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SALAMANDERS AND NEWTS

## Black Knobby Newt

# *Tylototriton asperrimus*

*Tylototriton asperrimus* is a dark, warty crocodile newt of 12-15 cm with knobbly rib protuberances and heavy dorsal ridges. The species lives in humid mountain regions in the Chinese province of Guangxi and has given its name to a whole group of closely related crocodile newts, which have only recently been split off as separate species.

Family: Salamandridae  Former name: *Echinotriton asperrimus; Pleurodeles asperrimus*

**Mild skin toxins**

KEY FACTS

### THE ANIMAL

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|---|---|
| Adult size | **12-15 cm**<br>total length incl. tail |
| Lifespan | **15-25 years** |
| Active | **At dusk and at night** |
| Lifestyle | **Terrestrial** |
| Habitat | **Montane forest and wetland** |
| Skin toxins | **Mild**<br>Wash your hands after contact and keep your fingers away from your eyes and mouth |
| Difficulty | **Experienced** |

### CARE

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|---|---|
| Min. enclosure | **60 × 40 × 40 cm**<br>L × W × H for 3 adults |
| Temperature, day | **20-24 °C** |
| Temperature, night | **18-21 °C** |
| Humidity | **80-100%** |
| Water | **Water section**<br>depth 1-5 cm |
| UVB | **Optional** |
| Winter rest | **8-12 °C**<br>8-12 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 | **On the ground** |
| Eggs per season | **30-80** |
| Hatching | **20-36 days**<br>at 22-24 °C |
| Larval period | **50-110 days**<br>from hatching to metamorphosis |
| Larval diet | **Other larvae and small aquatic invertebrates (daphnia, mosquito larvae)** |
| Parental care | **None** |

### PROTECTION AND PAPERWORK

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| CITES | **Appendix II** |
| EU annex | **Annex B** |
| IUCN | **Near Threatened (NT)** |

## About the species

*Tylototriton asperrimus* is a medium-sized crocodile newt of 12-15 cm in total. As in the rest of the genus, the skin is covered with warts, there are large ear glands (parotoids) at the back of the head, and along the back run heavy rows of enlarged wart-like scales with knobbly rib protuberances. The animal is dark, almost black. The female is more heavily built than the male and has a small, point-like vent opening, the male a larger, slit-shaped one.

The species was described in 1930 by Walter Unterstein from a female from Guangxi and was the second species in the genus after *Tylototriton verrucosus*. It is the type species of the *asperrimus* group (subgenus *Yaotriton*). The name long covered populations from central and southern China to northern Vietnam, but more recent studies have shown that it is a complex of many separate species, often with very small ranges, such as *Tylototriton ziegleri*, *Tylototriton vietnamensis* and *Tylototriton pasmansi*. Animals from Vietnam that are called *T. asperrimus* in older literature belong to other species, and animals in the trade under the name may also be another species.

The skin is densely covered with glandular warts, and the ear glands are large. How strong the secretion is in *T. asperrimus* has not been described. Wash your hands before and after contact, and keep your fingers away from your eyes and mouth. Lifespan is not documented; the closely related *T. ziegleri* can live for over 20 years.

## Distribution and habitat

*Tylototriton asperrimus* is now regarded as endemic to Guangxi province in southern China. The type locality lies in the Dayao Mountains (Dayaoshan) in Jinxiu, and the species is also known from Mount Xianglu, Longsheng, Mount Miao'er in Ziyuan, Mulun Reserve in Huanjiang and Tian'e. It lives scattered in separate mountain areas from northern through central to southern Guangxi. A population in the E'huangzhang Mountains in Guangdong is closely related but has not yet been assigned to a species. Older records from Vietnam and other parts of China concern other species in the group.

> **Native range:** China.

### HABITAT

*Tylototriton asperrimus* lives in humid, subtropical forest in the mountains and in and near swamps and temporary pools. Outside the breeding season the animals live hidden on the forest floor under leaf litter and stones.

The climate is cooler than for the relatives in Vietnam. The annual mean temperature is about 17 °C. In the warmest season the mean temperature is 21-23 °C, and the warmest month reaches 24-26 °C. Winter is cool: the mean temperature in the three coldest months is 9-11 °C, and in the coldest month the temperature falls to 3-6 °C. Rainfall is 1,550-1,700 mm a year, mostly in summer, but unlike the Vietnamese species it also rains a fair amount in winter (170-190 mm in the three driest months). In the closely related species the breeding season falls in the rainy season in spring and early summer, and the eggs are laid on land at the edge of the breeding ponds.

## Care

### THE ENCLOSURE

Little is known about the care of *Tylototriton asperrimus*. The species is rarely kept, so the figures here are borrowed from *Tylototriton ziegleri* and *Tylototriton vietnamensis*, which belong to the same group and are far better known, and adapted to the cooler climate in Guangxi.

For 3 adults an enclosure of 60 × 40 × 40 cm suits, with a small water section of a fifth to a quarter of the area. The water is at most 5 cm deep, and access must be easy, with a gently sloping bank of stones or gravel. The substrate is filled 8-15 cm deep with a mixture of clay, forest soil and gravel over a drainage layer, so that there are both damp and drier zones. Provide many hiding places in both: half bamboo tubes, cork bark, clay dishes and a layer of oak, beech or bamboo leaves. Moss retains moisture and suits as an egg-laying site. The enclosure must have good ventilation, and plants such as ferns and *Pilea cadierei* thrive in the same climate. Springtails and earthworms in the substrate eat waste and are also food.

Read more: Terrarium construction and bioactive substrate Read more: Feeder animals: keeping and breeding

### TEMPERATURE

In summer the enclosure is kept at 20-24 °C by day and 18-21 °C at night, which corresponds to summer in the range. Briefly higher temperatures are tolerated, but longer periods above 25 °C must be avoided, and there must always be cool places.

Winter is colder than for the Vietnamese relatives. Keep the animals at 8-12 °C for 8-12 weeks with very little food. The cool winter followed by a simulated rainy season is the most important trigger for mating in the genus.

### HUMIDITY AND MISTING

Humidity is 80-100 %. The enclosure is misted daily with a plant mister, and there must be both damper and drier zones so that the air does not stand still. In the cool period less misting is done and the water level is lowered, but the enclosure must not dry out, as it also rains in winter in the range. When the rainy season is to begin, mist heavily several times a day and raise the water level.

Read more: Humidity, misting and ventilation

### WATER AND WATER QUALITY

The water section must have soft, slightly acidic water; rainwater or reverse-osmosis water suits. The pH of the water is not documented for *Tylototriton asperrimus*; *Tylototriton ziegleri* is kept at pH 6.4-6.8. Never use tap water without removing chlorine. Amphibians absorb substances through the skin, so cleaning agents and soap must not come near the enclosure. Change the water regularly, and remove visible impurities.

### LIGHTING AND UVB

Light is of no particular importance to the animals and is arranged for the plants: LED strips or fluorescent tubes for 12 hours in summer and 10-11 hours in winter. UVB is not necessary for this secretive species.

Read more: Lighting and UVB

### FEEDING

Adults are given compost worms, crickets, house crickets, waxworms, earthworms and isopods of suitable size about twice a week. In winter they eat irregularly and much less. The feeder insects must be well fed and dusted with a vitamin and mineral supplement. Newly metamorphosed young are fed every day with small crickets, small earthworms, fruit flies and bloodworms.

### BEHAVIOUR AND HANDLING

In the closely related species the animals live very secretively and are seen mostly when fed or when the males are in the water. Pairs or small groups can be kept together in a spacious enclosure with many hiding places. Keep them in a species enclosure without other amphibians. The animals are handled as little as possible, and the hands are washed afterwards. Newly acquired animals are quarantined before they are put with other amphibians.

## Breeding

### SEXUAL MATURITY AND SEXING

The female is larger and more heavily built than the male. The sex can be seen from the vent opening: in the female it is small and point-like, in the male larger and slit-shaped. Age and size at sexual maturity are not documented for *Tylototriton asperrimus*.

### MATING

Mating has not been described for *Tylototriton asperrimus*. In the closely related species it is triggered by a cool winter with little food, followed by a simulated rainy season: heavy misting, a higher water level and rising temperature. The rainy season is best started when a low-pressure system is approaching. The males enter the water and wait for the females, and the pair performs a circle dance in which the male deposits spermatophores that the female picks up.

### EGGS AND LARVAE

The number of eggs is not documented for *Tylototriton asperrimus*. In *Tylototriton ziegleri* a clutch is most often 30-80 eggs, and the female lays them on land in moss or under leaves close to the water. The eggs are removed from the enclosure, because the adults can eat eggs and larvae. They are placed on slightly damp kitchen paper on a grid in a closed plastic box with a little water at the bottom, so that they lie above the water in very high humidity. The box is opened once or twice a day, and dead eggs are removed. In *T. ziegleri* the eggs hatch after 20-36 days at 22-24 °C.

### METAMORPHOSIS

When the first larvae hatch, the water level in the box is raised so that the rest also hatch. The larval period is not documented for *Tylototriton asperrimus*; in *Tylototriton ziegleri* the larvae metamorphose 81-130 days after egg-laying. Before metamorphosis the larvae darken, the gills and tail fin disappear, and the skin becomes rough. The larvae must be able to leave the water at any time: make an easily accessible transition with sloping gravel, cork, roots or stones.

Read more: Rearing tadpoles

### REARING THE YOUNG

In the closely related species the larvae are aggressive towards each other, and cannibalism is common. The fewer larvae together, the better the survival; the safest is to keep them singly or at most 5 together in a 10-litre tub with many hiding places. The water must be still. The larvae are fed immediately after hatching several times a day with brine shrimp, very small daphnia and copepods, later with tubifex, compost worms and bloodworms. Change part of the water every day, at most about 15 % at a time. Newly metamorphosed young are kept on sloping gravel with a small puddle, moss and hiding places at 19-21 °C and fed daily with small feeder insects.

## Health and common mistakes

Diseases have not been described for *Tylototriton asperrimus* specifically. From the closely related crocodile newts the following are known:

- Stagnant air and too much heat: keep the enclosure airy, and provide cool places.
- Bsal and Bd: fungi that can be fatal to salamanders and newts. Asian salamanders and newts can carry them without symptoms. Quarantine, hygiene (separate equipment for each enclosure) and swab tests are the best prevention.
- Water that is too hard damages the larvae's gills, and too much fresh water at a time causes gas bubbles in the belly.
- Bite injuries on larvae and young from other larvae.
- Go to a vet who knows amphibians at signs of illness, such as sores, swellings, refusing food or death without a visible cause.

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.