



## NEWT WORLD \* NEWT WORLD \* NEWT WORLD

Newts are a kind of water-breeding salamander. Newts evolved from other salamanders about 60 million years ago. Today newts are found in the temperate parts of North America, Europe, Asia and north Africa.

### ROUGH-SKINNED NEWT

- **Distribution.-** The Rough-skinned newt (*Taricha granulosa*) is found only in the Pacific Northwest, from northern California to British Columbia. In Oregon it is found from the Cascades west to the Pacific Ocean.
- **Habits.-** Adult newts live in forests, away from ponds, from November until February. In February, the adults migrate to ponds for mating and egg-laying. Some adults stay in the pond until November, then they migrate back to the forest. Other adults remain in the pond all year long.
- **Food.-** In the forest, newts feed on earthworms and insects. In the pond, newts feed on snails and aquatic insects.
- **Males and females.-** During the breeding season (February – April) it is easy to tell the male from the female. The male is larger than the female. The male has smooth skin, a

tall tail, and black friction pads on the soles of his feet (Fig. 1). The female has rough skin that is dark reddish brown in color.

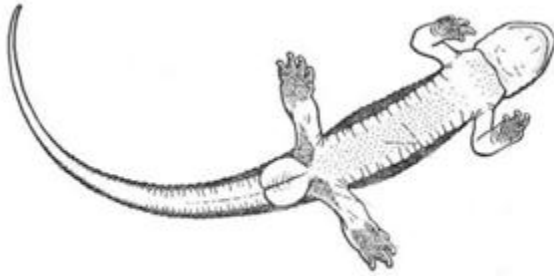


Figure 1. Underside of the male newt, showing dark friction pads on the soles of his feet. From Stebbins 1962.



Figure 2. A pair of newts in amplexus. The male is above; the female is below.

- **Mating behavior.** – Mating takes place underwater and follows a sequence of steps.
  1. **Capture.** - The male captures the female with his front legs. He rides on her back holding her with all four limbs. This posture is called *amplexus* (Fig. 2).
  2. **Amplexus.**- During amplexus, the male rubs his chin on the female's nose (Fig. 3) and twitches his hind feet. Other males may attempt to capture the female while the male holds her in amplexus. To avoid these rival males, the amplexing male may swim away while holding on to the female. During amplexus, the female may signal to the male that she is not ready to mate by holding her head down. If she persists with this signal, the male may dismount and search for another female. After 1-4 hours, the female may signal to the male that she is ready to mate by holding her head up.

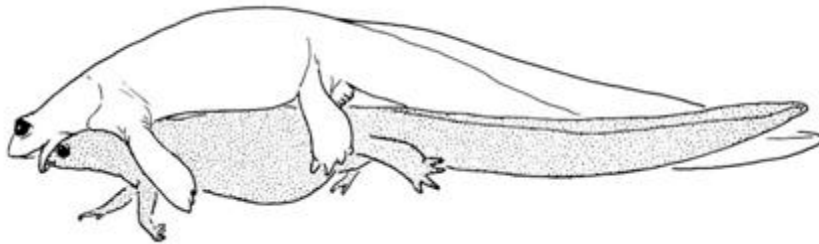


Figure 3. A male newt rubbing his chin on the female's nose during amplexus. From Arnold 1977. [Video](#)

3. **Making a spermatophore.**- The male responds to the female's head-up signal by dismounting and depositing a *spermatophore* on the ground in front of the female. The spermatophore is a small (1 cm high) but complicated structure that holds a spherical mass of sperm (Fig. 4).

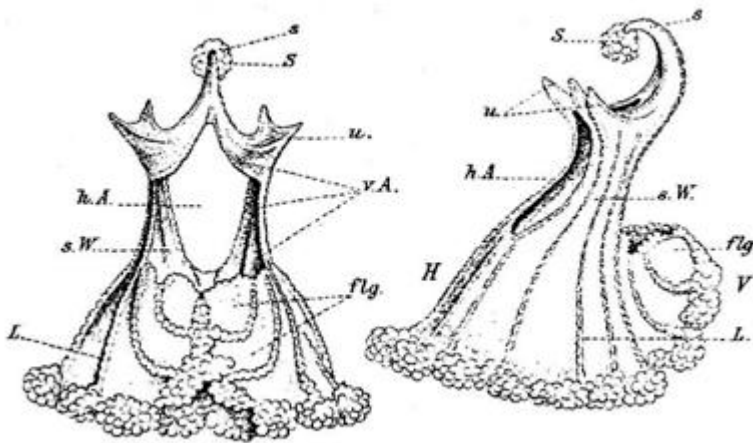


Figure 4. A *Taricha* spermatophore. Rear view on left; side view on right. The sperm mass is labeled S. From Zeller 1905

4. **Sperm transfer.**- If the female is receptive, she moves her body over the spermatophore and the sperm mass clings to her genital opening. After a successful sperm transfer, the male may capture the female again, so that steps 1-4 are repeated.
- **Egg-laying.**- The female stores sperm from 1-3 males inside her body. She uses the sperm to fertilize eggs just before they are laid. Eggs are laid a few days after sperm transfer. Typically the female lays several eggs each day. She lays a total of about 300 eggs during a breeding season. Eggs may be attached to branches or roots underwater (Fig. 5). Alternatively, the female may wrap the leaf of an aquatic plant around each egg as it is laid. This wrapping protects the egg from predators.



Figure 5. A female newt laying her eggs. From Stebbins & Cohen 1995.

- **Larvae.**- Small larvae with bushy gills hatch from the eggs. At first, the larvae have only front legs. When they get bigger, they develop hind legs as well. The larvae feed on aquatic insects and crustaceans.
- **Young newts.** In September, the larvae lose their gills, develop rough skin and walk out of the pond onto land. They now resemble the adults but are much smaller (two inches long). Over the next several years, the young newts live in the forest, eating worms and insects. When they reach adult size, they return to the pond to breed.
- **Predators.**- Young and adult newts are protected from most predators by powerful toxins (tetrodotoxin) in their skin. Because of these toxins, newts are avoided by most bird and mammal predators. Some garter snakes, however, are resistant to newt toxins. They can eat newts without any problems. Garter snakes are thought to be the major predators of newts.
- **Newt safety** – The same toxins that protect newts from predators can irritate your eyes, nose and mouth. It is safe for you to carefully handle newts, but you should wash your hands afterwards and avoid touching your nose, eyes and mouth.

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