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SALAMANDERS AND NEWTS

Alpine Newt

Ichthyosaura alpestris

Ichthyosaura alpestris is an attractive European newt with an orange belly and, in the breeding season, a blue male with black-spotted sides. It reaches 8-12 cm, lives alternately in water and on land, and is relatively easy to keep and breed in a cool aquarium or aquaterrarium.

Family: Salamandridae Former name: *Mesotriton alpestris; Triturus alpestris* **Mild skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**8-12 cm** total length incl. tail
Lifespan	**10-20 years**
Active	**At dusk and at night**
Lifestyle	**Semi-aquatic**
Habitat	**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	**70 × 35 × 30 cm** L × W × H for 4 adults
Temperature, day	**10-18 °C**
Temperature, night	**8-14 °C**
Humidity	**80-100%**
Water	**Aquaterrarium** depth 20-25 cm
UVB	**Not required**
Winter rest	**2-5 °C** 8-13 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	**12-48 months**
Eggs per season	**30-200**
Clutches per year	**1**
Hatching	**10-30 days**
Larval period	**60-180 days** from hatching to metamorphosis
Larval diet	**Other larvae and 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

Ichthyosaura alpestris is a slender newt with a rounded head, a laterally compressed tail and golden eyes. Adults are 8-12 cm, and the male is usually slightly smaller and slimmer than the female. The skin is smooth in the aquatic phase and darker and more velvety on land. The belly is bright orange to red and normally unspotted, and the colour depends on the diet: the more

red food, the redder the belly. In the aquatic phase in spring, the male has a blue back, sides with black spots and a pale band along the flank, as well as a low, smooth crest with yellow and black cross-bands. The female is marbled in dark grey, brown and greenish tones with fainter side spots and a faint yellow-orange stripe along the back.

The species has been placed in the genera *Triturus* and *Mesotriton*, but is now placed in *Ichthyosaura*. Several subspecies are known, some of which are neotenic and remain in larval form all their lives. Neoteny occurs relatively often in the species. The skin can contain tetrodotoxin, but only in low and highly variable amounts, and in many animals the toxin cannot be detected at all. Always wash your hands after working in the aquarium and enclosure, and keep secretions away from eyes and mouth.

Distribution and habitat

Ichthyosaura alpestris is found in large parts of Europe: from northern France and the Benelux countries through Germany, Switzerland, Austria and northern Italy to Poland, the Czech Republic, Hungary and the Balkans and on to Romania, Ukraine and northern Greece. There are separate populations in southern Denmark, in southern Italy and in northern Spain.

In northern Europe the species lives mostly in the lowlands, in southern Europe most often in mountains and hills. In Italy and Albania it is found up to about 2,700 m. Populations outside the range, for example in Great Britain, are introduced and are not included on the map.

> **Native range:** Spain, France, Belgium, Netherlands, Luxembourg, Germany, Denmark, Switzerland, Austria, Italy, Czechia, Slovakia, Poland, Hungary, Slovenia, Croatia, Bosnia & Herzegovina, Serbia, Montenegro, Albania, North Macedonia, Greece, Romania and Ukraine.

HABITAT

Ichthyosaura alpestris lives in wooded regions with plentiful access to water. In the breeding season it uses still or gently flowing, clear, plant-rich water: woodland ponds, lakes, water-filled wheel ruts, canals and water troughs. Outside the breeding season the species is nocturnal and terrestrial and lies under stones, wood and moss by day. At night it hunts beetles, earthworms and other small animals. After hibernation, in February-March, the animals head quickly for the water.

In the water the species eats crustaceans, snails and springtails as well as insects that fall into the water. The larvae typically metamorphose after 4-5 months, but in larger, deep waters they often overwinter and metamorphose only the following year. In the southern parts of the range, the animals live mostly in water all year round.

Read more: Feeder animals: keeping and breeding Read more: Brumation and the seasons

Care

THE ENCLOSURE

The species can be kept in an aquarium, in an aquaterrarium with both water and land, or in water all year round. An aquarium of 70 × 35 × 30 cm suits two pairs in the aquatic phase. The water must be at least 20 cm deep, because the species is highly aquatic, and the water section must be large. The land section is given fine gravel, hides of cork and rock, as well as moss and ferns. Soil can become a breeding ground for bacteria when there are not many plants, so use gravel instead.

In the water there must be many aquatic plants, for example hornwort, Canadian waterweed and milfoil, for oxygen and egg laying, rocks as hiding places, and a floating piece of cork or a rock that breaks the surface so that the animals can come up. Use bottom gravel that cannot be swallowed. Cover the aquarium well, because newts climb on glass and squeeze through small openings.

Three to five animals can overwinter together in a plastic box of about 35 × 20 × 15 cm with soil, dead leaves, a piece of cork and a small water bowl.

TEMPERATURE

Ichthyosaura alpestris is a cool-climate species. In both the water and the land section, the temperature should be 10-18 °C by day and 8-14 °C at night, and it must never exceed 23 °C. Place the aquarium somewhere cool, out of direct sun. In summer a cold cellar or a water chiller may be necessary. Heating elements are dangerous, because temperatures that are too high kill the animals.

A cool winter rest is necessary if the animals are to breed the following spring. It lasts 2-3 months at about 2-5 °C, and the animals eat little or nothing. It can be kept in a refrigerator at a constant 2-4 °C or outdoors in a frost-free shed or garage. Lower the temperature over several hours to about 5 °C or slightly below. Depending on the subspecies, a cooler period at 14-17 °C in a cellar can be enough to start breeding; the animals still eat then.

HUMIDITY AND MISTING

The air in the land section must be humid, about 80-100 %, and 90-100 % during the winter rest. The animals' soft skin dries out easily, so there must always be water or a damp hide. Use a moisture-retaining substrate such as damp moss, and mist regularly with dechlorinated water, but never let the substrate become soaked through.

In the aquatic phase the air humidity is irrelevant. Provide ventilation so that the air does not become stagnant.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

The water must have a neutral pH and be dechlorinated. Use a dechlorinator, or let the water stand for a day in an open bucket. The water depth is at least 20 cm. Water quality is not critical as long as the water is clean. Use a filter on its lowest flow so that the animals are not swirled around, because the species lives in still water. Change part of the water about every month, and wash the filter medium every month.

Never use soap or cleaning products in the aquarium. In summer the water level is lowered, and in winter the water is kept cold if the animals overwinter in water.

LIGHTING AND UVB

The species does not need UVB. Daylight from a window is enough, but the aquarium must not stand in direct sun. If there are plants, a plant light tube on a timer can give them light and give the animals a regular daily rhythm.

Read more: Lighting and UVB

FEEDING

Ichthyosaura alpestris is voracious and eats almost anything that fits into its mouth. In the water, give daphnia, mosquito larvae, tubifex, earthworms, snails with crushed shells, crickets and occasionally mealworms and wax moths every other day. On land, give crickets, pieces of earthworm, snails and spiders. Small pieces of lean meat, which are removed if not eaten, can also be used. With a varied diet, vitamin supplements are not necessary.

Animals that overwinter are not fed. Animals in the aquatic phase often take stationary food, but on land the food must be live or moved. Red food such as mosquito larvae gives a redder belly, while only white enchytraeids give a pale yellow belly. Larvae and juveniles are fed as described under breeding.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

The species is crepuscular and nocturnal and is most lively in the water in spring. It can be kept in pairs or in groups, and males can with advantage be kept together, because the competition promotes breeding. The animals are peaceful, but adults may eat eggs and small larvae. After the breeding season, adults go onto land and lose their bright colours. When the animals spend more time on the floating cork than in the water, the aquatic phase is coming to an end.

The animal should be handled only when necessary, with wet hands or with a net.

Breeding

SEXUAL MATURITY AND SEXING

The species becomes sexually mature after 1-4 years, and males are mature half a year to a year before females. In the breeding season the male has a swollen vent and a low crest, which the female lacks. The female is also larger and rounder in the body. For breeding there must be at least two pairs, and males can with advantage be kept together.

MATING

If the animals have had a proper cool winter rest, they mate in the water in spring. Raise the temperature, give more food and more light, and put the animals in an aquarium with many plants for egg laying. The courtship has three phases: the male follows the female and positions himself in front of her, waves his tail and displays, and finally he deposits one to five

spermatophores on the bottom. The female follows and takes up the tip into her cloaca. About 15 °C is a good breeding temperature.

EGGS AND LARVAE

The female begins to lay eggs 3-10 days after mating, most often at night and over one to three months. She folds one egg at a time into the leaves of aquatic plants, and a total of 30-200 eggs are laid in a season. Large females can lay up to 500. Hornwort, milfoil and similar plants are good. Without leaves, the eggs are laid in groups on the bottom. Check the plants the day after mating, cut off the leaves with eggs, and move them to a separate tank, otherwise the eggs will be eaten.

The eggs hatch after 10-30 days, more slowly at low temperatures. The larvae are 7-8 mm, have small gills and no legs and cling to plants with two small adhesive strips by the head. They do not eat for the first 2-3 days while they live off the yolk. Then give newly hatched brine shrimp nauplii, later enchytraeids, tubifex and pieces of mosquito larvae. Keep no more than six larvae per 4 litres of water, no more than 10 cm deep and without metals. Change some water daily. The larvae are predators and can be cannibals, so sort by size.

METAMORPHOSIS

The larval period lasts two to almost four months, in cold water up to six, depending on food and temperature. Below 15 °C development is slow, and 18-22 °C with two meals a day is best. When the larvae begin to metamorphose, they are moved to secure, airy containers with about 1 cm of water and a rock or a floating object that breaks the surface so that they do not drown.

Metamorphosis takes a few days, and the new juveniles are no more than 5 cm. In larger, deep waters the larvae often overwinter and metamorphose only the following year. Some larvae become sexually mature as larvae (neoteny).

Read more: Rearing tadpoles

REARING THE YOUNG

Newly metamorphosed juveniles are harder to keep than larvae. They can only eat very small, slow animals: newly hatched mealworms and crickets, enchytraeids, aphids and springtails. Feed them once a day with as much as they will eat. Four or five juveniles can be together in a plastic box of about 20 × 15 × 15 cm with kitchen roll as a substrate and half a plastic cup as a shared hide.

A water bowl is not necessary, but a shallow bowl where the head can be held above the water is fine. Mist lightly with water every day, and change the substrate every other day. Some subspecies are more aquatic than others, so give the juveniles access to both water and land.

Health and common mistakes

The species is hardy and can live 10-20 years, but typical husbandry errors are:

- Heat: Above 23 °C is dangerous, and sustained temperatures above 18 °C stress the animals. Keep the aquarium cool and shaded.
- Drying out on land: The skin dries out easily. Provide a damp substrate and hiding places.
- Poor water: Food remains and pollution. Change the water regularly.
- Escape: Newts climb on glass and squeeze through small openings, so lids must be tight.
- Cannibalism: Larvae of different sizes eat each other. Sort them.

Salamander plague (Bsal, *Batrachochytrium salamandrivorans*) is a fungal disease in caudates that causes skin ulcers and is fatal to many European salamanders. It has killed populations of *I. alpestris* in southern Germany. Quarantine new animals, use separate equipment for each stock, and disinfect tools, hands and shoes. Do not use water, moss, soil or plants from the wild without sterilising them. Keep the species apart from other salamanders, and never release animals into the wild. Contact a vet with expertise in amphibians in the case of ulcers, weight loss or loss of appetite.

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.