herpy

SALAMANDERS AND NEWTS

## Northern Crested Newt

# *Triturus cristatus*

*Triturus cristatus* is a robust, warty newt of 12-16 cm with a dark back and a yellow to orange belly with black spots. In the aquatic phase the male develops a tall, serrated crest. The species is one of the hardiest newts to keep, both in an aquarium and in a set-up with land and water sections.

Family: Salamandridae

**Mild skin toxins**

KEY FACTS

### THE ANIMAL

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| Adult size | **12-16 cm**<br>total length incl. tail |
| Lifespan | **7-17 years** |
| Active | **At dusk and at night** |
| Lifestyle | **Semi-aquatic** |
| Habitat | **Wetland and temperate woodland and meadow** |
| Skin toxins | **Mild**<br>Wash your hands after contact and keep your fingers away from your eyes and mouth |
| Difficulty | **Beginner** |

### CARE

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| Min. enclosure | **45 × 30 × 30 cm**<br>L × W × H for 4 adults |
| Temperature, day | **12-20 °C** |
| Temperature, night | **8-15 °C** |
| Humidity | **70-95%** |
| Water | **Aquaterrarium**<br>depth 15-30 cm |
| Water temperature | **10-20 °C** |
| UVB | **Not required** |
| Winter rest | **4-10 °C**<br>6-12 weeks |
| Diet | **Insects and worms/snails** |
| Kept | **In pairs or in groups** |

### BREEDING

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| Reproduction | **Egg-laying** |
| Development | **Larvae in water** |
| Egg-laying site | **In water** |
| Sexually mature | **12-36 months** |
| Eggs per season | **150-400** |
| Hatching | **14-35 days** |
| Larval period | **56-112 days**<br>from hatching to metamorphosis |
| Larval diet | **Complete diet, other larvae and small aquatic invertebrates (daphnia, mosquito larvae)** |
| Parental care | **None** |

### PROTECTION AND PAPERWORK

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| CITES | **Not listed** |
| EU annex | **Not listed** |
| IUCN | **Least Concern (LC)** |

## About the species

*Triturus cristatus* is a large and heavily built newt. Males reach about 13 cm, females up to 16 cm, and a few animals reach 17-20 cm. The skin is warty and dark brown to black on the back and sides, with black spots and white speckles along the flanks. The throat is yellow and black with fine white speckles, and the belly is yellow to orange with large, sharply defined black spots. The pale belly is a warning colour, which the animal displays when it feels threatened.

In the aquatic phase in spring the male develops a strongly serrated crest on the back, up to 15 mm high, and a lower, smoother crest on the tail; the crest is interrupted at the base of the tail. The cloaca swells, and a white band appears along the sides of the tail. The female develops no crest but has a yellow line along the lower edge of the tail. Outside the breeding season the male is slimmer and has the larger cloaca, while the female is more heavily built and can look pear-shaped.

The species belongs to a group of closely related crested newts that were formerly regarded as subspecies of *T. cristatus*. They can hybridise with each other, so different species are not kept together.

The skin secretes tetrodotoxin, but in small amounts: in many animals the toxin is not measurable, and it is far weaker than in the North American *Taricha*. Threatened animals curl up and secrete a milky fluid. The secretion can irritate mucous membranes, so wash your hands after handling and do not touch your eyes or mouth.

Adults normally live 7-9 years in the wild, a few up to 17 years.

## Distribution and habitat

*Triturus cristatus* is the most widespread and northernmost of the crested newts. It lives in Great Britain and in large parts of northern and central Europe, from France and the Benelux countries through Germany, Denmark, southern Norway, Sweden and Finland, Poland, the Czech Republic, Slovakia, Austria, Switzerland and the Baltic states to Belarus, Ukraine, Moldova, Romania and Russia. The northern limit runs from Great Britain through southern Fennoscandia to Karelia; the southern limit runs through central France, south-western Romania, Moldova and Ukraine and from there through central Russia and across the Urals. In the east the species reaches western Siberia.

Where the range meets other crested newts, and in western France, where *Triturus marmoratus* lives, hybrids occur. The species is predominantly a lowland species but has been found up to 1,750 m in the Alps.

> **Native range:** United Kingdom, France, Belgium, Netherlands, Luxembourg, Germany, Denmark, Norway, Sweden, Finland, Estonia, Latvia, Lithuania, Poland, Czechia, Slovakia, Austria, Switzerland, Belarus, Ukraine, Moldova, Romania and Russia.

### HABITAT

Outside the breeding season *Triturus cristatus* lives mostly in woodland. It prefers deciduous forest and groves but is also found in coniferous forest in the northernmost and southernmost parts of its range. Where there is no forest, it uses other places with good cover: hedges, scrub, marshy meadows and quarries. By day it hides under logs, bark, boards, stones and in small-rodent burrows, often several animals together.

In spring, normally in March, the animals head for the water when the temperature stays above 4-5 °C. The breeding sites are medium-sized to large, still or slowly flowing waters with many aquatic plants and without fish, which eat the larvae. In the aquatic phase the animals are most active at night. Most adults leave the water in late summer, but some stay in the water all year.

Winter is spent in frost-free refuges underground, often many animals together. The animals seldom travel far: about 100 m in a night, and only rarely more than a kilometre from the water.

## Care

### THE ENCLOSURE

*Triturus cristatus* can be kept following its natural cycle with an aquatic phase and a terrestrial phase, or in water all year. An aquatic set-up or a terrestrial set-up must be at least 45 × 30 × 30 cm for two pairs, and bigger is always better. If the whole life cycle is to take place in one set-up, it must be correspondingly larger, with room for both a spacious water section and a land section. Two separate set-ups are often easiest.

The aquatic set-up can be very simple: an aquarium without substrate, with Canadian pondweed (*Elodea*) or other plants and some pieces of clay pipe or flowerpot shards as hiding places and help with shedding. Dense plants in mid-water are important, as the animals seek cover there and the female lays eggs in the leaves. A floating board or a slope allows the animals to leave the water. The water must be calm, even with a filter, as the species lives in still water.

The terrestrial set-up must be well ventilated and never either bone dry or waterlogged. A layer of moist, unfertilised soil several centimetres deep retains moisture, and a layer of moss on top provides cover. Bark and stones provide more hiding places. The lid must always be tight, as newts climb up glass and squeeze through small gaps. A lid of fine mesh on a frame

gives good ventilation and keeps even the smallest feeder insects in.

### TEMPERATURE

*Triturus cristatus* loves cool conditions. The water must be kept below 25 °C, as in warmer water the animals try to leave it. The animals are fully active down to about 10 °C. The terrestrial phase is kept at roughly the same temperature as the aquatic phase: 12-20 °C by day and 8-15 °C at night. Place the set-up somewhere cool and out of direct sun; in warm periods a cool room or a cellar helps.

A cool winter is the most important prerequisite for breeding. About six weeks at 10 °C is enough to bring the animals into breeding condition, and down to 4 °C does not harm them; in the wild the winter rest is longer. Feeding is cut back during the period. If the temperature goes all the way down towards 4 °C, feeding is stopped about a week beforehand, so that no undigested food is left in the gut. After the rest the animals are moved to the aquatic set-up at 15-20 °C.

### HUMIDITY AND MISTING

In the aquatic phase humidity is no problem. In the terrestrial phase the soft skin dries out quickly, so the substrate must be kept moist, with a humidity of 70-95 %. Mist regularly with dechlorinated water or rainwater, preferably at one end, so that a humidity gradient forms and the animals can choose how humid they want it.

The substrate must never become waterlogged, as it then rots and fungus appears. Stagnant air also causes fungus, so ventilation must be good. If it is too dry, the animals sit still with dry, dull skin and try to get back to the water. Then humidity must go up, or the animals must go back into the aquatic set-up.

Read more: Humidity, misting and ventilation

### WATER AND WATER QUALITY

A water depth of 15 cm is enough, and deeper is fine: 15-30 cm gives the animals room to swim. The water is kept at 10-20 °C. The species tolerates many kinds of water, but chlorine can harm it; tap water that has stood for a couple of days is unproblematic.

A filter with a gentle current means less work. Without a filter the water is changed regularly and the bottom is kept clean. A bare bottom is easiest to keep clean; avoid gravel and small stones that the animals could swallow.

### LIGHTING AND UVB

The animals are nocturnal and do not need UVB or artificial light for their own sake. The plants need light to grow, and an ordinary aquarium lamp is enough. After the winter rest, more light together with more food and rising temperature helps bring the animals into breeding condition. The lamp must not heat the water.

Read more: Lighting and UVB

### FEEDING

In the aquatic phase *T. cristatus* takes a wide range of food: earthworms, freshwater shrimps (*Gammarus*), bloodworms, daphnia and white worms. Frozen bloodworms, fish food and turtle pellets are also taken, but often need to be offered with tweezers at first. A varied diet makes vitamin and mineral supplements unnecessary, and feeder insects can be gut-loaded before they are offered.

In the terrestrial phase feeding is harder, as motionless food is seldom taken on land. Offer live earthworms, white worms, waxworms, small crickets and fruit flies.

Females need to build up reserves for the following spring and may eat large amounts, while males must not be overfed. Adults are fed twice a week. Food from ponds and ditches may contain toxins or disease, so it must not be collected at polluted sites or in waters with wild amphibians.

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

### BEHAVIOUR AND HANDLING

*Triturus cristatus* is robust and easy to keep. In the water the animals snap hard at anything that moves, including each other during feeding, and in the wild they also eat smaller amphibians. Between animals of the same size this seldom causes injuries, but animals of different sizes must be kept separately.

During the breeding season the males are territorial and can be aggressive towards other males, especially if there are many in a small space. An animal that is being bullied is moved. The skin is sensitive, so the animals are handled only when necessary; if an animal must be moved, use a wet hand or a net. The set-ups must always be completely closed, as the animals are good at escaping, and escaped animals must never come into contact with wild populations.

## Breeding

### SEXUAL MATURITY AND SEXING

The sexes are easy to tell apart. Males are slim with a large cloaca, females more heavily built and often pear-shaped. In breeding dress the male is unmistakable with his tall, serrated crest and the white band along the sides of the tail. The animals reach sexual maturity after 1-3 years, depending on food and temperature. With plenty of food, even in winter, they can breed as early as the year after hatching; in the wild it takes longer. The sexes cannot be told apart as juveniles, so for breeding you need a small group to be sure of both sexes.

### MATING

Mating is triggered by a cool winter followed by rising temperature, more light and more food, especially live food. After the winter rest the animals are moved to an aquatic set-up at 15-20 °C; if they are put on a floating board in early spring, they normally enter the water within a few days. The males develop their crest within a few weeks, and then mating begins.

The male displays to the female with tail vibrating and whiplash movements of the tail, arches his back and waves his crest, and there must be an open patch on the bottom for the dance. If the female is interested, the male deposits a spermatophore on the bottom and leads the female over it so that she can pick it up with her cloaca. Fertilisation is internal. The males can become aggressive towards each other, especially when crowded.

### EGGS AND LARVAE

The female begins laying eggs a few days after mating and continues for several weeks, 150-400 eggs in all. Each egg is laid singly in the leaf of an aquatic plant: the female chooses the leaf, folds it around the egg with her hind legs and presses it together, and the egg sticks the leaf fast. The eggs are pale, 1.8-2 mm in diameter and have a jelly capsule of about 6 mm. Canadian pondweed (*Elodea*) and water forget-me-not have leaves of the right size, and strips of thin plastic of about 1 cm also work. The female prefers to lay where the plants stand dense.

The parents eat eggs and larvae, so the folded leaves are removed and moved to a separate tub. About half of the eggs die within 1-2 weeks; this is due to a chromosome defect that the whole genus has, and is normal. The dead eggs are quickly attacked by fungus and are removed so that the fungus does not spread. The eggs hatch after 2-5 weeks, depending on the temperature; at 18-21 °C it takes 2-3 weeks.

The newly hatched larvae are about 1 cm and live on the yolk for the first few days. After that they are predators: first infusoria, then cyclops and small daphnia, later larger daphnia, white worms and bloodworms. In time some larvae take frozen bloodworms and fish food. The larvae are fed daily. They live freely in the water column, so the water must be 10-15 cm deep with plants in mid-water. The larvae are far more sensitive to water quality than the adults and require frequent water changes. Large larvae are very greedy and attack each other if they get too little food or are kept too densely; divide them into small groups by size.

### METAMORPHOSIS

The larvae metamorphose after 8-16 weeks, depending on food and temperature, when they are 5-8 cm. When all four legs have developed, the colours of the young appear and the external gills are withdrawn. Now the young must be able to climb out of the water, otherwise they can drown: a floating board, a slope or stones sticking up.

The young can also be raised in the water if they are kept in a predominantly aquatic set-up and fed in the water; they then get used to staying there.

### REARING THE YOUNG

The newly metamorphosed young begin to leave the water at 6-8 cm and live on land like the adults but need smaller food: aphids, white worms, fruit flies and small crickets. They eat large amounts and grow quickly; with plenty of food they are full-grown in a year, but two years is more common. Sort them by size so that the large ones do not take the small ones. The terrestrial set-up must be moist, cool and well ventilated. Young animals often go into the water in spring before they are sexually mature, so they must have access to water.

## Health and common mistakes

*Triturus cristatus* is hardy, and most problems are due to husbandry errors:

- Heat: water above 25 °C stresses the animals and makes them leave the water. Move the set-up to a cooler place.
- Dryness in the terrestrial phase: still animals with dry, dull skin. Raise the humidity, and move them to the water if necessary.
- Poor ventilation: stagnant air causes fungal infections and can poison the animals with carbon dioxide.
- Fungus on eggs and skin: remove dead eggs quickly, and keep water and substrate clean.
- Larvae floating belly-up: underfeeding or crowding can make larvae swallow air. Place the larva in a dish with so little water that it cannot turn over, and give plenty of food; the air often comes out again within half an hour.

The fungus *Batrachochytrium salamandrivorans* (Bsal) is fatal to many salamanders and newts. New animals must be quarantined in a separate set-up, and equipment, water and hands are kept separate between set-ups. Asian salamanders and newts can carry the infection without being ill and must never come into contact with the species, either directly or via water and equipment. Captive-bred animals less often carry diseases and parasites than wild animals. If an animal becomes ill without a clear cause, contact a vet who knows amphibians.

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

### 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.