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SALAMANDERS AND NEWTS

California Newt

Taricha torosa

Taricha torosa is a sturdy newt, 13-20 cm long, from the California coast, with a granular brown back and a yellow to orange belly. The skin contains tetrodotoxin, a nerve toxin with no antidote, and the animal can be deadly if swallowed. The species lives mostly on land and enters the water only to breed, and it must be kept cool.

Family: Salamandridae Former name: *Cynops torosus; Notophthalmus torosus* **Strong skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**13-20 cm** total length incl. tail
Lifespan	**12-22 years**
Active	**By day and at night**
Lifestyle	**Semi-aquatic**
Habitat	**Wetland and temperate woodland and meadow**
Skin toxins	**Strong** Avoid skin contact and wash your hands thoroughly after working in the enclosure
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 30 × 30 cm** L × W × H for 2 adults
Temperature, day	**16-21 °C**
Temperature, night	**14-18 °C**
Humidity	**70-90%**
Water	**Water dish**
UVB	**Not required**
Diet	**Insects and worms/snails**
Kept	**In pairs or in groups**

BREEDING

Reproduction	**Egg-laying**
Development	**Larvae in water**
Egg-laying site	**In water**
Sexually mature	**36 months**
Eggs per season	**7-30**
Hatching	**14-21 days**
Larval period	**60-90 days** from hatching to metamorphosis
Larval diet	**Small aquatic invertebrates (daphnia, mosquito larvae)**
Parental care	**None**

PROTECTION AND PAPERWORK

CITES	**Not listed**
EU annex	**Not listed**
IUCN	**Near Threatened (NT)**

About the species

Taricha torosa is a sturdy, placid salamander with granular skin and a rounded snout. Adults are 13-20 cm long including the tail, and males are slightly larger than females. Land-phase animals are yellowish brown to dark brown on the back and pale yellow to orange on the belly. The eyelids and the area under the eyes are paler than the rest of the head, and the iris is silvery to pale yellow. Seen from above, the eyes project to or beyond the outline of the head. That, and the Y-shaped palatal teeth, distinguish the species from *Taricha granulosa*, with which it is often confused; that species has smaller eyes that do not project, and V-shaped palatal teeth.

In the breeding season the male develops smooth, loose skin, a broader, flatter tail, a swollen vent and rough horny pads under the feet, so that he can hold on to the female. The female also develops smoother skin and a broader tail, but less distinctly. The larvae are pale yellow with two narrow dark bands on the back.

The skin contains tetrodotoxin, the same nerve toxin as in pufferfish. The toxin is probably produced by bacteria and not by the salamander itself. The toxin is present throughout the skin, in the muscles, the blood and the ovaries and also in the jelly of the eggs, while the larvae are not toxic. The liver, intestines and testes contain only very little. The amount varies greatly from population to population: some animals have almost no toxin, and the most toxic populations of *T. torosa* contain less than the most toxic populations of *Taricha granulosa*. The toxin is still strong enough to kill most vertebrates, including humans, if the animal is swallowed. There is no antidote. The toxin can also be absorbed through mucous membranes and wounds, so animals and eggs are handled only when necessary. When threatened, the animal arches its back, closes its eyes, stretches its limbs out to the sides and holds its tail straight back, so that the orange belly is visible as a warning.

The species was previously regarded as two subspecies. Since 2007 the Sierra Nevada populations have been a separate species, *Taricha sierrae*, and *T. torosa* comprises only the coastal populations and a few populations in the southern Sierra Nevada. The species lives 12-15 years in the wild and can live over 20 years in captivity.

Distribution and habitat

Taricha torosa is found only in California in the western USA. The main range follows the coastal mountains from Mendocino County in the north to Los Angeles County, with separate populations in San Diego County further south and in the southern Sierra Nevada south of the Kaweah River. North of the river in the Sierra Nevada lives *Taricha sierrae*, and the two species overlap slightly around the river.

> **Native range:** United States.

HABITAT

Taricha torosa lives in deciduous woodland, scrub and shrub vegetation (chaparral) near the ponds and streams where it breeds. In the northern part the animals prefer damp woodland; further south they live in drier terrain. For most of the year adults are terrestrial. By day and in the dry summer they hide in damp burrows, under wood and stones and in animal burrows, and the rain of autumn and winter prompts them to migrate to the breeding ponds, often in large numbers and often to the pond where they themselves hatched. They are most visible from December to May. After breeding, most adults leave the water again, but in some permanent waterholes some animals stay in the water all year.

The breeding ponds are small ponds, waterholes and slow-flowing streams. The species is near threatened. Populations in Southern Californian streams have declined sharply because introduced red swamp crayfish and mosquitofish eat eggs and larvae, and adults are injured by the crayfish's claws. Many animals also die on roads during the migration to the ponds.

Care

THE ENCLOSURE

There is relatively little knowledge about the care of *Taricha torosa*, so the winter temperatures are borrowed from the closely related *Taricha granulosa*, which is kept more often. The care of the two species is not identical: *T. torosa* lives mostly on land. An enclosure with a water dish is therefore the normal set-up; only in the breeding season is an aquarium necessary. A pair of adults needs at least 60 × 30 × 30 cm, and animals in the same enclosure should be roughly the same size, because the species eats anything smaller than itself.

The floor is covered with damp leaf mould, moss or another substrate that retains moisture. Bark, roots and stones provide hiding places, and the animals like to hide under them by day. Snail shells and other hollow objects with only one opening must not be used, because the animals crawl into them and cannot get out again. The animals climb well and escape easily, especially as newly metamorphosed young, so the lid must be fixed firmly.

TEMPERATURE

Taricha torosa likes the cool. By day the temperature should be 16-21 °C and at night 14-18 °C. The temperature must not exceed 24 °C, and longer periods above 21 °C must be avoided. Place the enclosure somewhere cool, out of direct sun and with no heat lamps.

In winter the animals are kept cooler, at 5-12 °C; the cool period triggers breeding activity in spring. The figures are borrowed from *T. granulosa*. How long the winter rest should last is not documented.

HUMIDITY AND MISTING

The substrate should be damp, but the enclosure should not drip. Humidity is about 70-90%, and daily misting with dechlorinated water keeps the substrate moist. The species tolerates dry periods better than many other salamanders, but ventilation is important, so that skin infections do not develop.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

A shallow dish of clean water must always be available, so that the animal can cover itself completely with water. Use tap water treated for chlorine and chloramine; distilled and demineralised water are not used. The water is changed often, so that it is not fouled by food remains and droppings, and the dish should be easy to get in and out of. No gravel or small stones in the water, because the animals can swallow them.

For breeding an aquarium is needed, with water 15-30 cm deep, plants and a ramp of bark or stones, so that the animals can get out of the water.

LIGHTING AND UVB

The species does not need UVB. Daylight in the room or a weak fluorescent tube during the day and darkness at night is enough. The enclosure must not stand in direct sun, and heat lamps must be avoided, because the species does not tolerate heat. If the room has no daylight, a weak fluorescent tube on a timer is enough.

Read more: Lighting and UVB

FEEDING

Taricha torosa is an opportunistic predator that takes almost anything it can overpower. Earthworms are a complete diet in themselves, and compost worms (*Eisenia fetida*) are also taken readily. In addition come snails, woodlice, crickets, mosquito larvae and other small arthropods. The animals find food by both smell and movement and take live food best. Larger earthworms are cut into pieces. Fish food and pellets are not suitable for a species that lives mostly on land. Adults are fed two to three times a week, and uneaten food is removed. Food given on land is dusted with calcium and vitamins once a week.

The larvae are predators and are first given newly hatched brine shrimp (artemia), small grindal worms and daphnia, later white worms, bloodworms, mosquito larvae and small earthworms.

Read more: Feeder animals: keeping and breeding Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Taricha torosa is calm, sociable and not aggressive towards others of its kind of the same size. In the breeding season the males become more aggressive towards each other, and large balls of animals form around a receptive female. After breeding the animals return to a more solitary way of life. The species can produce clicks, squeaks and whistles: clicks in unfamiliar surroundings and during confrontations, squeaks in defence and whistles in interaction between the animals.

The animal is handled only when necessary. The toxin can be absorbed through wounds and mucous membranes, so hands and tools are washed thoroughly, and you do not touch your eyes or mouth until your hands are clean.

Breeding

SEXUAL MATURITY AND SEXING

Taricha torosa becomes sexually mature at around three years of age. The sexes are most easily told apart in the breeding season: the male has smooth skin, a broad and flat tail, a swollen vent and rough horny pads under the feet, while the female has a narrower tail and a smaller vent. Males are slightly larger than females.

MATING

Mating takes place from December to May. The males enter the water first and wait for the females, and when they arrive, groups of animals gather. The male sits on the female's back, rubs her snout with his chin and strokes her vent with his hind legs; the mating clasp can last more than an hour. Finally he deposits a spermatophore, which the female picks up with her

vent. The female can mate with several males. The species breeds only after a cool winter.

EGGS AND LARVAE

The female lays the eggs in clumps of 7-30 eggs, attached to roots, plants and stones in shallow, still water. Each clump is wrapped in a toxic jelly, and the eggs contain the same toxin as the adults. How many clumps and eggs a female lays per season is not documented; the figure in the table applies to a single clump. The adults readily eat eggs, so the clumps are removed together with what they are attached to. The larvae are kept in an aquarium with an air stone and plenty of water and should not be crowded. They are first given the smallest live food and later larger. There is no parental care.

METAMORPHOSIS

The eggs hatch after 14-21 days, depending on temperature. Most larvae metamorphose after about two to three months, when they are about 5 cm long; the larval period depends on food and temperature. The gills shrink, and the skin changes structure. Just before metamorphosis the aquarium must have a lid, because the newly metamorphosed young climb out at once. Stand the container at a slant, so that a ramp forms and the young can crawl up onto land.

Read more: Rearing tadpoles

REARING THE YOUNG

The newly metamorphosed young are kept on land in a clean container with damp kitchen paper or in an enclosure with moss and hiding places under bark and stones. The substrate must be damp and cool. They are given small feeder insects such as woodlice, small crickets and smaller earthworms. Young animals lose moisture easily and therefore like to sit together in clumps under cover.

Health and common mistakes

The species is hardy, but these problems are frequent:

- Too warm: longer periods above 21 °C stress the animal.
- Dehydration: keep the substrate damp and always leave a water dish available.
- Poor water quality in the dish and the aquarium: change the water often.
- Swallowed gravel or small stones can cause constipation.
- Obesity: the species eats everything, so feed moderately.
- Skin infections from poor ventilation.

The toxin is deadly if the animal is swallowed, and there is no antidote. Keep the salamander out of reach of children and pets, wash hands thoroughly after any contact with the animal, water or furnishings, and do not touch your eyes or mouth until your hands have been washed. Other animals that try to eat the species can die.

Salamanders can carry the fungal disease Bsal (*Batrachochytrium salamandrivorans*), which is deadly to many species. Quarantine new animals for at least 60 days, and wash hands and tools between containers.

See a vet with amphibian expertise if the animal refuses food for a long time, has open wounds or has trouble moving.

Read more: Quarantine and hygiene

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.