clitellum, which appears as a thicker band on the front half of the worm. The fertilized eggs, along with nutritive fluids, then slip off the mated earthworm in the form of a small packet, referred to as a cocoon. Each cocoon may produce from 2 to 20 baby earthworms, which typically emerge about 3 weeks after the cocoon is shed. Egg hatch may be considerably extended if conditions are unfavorable.

The young nightcrawlers form their own burrows, extending it as they grow. Nightcrawlers typically may become full-sized and mature at about 3 years and can live several years longer as an adult, producing 2-3 cocoons a month during active periods.



Figure 5. Piled “castings” around the nightcrawler burrow entrance produce lumpy areas in lawns.

Nightcrawlers and Lawns.

Nightcrawlers can be very important in healthy growth of lawns through their scavenging of dead plant matter. However, their incidental production of lumpy areas in lawns around the burrow entrance is sometimes considerable undesirable.

Where lumps are a problem they are best handled by raking, which should be done after a rainfall or irrigation so that the piled worm castings can be easily spread.

Pesticides that are used on lawns have little, if any, effect on nightcrawlers and other earthworms. Insecticides that have been most deleterious to earthworms are in the carbamate class, which is most widely represented by the insecticide carbaryl (Sevin). However, no carbamate insecticides are currently labeled for use on home lawns. The fungicide that most adversely affects earthworms is thiophanate-methyl, a rarely used pesticide sold only for commercial applicators under the trade name Cleary’s 3336.

Acidifying fertilizers, such as ammonium sulfate, can be harmful to earthworms. However, adverse impacts on earthworms are less likely to occur in the typical soils found in Colorado, which are alkaline and will thus tend to modify the effects of acidic fertilizer applications.

Experimentally, applications of tea seed cake have been shown to be highly toxic to some earthworms, apparently due to their high saponins content. Tea seed cake is currently in development as a possible material to control pest earthworms, but is not registered for this purpose.

Catching Nightcrawlers. The nightcrawler is a familiar animal to fisherman and a favored bait, sometimes sold as “Canadian nightcrawlers”, “European/Belgium nightcrawlers”, or “dew worms”. Nightcrawlers can be captured during evenings when they are foraging. Ideal conditions would be an humid, overcast night following soaking conditions (rain/irrigation) and temperatures of about 16-21⁰C (60-70⁰F). Flashlights can be used, so long as they do not shine

directly on the worm, which may cause it to quickly retreat into the burrow. Vibrations from heavy footsteps will also cause worms to retreat.

A bit of fine sawdust coating the fingers can be helpful in grabbing nightcrawlers, which should be grasped as close to the posterior end as possible. If they remain partially in the burrow, stroke the worm along the end of the body near the burrow entrance while pulling carefully. This will usually allow the worm to relax so that it can be extracted without injury. Nightcrawlers that have been collected could be kept with some soil, dead leaves, or other similar material that is moist but well drained and not saturated. Nightcrawlers should be kept in a cool area for storage and normal refrigerator temperatures are suitable for temporary storage.

Experimentally, nightcrawlers can be irritated to come to the surface by mustard. A proposed concentration is 1/3 cup of ground yellow mustard/gallon, drenched over a site where nightcrawlers are present.

Related Species: Fourteen species of earthworms have been reported from Colorado. None are native to the state and most are European species. Most closely related to the nightcrawler is *Lumbricus rubellus* Hoffmeister, sometimes known as the “red earthworm” because of its reddish-brown/reddish-violet coloration. It has been more widely found in the state than the nightcrawler and is primarily associated with decaying organic matter, particularly animal manure.