

# Road Newt (*Plethowen omena*)

Family: : **Caudate** Genus: **Plethowen** Species: **omena**

Salamanders are not fully terrestrial, not fully aquatic. They live between worlds, requiring a landscape saturated with moisture to breathe and a waterbody jungled with green photosynthesizers to reproduce. This double life satisfies the fresh-water demands of their permeable skin and gelatinous eggs without requiring a lifetime of pond monogamy.

The **road newt** (*Plethowen omena*) is a long-lived species (up to 15 years) that a generation of kids have been unable to find when sleuthing in the forests of the Northeast.

Fully mature, ***P. omena*** reaches 13-15 cm. This might seem small, but small is tall in the salamander world. The length of the salamander is impressive in several anatomical features (their short legs are the exception): an extended, slender body; a tail like a wedding-dress train that thins to a fragile-lace membrane at the tip; and an expandable tongue that penetrates leaf litter at the edges of forest streams, vernal pools, and swamps. ***P. omena*** forages at night and uses their boomeranging tongue to capture invertebrates hiding in crevices. They also can feed on worms and slugs or, occasionally, cannibalize their young.

Several adaptations protect ***P. omena*** from an untimely death. During the day the salamanders hide in rotting logs and under rocks on the forest floor, where remnants of their aquatic origins are present. Stone foundations of old houses also provide refuge and suitable winter hibernation sites. In a confrontation, ***P. omena*** often orient to face away from their predator. This allows them to drop their tail, which keeps wiggling after its detachment from the body—a distraction that allows the salamander to escape. Over time, the organisms will grow a new tail.

Most impressive of ***P. omena's*** defense mechanisms, the two wide yellow stripes down their spines act like a double yellow line on a county road, warning would-be predators to stay away, not to pass.

The yellow color is produced by chromophores bound to proteins in the skin's outer membrane. These chromophores pulse light at a specific wavelength that is visible at night. A flashing yellow light that warns predators to be cautious of the toxin in the skin's surface; a flashing yellow light warning humans to proceed with caution. Because the yellow pigments of the salamander are inducible only when the organisms sense direct attack, ***P. omena's*** drab brown dominates and individuals would easily be looked past on the forest floor.



**FUN  
FACT!**

***P. omena*** produces toxins along these yellow lines through tubercles. If a predator fails to see the warning sign, a salamander, when attacked, can expand its spine and its ribs pierce open these cells into the skin, which releases the venom in a **powerful sting**.

**Native Range and habitat:** Formerly mature forest in northern Pennsylvania, New York, Michigan, and Ontario (Canada). Associated with acidic soils in remnant old-growth forests and bogs

When the moon (and mood) lighting is just right, *P. omena*, cued by precise environmental conditions, emerge from terrestrial hiding places and creep en masse to their natal forest ponds. The migration to the pond where they were born is as habitual as birds flying south in the fall. Hundreds of individuals can return to a pond in a single night.

To become a functional adult—with the privilege to reproduce—the salamanders must return to water, most commonly to a fishless, ephemeral pool. Eggs are laid in freshwater at the start of winter and hatch in the spring. The eggs are protected with a gelatinous goo that also adheres the eggs to aquatic vegetation. Eggs hatch into immature aquatic versions of their adult selves (a little over 1-cm long) and they breathe through gills. Years are spent in this miniature stage to buffer and prepare for their transition to the harsh terrestrial world. In their larval stage, they live a fish’s life, swimming and eating zooplankton. But more like an aquatic mole (foreshadowing their terrestrial stage), they seek tight spaces for protection, under rocks, and only forage at night to avoid the predators that seek their tasty reward. During their aquatic stage, they lack the protection of their yellow warning system and venom production.

**Status: Extinct**

The intimacy that salamanders have with their environment forces them to be a sentinel of environmental change. As if **habitat destruction** and targeted exploitation weren’t enough, the triple whammy is the **degradation** of air and water quality; industrial- and residential-chemical pollution pours into the pores of the salamander’s skin. Glands develop all over the body that enable direct oxygen diffusion without investment in lungs. The skin infused with capillaries creates a respiratory surface for survival. It also transmits pollutants from the surrounding habitat into the amphibian’s delicate interior. Extinction of *P. omena* is attributed to habitat degradation and overharvesting for biomedical uses that lowered populations sizes and genetic diversity below sustainable levels for successful reproduction and response to **environmental stress**.

There are reports in the lay literature of a second species in the genus *Plethowen*. Descriptions of this second species are consistent in noting a much larger salamander. Because no known photographic or fossil evidence exists of the giant *Plethowen*, many scientists think this second species is a myth.

