

## *Wild Things in Your Woodlands*

### Eastern Red-backed Salamander



The eastern red-backed salamander (*Plethodon cinereus*) is a small, slender salamander with a red stripe that runs down the middle of the back from the nape of the neck down onto the tail. The stripe is bordered by black, and the belly is mottled black and white, giving it a salt-and-pepper appearance.

Occasionally, the stripe may be beige, cream or grey instead of red. Another color morph, the lead-back phase, has a dark grayish black body with no stripe and the characteristic salt-and-pepper belly.

The body of the red-backed salamander is rounded and the head is only slightly wider than the body. The snout is short and the tail is about the same length as the body. Females are slightly larger than males.

The eastern red-backed salamander is a primarily woodland species that inhabits deciduous, mixed hardwood-conifer, and coniferous forests, though it may be found in disturbed areas at the borders of forests, and along rocky road cuts or railroad rights-of-way. Red-backed salamanders require habitat that is not too dry or exposed, and will avoid areas of low soil pH. In the winter, red-backed salamanders hibernate in underground shelters such as cracks and crevices, abandoned ant mounds, and root channels.

In early summer, females lay 3-11 eggs in cracks and crevices in or under logs, under flat rocks, and in burrows of other animals. While brooding eggs, the female is inactive, and spends her time guarding the nest site and defending the eggs from predators. Development of the young is completed in the egg, so there is no larval stage and the young are fully developed upon hatching.

Red-backed salamanders feed on small soil and leaf litter invertebrates including mites, springtails, millipedes, fly and beetle larvae, worms, flies, ants, and beetles. They feed actively when the ground is moist, and rainfall and humidity are high. During periods of drought, salamanders move to retreats that offer protection from desiccation and food intake decreases.

In New York, the red-backed salamander is the most abundant and widely distributed salamander in the state. Indeed, red-backed salamanders are likely the most abundant vertebrate in forests throughout the Northeast. In a New Hampshire study, researchers found that the biomass of red-backed salamanders equaled that of mice and shrews and was twice that of forest birds (excluding raptors). Because of their sheer abundance, their ability to feed on small prey not consumed by other predators, and their ability to convert a high percentage (60%) of the energy they consume into salamander biomass, the red-backed salamander is a very important component of woodland ecosystems.

The red-backed salamander reaches its greatest abundance in forests with a closed canopy and abundant cover items, such as logs and rocks. Light timber harvests may have little effect on these animals. However, as the intensity of the harvest increases, allowing more wind and sunlight to penetrate to the forest floor, salamander populations will decrease. In clearcuts, red-backed salamander populations may be eliminated and can take decades to recover. However, through research at Cornell's Arnot Forest, we have discovered that leaving a significant amount of woody material on the forest floor following heavy partial harvests can help mitigate the effects of opening up the forest canopy. Retaining treetops and unmarketable logs on the forest floor creates moist refuges for these woodland animals and can buffer the effects of canopy removal. While populations may still decline, they do not disappear completely, and may recover to pre-harvest levels more quickly.

*Kristi Sullivan coordinates the Conservation Education Program at Cornell's Arnot Forest. More information on managing habitat for wildlife, as well as upcoming educational programs at the Arnot Forest can be found by visiting the Arnot Conservation Education Program web site at [arnotconservation.info](http://arnotconservation.info)*

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