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SALAMANDERS AND NEWTS

Anatolia Newt

Neurergus strauchii

Neurergus strauchii is a slender mountain-stream newt, 13-18 cm long, from eastern Turkey, black with bright yellow spots and an orange stripe along the belly. The species is relatively easy to keep and can live in water all year round or alternate between land and water. It must be kept cool and given a cold winter in order to breed.

Family: Salamandridae

Mild skin toxins

KEY FACTS

THE ANIMAL

Adult size	**13-18 cm** total length incl. tail
Lifespan	**12 years**
Active	**At dusk and at night**
Lifestyle	**Terrestrial and semi-aquatic**
Habitat	**Rocky terrain and temperate woodland and meadow**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 30 × 45 cm** L × W × H for 4 adults
Temperature, day	**10-21 °C**
Temperature, night	**8-15 °C**
Humidity	**60-80%**
Water	**Aquaterrarium** depth 15-30 cm
UVB	**Optional**
Winter rest	**2-10 °C** 4-12 weeks
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	**24-48 months**
Eggs per season	**17-285**
Clutches per year	**1**
Hatching	**15-34 days** at 15-21 °C
Larval period	**90-210 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	**Least Concern (LC)**

About the species

Neurergus strauchii is a relatively large newt. Adults are 13-18 cm long including the tail, in the wild 14-15 cm on average, and the largest reach 19 cm. The body is slender and black with bright yellow spots, and the belly is black along the sides with an orange stripe or row of spots down the middle. As in most stream-dwelling salamanders, the build is slender and the tail is low.

The male is slimmer, has a shorter tail and a larger vent, and has bluish-white markings on the sides of the tail, which can continue up along the body. The markings are visible all year, but become stronger and are seen as early as autumn when the breeding season approaches. The female is more heavily built with a longer tail, shorter legs and an orange, cone-shaped vent. Outside the breeding season the vents are not clearly different.

The species consists of two subspecies, *N. s. strauchii* east of the Euphrates and *N. s. barani* west of the river. In *N. s. strauchii* the yellow spots become more numerous and larger with age, and the number increases towards the east. In *N. s. barani* the animals keep roughly the juvenile pattern with small spots in two rows. The westernmost *N. s. strauchii* can hardly be told apart from *N. s. barani*. A rare colour form of *N. s. strauchii* has a golden, dusted pattern and a black stripe along the back. Captive-bred animals live at least 12 years.

Like other newts, the species has poison glands in the skin, but the toxin has not been studied in *N. strauchii*. Wash your hands after contact, keep your fingers away from your eyes and mouth, and handle the animals only when necessary.

Read more: Buying animals: captive-bred, wild-caught and transport

Distribution and habitat

Neurergus strauchii is found only in mountain areas of eastern Turkey, from Malatya to the area around Lake Van, at altitudes of 1,000-1,900 metres. *N. s. barani* lives only in the mountains south-east of Malatya, and the Euphrates separates the two subspecies. The range consists of scattered, isolated occurrences, and the animals cannot migrate between them, because the areas in between are uninhabitable.

The populations are vulnerable, because the habitat is sensitive to human impact and climate change, and a vanished population cannot be recolonised. The threats are overgrazing, deforestation, pollution of the breeding waters, agricultural chemicals, road building and rubbish.

> **Native range:** Turkey.

HABITAT

The species breeds in narrow mountain streams 0.5-2 metres wide, fed by meltwater, preferably with large, deep and slow-flowing pools. The bottom consists of stones, shell fragments and coarse sand, and there are almost no aquatic plants. The water temperature in the breeding streams is 11-17 °C, in springs down to 9 °C and at times as low as 2-3 °C. The water is slightly alkaline (pH 7-9) and soft to hard, because the bedrock is rich in lime. On land the animals live in rock crevices and under stones in open terrain with sparse, low vegetation and few bushes and trees.

The winters are cold and snow-covered, and the summers hot and dry. Most animals spend the greater part of the year on land under stones or in the ground, sheltered from heat and drought, and hibernate on land near the streams. Breeding animals are in the water for a short period from April to June.

Care

THE ENCLOSURE

Neurergus strauchii can be kept in two ways. One follows the animals' natural year: on land for most of the year and in water during the breeding season in spring. The other is to keep the animals in a tank all year round, as long as the temperature is kept low. Both work, and the animals breed under both forms.

Four adults need an aquaterrarium of at least 60 × 30 × 45 cm, preferably larger. The water is 15-30 cm deep. Furnish with stacked stones, cork and hollow bricks, which provide many crevices above and below water, and lay stone slabs that stick out above the water, so that the animals can climb onto a dry spot. The animals prefer stones to plants, and plants are not necessary. The filter may produce current in part of the tank, as current does not stress the species.

For the land phase, use soil or a mixture of soil with bark or coconut fibre, kept slightly damp, with hides of cork, stacked stones and bricks, and a water bowl. Provide a gradient from damp to dry. The substrate must never dry out completely, or the animals will die. Avoid acidic materials such as moss and peat, as the species requires neutral to alkaline water. Limestone is suitable, and if the water is soft or below pH 7, calcium carbonate is added in the form of crushed shells, calcareous sand or bird grit.

The animals are good at escaping and will find any crevice. Cover the enclosure with a tight but ventilated lid.

Read more: Calcium, vitamins and supplements

TEMPERATURE

Neurergus strauchii loves cool conditions. In spring and autumn 10-17 °C suits it, and in summer 17-21 °C. Animals in water leave the water when it gets above 20-22 °C, and water temperatures above about 25 °C can be fatal. Animals on land tolerate brief peaks up to 30 °C if they are healthy. If there is no cellar or reliable cooling, the animals are moved to land when the heat arrives. The night temperature is not documented; a drop of a few degrees, as in a cool room, suits the species.

A cold room or cellar suits it better than a living room. On the same amount of food, animals at 10-17 °C grow faster and put on more weight than animals at 18-25 °C.

In winter the animals are kept at 2-10 °C for one to three months, for example from mid-December to the end of February. This can be done in a refrigerator at 2-5 °C in small boxes with wet kitchen roll and bark, with the sexes separate, or in an unheated room, cellar or shed, where the temperature follows the season. A period below 10 °C is necessary for the animals to breed (see Mating).

HUMIDITY AND MISTING

The species does not need high humidity, and the enclosure should not be misted. 60-80 % suits it. The substrate is kept slightly damp with a gradient from damp to dry, so that the animals can choose for themselves, and it must never dry out completely. Good ventilation is important, because still, humid air causes skin problems.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

The water in the aquaterrarium is 15-30 cm deep. The water must be neutral to alkaline and preferably hard; limestone in the tank keeps it that way, and if the water is soft or below pH 7, calcium carbonate is added. Acidic materials are avoided. Use dechlorinated tap water, and use no cleaning agents on the furnishings.

A filter with some current keeps the water clean. Change part of the water every week, more often in the breeding season and in warm periods. If the animals are kept on land, fill the water bowl with fresh water several times a week.

LIGHTING AND UVB

The species does not need any special lighting. Daylight or fluorescent tubes are enough, preferably with a day length that follows the season: longer days in summer and shorter in winter. The light is switched off during the winter rest in the refrigerator. UVB is not necessary. Always provide shade and hides, so that the animals can retreat from the light.

Read more: Lighting and UVB

FEEDING

The species takes many kinds of live and dead food. On land, young crickets, mealworms, fungus beetle and wax moth larvae, earthworms, fly larvae, silverfish and snails suit it. In water it takes earthworms, blackworms (*Lumbriculus*), tubifex, red mosquito larvae, daphnia, amphipods, water hoglice and white worms. Feeder animals on land are dusted with calcium and vitamins, and crickets are fed calcium-rich plants such as dandelion or nettle. Small pieces of meat are also taken, and the animals easily learn to take food from tweezers. Almost all animals, including young ones, go into a shallow feeding dish, so that animals on land can also be given worms and other aquatic food.

The species eats less at a time than, for example, *Triturus* and has a fixed limit for how much it takes at each meal. Animals in water must be fed more often than animals on land. Feeding varies from daily to every sixth day, depending on age, husbandry form and temperature. Give plenty of nutritious food, for example waxworms, up to and during the breeding season, as well-fed females lay more eggs.

If the animals are kept cold in water or in an unheated room, they are still active and must be fed, so that the females have the energy to produce eggs. In a refrigerator at 2-5 °C they are not normally fed. Crickets die below 10 °C and are not suitable as food in the cold period.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Neurergus strauchii is most active at dusk and at night and hides by day in rock crevices and under stones. Animals on land are a little shy, but can learn to take food from the hand. Animals in water become very bold. The species escapes through even small gaps. The animals can be kept in groups; in the breeding season other males can disturb a pair, and some adults eat eggs.

If the animals need to be moved, use wet hands or a damp net, and transport them in boxes with air holes and wet paper so that they do not dry out.

Breeding

SEXUAL MATURITY AND SEXING

The animals breed from a total length of about 12 cm: males from about 12 cm and females from about 13 cm. This corresponds to an age of two to four years. Well-fed males can breed after two years, females normally a year later, and with less food it takes three to four years. The male's swollen vent and the bluish-white markings on the tail are visible as early as autumn. The female has a cone-shaped vent. A ratio of 1:1 or 1:2 between males and females gives good results.

MATING

The species needs a cold period in winter followed by rising temperatures in spring. There are two methods. Either the animals are kept in water all year at 16-20 °C, and the tank is moved to a cold place (4-12 °C) in winter. Or the animals are kept on land in summer, autumn and winter, and after the cold period they are suddenly moved into a tank in early spring. The sudden change in temperature, often together with the switch from land to water, sets breeding in motion. If the temperature does not fall below 10 °C, the animals rarely breed.

The males begin courting at about 10 °C, often the same evening they enter the water, and during courtship the water is preferably kept below 14 °C. The male waves his tail at the female and deposits a sperm packet, which she picks up with her vent. Mating resembles that of *Triturus*, even though the species lives in streams, and often takes place hidden among the stones. The female must take up sperm packets regularly in order to keep laying fertilised eggs, so the sexes should not be separated during the breeding season. The breeding season in captivity can begin as early as February.

EGGS AND LARVAE

When the water rises from 12-14 °C to 16-18 °C, the female begins to lay eggs. Most eggs are laid at 15-19 °C, but eggs laid at 14-16 °C hatch best, and above 20 °C egg-laying almost stops. The eggs are laid singly or in small groups, mostly on the underside of stones, where the female lies on her back between two stone slabs, but also on the glass, the filter, plants and the inside of flowerpots. There must therefore be plenty of room between the stone slabs. The eggs stick with a thick jelly. Egg-laying is very irregular and can last two months or more when the temperature rises slowly; if it rises quickly, the period is shorter. A female lays from 17 to up to 285 eggs per season, mostly when she is given plenty of food.

The hatching rate varies from 0 to 80 %, and no clutch is fully fertilised. Adults eat eggs, so the eggs are removed every few days, either together with the stone or carefully scraped loose with a razor blade. They can also stay in the tank until hatching. If they are moved to a shallow container, the water is changed every second or third day to avoid bacteria and mould. Unfertilised eggs turn cloudy and go mouldy, and mould can spread to neighbouring eggs, so they are removed immediately.

METAMORPHOSIS

The eggs hatch after 15-34 days at 15-21 °C, most after 26-31 days. The larvae are large at hatching, 12-14 mm, and live on the yolk for the first few days. After that they are predators and take daphnia, white worms, tubifex, blackworms (chopped at first) and red mosquito larvae. They tolerate frequent water changes and 10-20 °C, and mortality is low. Keep the pH at 6.8 or above. A strong air stone is enough, and a filter is not necessary. Stones, pot shards and Java moss provide cover. The larvae are only slightly aggressive towards each other, but avoid too many in the same container.

Metamorphosis takes place after 3-7 months, on average about five, most often at 55-63 mm and about 0.6 g. The larvae develop yellow spots and gradually turn black, and the gills disappear over one to three months. Metamorphosis is slow, so the young alternate between water and land for some weeks. Larvae that hatch late overwinter and metamorphose the following year. Provide stones above the water so that the young can climb out, and move them to a land terrarium if the summer becomes warm (above 23 °C).

Read more: Rearing tadpoles

REARING THE YOUNG

The newly metamorphosed young are most often raised on land in a small terrarium (about 50 × 20 × 15 cm) with leaf compost, bark and damp kitchen roll and both damp and dry areas. Give small crickets, small waxworms, fruit flies, woodlice, silverfish and chopped worms in a shallow dish, at least once a week. The young can be kept at the same temperatures as the adults. Rearing in water also produces healthy animals that grow well. Survival from egg to metamorphosis is low, often under 10 % over a season, even though the larvae themselves are easy to rear.

Health and common mistakes

Illnesses and husbandry errors in the care of *Neurergus strauchii*:

- Heat: most cases of illness are seen in summer, and the species is sensitive to temperatures above 20 °C. Keep the enclosure cool, and move animals from water to land in warm periods.
- Drying out: a substrate that dries out is fatal. Maintain a damp gradient.
- Acidic water and acidic materials: avoid moss, peat and water below pH 7.
- Bone loss (metabolic bone disease) is caused by too little calcium and vitamin D and results in a deformed spine and lower jaw. Dust feeder animals on land with calcium, and give animals in water calcium-enriched food in pellet form if they take it.
- Intestinal parasites cause loss of appetite, emaciation and a swollen body and are linked to poor husbandry.
- Ranavirus, chytrid (*Batrachochytrium dendrobatidis*) and Bsal (*Batrachochytrium salamandrivorans*) can be fatal to caudate amphibians and can be carried by animals without symptoms. Quarantine new animals for at least six weeks, preferably have them tested for ranavirus and chytrid, use separate equipment, and never move water, plants or equipment between enclosures without cleaning.
- Mould on eggs: remove dead eggs immediately.
- Animals that will not eat, have wounds that do not heal, or are swollen should see a vet with amphibian expertise.

Read more: Quarantine and hygiene Read more: Common diseases and signs of illness

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.