



## Natural Heritage & Endangered Species Program

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*Massachusetts Division of Fisheries & Wildlife*

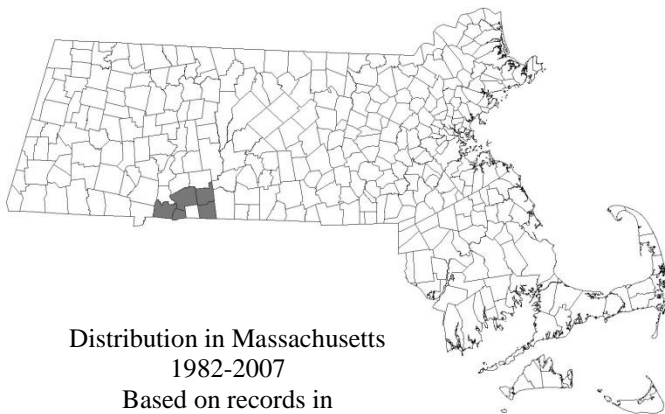
## Eastern Wormsnake *Carphophis amoenus*

State Status: **Threatened**  
Federal Status: **None**

**DESCRIPTION:** Eastern Wormsnakes are small, glossy, thin snakes, and range from 18-37 cm (7-14.5 inches) in length. The body is unpatterned, gray or tan to dark brown. Distinguishing characteristics include a slightly flattened and pointed nose, small eyes, and a pink venter. Venter coloration extends onto sides of body to include 1<sup>st</sup> to 2<sup>nd</sup> scale rows. The tail length is short and has a blunt spine-like tip. The body typically has 13 scale rows. The scales are unkeeled and the annual plate is divided. They are a non-venomous snake in the Colubidae family.

Based on research conducted in Kentucky, females Eastern Wormsnakes are slightly larger than males (mass: F = about 6.6g, M = about 4.6g); number of ventral scales (F = 112-150, M = 106-138). However, males have a longer tail length/body length (F = 11.3-20.3, M = 13.4-20.4) and greater average number of subcaudal scales (F = 14-36, M = 25-40).

Juveniles look like adults but the pattern is darker brown and the venter brighter pink.



Distribution in Massachusetts  
1982-2007  
Based on records in  
Natural Heritage Database



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**SIMILAR SPECIES IN MASSACHUSETTS:** There are three small snakes in Massachusetts that may be confused with the Eastern Wormsnake. The little brown snake (*Storeria dekayi*) has a faint pattern of parallel spotting on the dorsum and lacks a pointed snout. The ring-necked snake (*Diadophis punctatus*) has a distinct cream or yellow colored ring across the neck and a cream colored venter; some have black crescent-shaped spots down the mid-venter. Juvenile red-bellied snakes (*Storeria occipitomaculata*) have three pale spots around the neck that may form a collar, and have a grey to nearly black dorsum and also lack the pointed snout.

**RANGE AND HABITAT IN MASSACHUSETTS:** The Eastern Wormsnake ranges from southern Massachusetts south along the east coast through South Carolina, and west from southeastern New York and Pennsylvania, through West Virginia, the eastern side of Tennessee, to the northern end of Alabama and Georgia. There are isolated colonies on Lake Erie Island, southern Ontario, southeastern New England, and north central North Carolina.

**A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan**

## Massachusetts Division of Fisheries & Wildlife

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Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

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Eastern Wormsnakes have only been documented in five Massachusetts towns, all within Hampden County.

The Eastern Wormsnake prefers moist, non-saturated, sandy soil and woody debris. It occurs in deciduous hardwood forest, mixed pine-hardwoods, pine forest, and early successional fields. Often found in ecotone areas near woodland and wetland borders or woodland and grassland intersections. Microhabitat soil moisture ranges from 10-83% (most often 21-30%) and pH ranges from 5-6.9; similar to that of their preferred prey, the earthworm. Temperatures can also range widely, with a preference for 23 °C (73 °F). They are typically found under logs, stones, leaves, bark slabs, rubbish, boards open loose soft ground, sawdust or mulch piles and rotten stumps or under the ground. Wormsnakes are often encountered in gardens, compost piles, weedy pastures, and wooded areas.

**LIFE HISTORY AND ECOLOGY:** The Eastern Wormsnake is a fossorial snake; spending most of the year underground. They are non-aggressive and have a natural instinct to burrow when in danger. In the spring, they come up to the surface on warm sunny days. Annual activity likely varies by latitude and elevation; May is thought to be the primary mating season in Massachusetts. Summer activity is thought to be nocturnal, which may help to minimize water loss and coincide with ideal conditions for prey species activity. However, one study in Kentucky found the peak daily activity to be between 3:00-5:00 pm. They may be found crossing roads on humid or rainy spring and summer nights and likely burrow more deeply in the ground during dry periods. Eastern Wormsnakes may live to be more than 4 years of age in the wild.

The Eastern Wormsnake's primary food is earthworms. They also feed on fly larva, other insects, slugs, and snails. Predators include North American Racers (*Coluber constrictor*), Northern Copperheads (Endangered, *Agkistrodon contortrix*), and other predatory snakes, toads (*Bufo* spp.), opossums (*Didelphis virginiana*), Barn Owls (Special Concern, *Tyto alba*), and domestic cats.

Eastern Wormsnakes are oviparous. Males reach sexual maturity around 21.6 cm (8.5 in) snout-to-vent length and females at 25.0 cm (9.8 in) snout-to-vent length. Females are about three years of age when they lay their first clutch. They lay 2-6 eggs (typically 4-5) in humus,

under decaying woody debris or under rocks. Nesting occurs from mid-June through early July; eggs are typically laid in the morning. Some females may store sperm in their oviducts over winter. Average egg length is 1.8 cm (0.7 in) and weight is 0.8g (0.028 oz). Older, larger females tend to have larger clutches. The incubation period lasts about 45-49 days. Hatchling emergence likely occurs in August or September. Sex ratios are approximately 1:1.

Home range sizes of the Eastern Wormsnake are thought to be small. Average home range size was found to be 253 m<sup>2</sup> in one study and 1,000 m<sup>2</sup> in another (0.062 acres; 0.247 acres), both study locations were in Kentucky. Males were shown to move greater distances than females. There is evidence to suggest they aggregate in some areas. Eastern Wormsnakes can be found in high population densities in Kentucky (108 in 100 m stretch) and Kansas (60-120 per ha). However, population densities are thought to be much lower in Massachusetts.

**POPULATION STATUS IN MASSACHUSETTS:** The Eastern Wormsnake is listed as a Threatened species under the Massachusetts Endangered Species Act (MESA), because of its rarity. Destruction and degradation of habitat and possible mortality on roads imperil the Eastern Wormsnake. Flooding may be a problem in some years. In addition, insecticide poisoning can cause mortality.

**MANAGEMENT RECOMMENDATIONS:** This species is difficult to find and further surveys are needed. Survey techniques should be tested to determine the most efficient methods and time of the year to detect the Eastern Wormsnake in Massachusetts. Research is needed to better understand habitat use and population sizes and dynamics. Increased public land holdings in prime Eastern Wormsnake habitats are needed and can be obtained through a variety of purchase or conservation easement mechanisms. In addition to land protection, management recommendations to safeguard known populations would include protecting the snake in its known habitat through the regulatory process, and limiting logging within its habitat to the winter months. Due to the location of preferred habitat, these sites are affected by development and installation of impervious surface. Roads also may place this species at risk due to mortality while crossing.

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