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SALAMANDERS AND NEWTS

Chinhai Spiny Newt

Echinotriton chinhaiensis

Echinotriton chinhaiensis is a critically endangered salamander found only in a small area of Beilun District, east of Ningbo in Zhejiang, China. The eggs are laid on land beside small, still ponds, and the larvae live in the water for 58-88 days. The species reaches sexual maturity only after about ten years and can live to at least 20 years. Almost nothing is known about the care of adults.

Family: Salamandridae Former name: *Pleurodeles chinhaiensis; Tylototriton chinhaiensis* **Mild skin toxins**

KEY FACTS

THE ANIMAL

Adult size	**14-21 cm** total length incl. tail
Lifespan	**20-25 years**
Active	**At dusk and at night**
Lifestyle	**Terrestrial**
Habitat	**Wetland and temperate woodland and meadow**
Skin toxins	**Mild** Wash your hands after contact and keep your fingers away from your eyes and mouth
Difficulty	**Experienced**

CARE

Min. enclosure	**60 × 40 × 40 cm** L × W × H for 3 adults
Temperature, day	**18-25 °C**
Temperature, night	**15-20 °C**
Humidity	**60-80%**
Water	**Water section** depth 10-20 cm
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	**On the ground**
Eggs per season	**3-46**
Hatching	**29-31 days** at 20 °C
Larval period	**58-88 days** from hatching to metamorphosis
Larval diet	**Other larvae and small aquatic invertebrates (daphnia, mosquito larvae)**
Parental care	**None**

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Critically Endangered (CR)**

About the species

Echinotriton chinhaiensis belongs to the genus *Echinotriton*, which also contains *Echinotriton andersoni* from the Ryukyu Islands in Japan. It was described in 1932 as a species of *Tylototriton* and has also been placed in *Pleurodeles*. It is critically endangered and known only from Beilun District east of Ningbo.

Size is not documented; 14-21 cm including the tail in the box is borrowed from *Echinotriton andersoni*. The species grows slowly: in captivity it reaches sexual maturity only after about ten years or later, and it can live to at least 20 years.

In the species of this genus the animal can raise its ribs so that the sharp tips push out through the skin. This has not been studied in *Echinotriton chinhaiensis*, and the skin toxicity in the box is borrowed from *Echinotriton andersoni*. In that species the skin secretion irritates mucous membranes, and the rib tips can prick. Do not handle the animal, and wash your hands before and after any contact.

Distribution and habitat

Echinotriton chinhaiensis occurs only in a small part of Zhejiang Province in eastern China, in Beilun District east of Ningbo. There is a protected area for the species at Ruiyansi in the forests there.

The species is critically endangered. Loss of habitat is one of the threats. The population is small, partly because so few of the hatched larvae reach the water (see Habitat). The larvae live in a few small ponds, which may dry out in warm periods, and the ponds hold many dragonfly larvae, which eat the larvae. Climate warming makes the ponds warmer and shallower.

> **Native range:** China.

HABITAT

The habitat is temperate forest, freshwater swamps and ponds. The larvae live in small, still ponds at the transition between farmland and forest. The ponds are about two square metres. From May to July the water in the ponds has a temperature of 22-27 °C. How the adults live outside the breeding season is not documented.

The breeding season is April-May. The female lays the eggs on land, near the ponds. The most used sites lie about 30 cm above the water level and about 45 cm from the water, and several females often use the same sites. The eggs can develop both on land and in water, and about 94 % of the eggs on land hatch. But only about half of the newly hatched larvae manage to reach the water, and in the wild only about a fifth. The larvae are predators and also eat one another.

Care

THE ENCLOSURE

Little is known about the care of *Echinotriton chinhaiensis*. Most studies concern eggs and larvae. The set-up, temperature and humidity for adults are borrowed from the close relative *Echinotriton andersoni*, which has a similar way of life. The adult care of *Echinotriton chinhaiensis* itself is not documented.

The adults probably live mostly on land, as in *Echinotriton andersoni*. An enclosure of at least 60 × 40 × 40 cm suits 2-3 animals. A larger group needs more floor area, for example 90 × 90 × 50 cm. The substrate is a thick layer of damp leaf litter and soil, so the animals can burrow. Provide bark, cork and flat stones as hides. At one end, build a water area with an evenly sloping bank, so the animals can easily get in and out. Keep the lid tight.

Read more: Humidity, misting and ventilation

TEMPERATURE

The temperature for adults is borrowed from *Echinotriton andersoni*: 18-25 °C by day and 15-20 °C at night. The requirements of adults have not been studied in *Echinotriton chinhaiensis*. The water in the species' ponds reaches 27 °C in the summer months, but warmth is a risk: larvae grow more slowly at 20 °C and at 32 °C than at 24-28 °C, and larvae tolerate at most about 33-36 °C. Heat lamps are unnecessary; keep the enclosure cool in summer and out of direct sun. Whether and how the species should have a cool winter period in captivity is not documented.

HUMIDITY AND MISTING

Humidity is borrowed from *Echinotriton andersoni*: 60-80 %. Keep the leaf litter and soil damp but not wet, and part of the substrate should be drier, so the animals can choose. Eggs on land must be kept moist at all times. Provide a little air exchange so the air does not stand still.

WATER AND WATER QUALITY

The water area is a bowl-shaped depression, about 30 cm across and 10-20 cm deep in the middle, with an even slope all the way round, so the animals are not at risk of drowning. Use dechlorinated tap water or rainwater, and change the water regularly. Amphibians absorb substances through the skin, so avoid soap, cleaning products and hand cream nearby, and rinse your hands in clean water before touching the animals. The larvae are reared in a separate container (see Breeding).

LIGHTING AND UVB

UVB is not necessary. The animals are assumed to be most active at dusk and at night; this is borrowed from *Echinotriton andersoni*. A light period of about 10 hours suits, and the light must also be able to keep the plants alive. Avoid direct sun.

Read more: Lighting and UVB

FEEDING

The diet of adults is not documented. In *Echinotriton andersoni* it is earthworms, crickets, snails, woodlice and small beetles, and the food must be small enough to be swallowed whole. Feed 2-3 times a week and give as much as the animals eat in half an hour. The larvae take newly hatched brine shrimp (Artemia), and they are predators that also eat one another.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The behaviour of adults is not documented. The larvae are cautious: they avoid visible predators and reduce their activity when they sense predators by smell or sight. The animals are not suited to handling. If an animal has to be moved, use wet, clean hands or a soft tray, and do not squeeze the animal.

Breeding

SEXUAL MATURITY AND SEXING

Sex differences are not documented. Animals in captivity reach sexual maturity only after about ten years or later, so the species reproduces very slowly.

MATING

Mating is not documented for *Echinotriton chinhaiensis*. In *Echinotriton andersoni* it takes place on land, where the male deposits a spermatophore that the female picks up. The breeding season of *Echinotriton chinhaiensis* is April-May.

EGGS AND LARVAE

The female lays the eggs on land, near the water but not in it. The number of eggs per laying is not documented; the figure in the box is borrowed from *Echinotriton andersoni*. The eggs can develop both on land and in water with almost the same hatching rate, and about 94 % of the eggs on land hatch. Eggs that are moved are placed on a sponge in a container with 1-2 cm of water, so the sponge is saturated and the moisture is kept constant.

The larvae hatch on land and have to find their own way to the water. The larvae are predators and also eat one another. Many larvae in the same container slow growth and make the metamorphosed animals smaller. Keep few larvae in each container. The larvae can be reared in containers of about 45 × 30 × 15 cm with 4-5 cm of water at 21-23 °C. The water is changed every day. Feed with newly hatched brine shrimp three times a day.

METAMORPHOSIS

The eggs hatch after 31 days at 20 °C and after about 29 days at room temperature. The larval period in the water is 58-88 days, and the whole course from egg to fully metamorphosed animal takes about 120 days. Metamorphosis is complete when the animal has gone onto land and lost the external gills. From then on the animal must be able to get out of the water easily.

Read more: Rearing tadpoles

REARING THE YOUNG

Rearing of the metamorphosed young is not documented for the species. In *Echinotriton andersoni* the young are kept in a damp tray with wet sponge or leaf litter at about 22 °C and fed small crickets and earthworms. Mortality is highest at hatching and around metamorphosis.

Health and common mistakes

Typical problems and faults:

- Too high a water temperature: larvae grow poorly at 32 °C, and they tolerate at most 33-36 °C.
- A substrate that is too dry, which dries out eggs and young animals.
- Too many larvae in the same container: this causes cannibalism and small animals.

- Drowning in water that is too deep without easy access to land.
- Bsal (*Batrachochytrium salamandrivorans*) is a skin fungus that kills many European salamanders. Many East Asian salamanders can carry the infection without symptoms. New animals are therefore quarantined for several weeks, kept apart from other salamanders and amphibians, with their own equipment and good hand hygiene.

Diseases in *Echinotriton chinhaiensis* are not documented. See a vet with expertise in amphibians if the animal stops eating or develops sores, swellings or discoloured skin.

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.