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ANGUIDS

Chinese Crocodile Lizard

Shinisaurus crocodilurus

Shinisaurus crocodilurus is a rare, semi-aquatic lizard from cool, humid forests in southern China and north-eastern Vietnam, with rows of bony scales on the back and tail like a crocodile. It grows to about 40 cm, perches on branches over water and drops into the water when threatened. It needs a large aquaterrarium with cool, clean water, good ventilation and a brumation period.

Family: Shinisauridae

KEY FACTS

THE ANIMAL

Adult size	**35-46 cm** total length incl. tail
Lifespan	**15-20 years**
Active	**By day**
Lifestyle	**Arboreal and semi-aquatic**
Habitat	**Rainforest and wetland**
Difficulty	**Expert**

CARE

Min. enclosure	**110 × 50 × 60 cm** L × W × H for 1 adult
Temperature, day	**22-28 °C**
Basking spot	**30-35 °C**
Temperature, night	**16-20 °C**
Humidity	**60-80%**
Water	**Aquaterrarium** depth 15-20 cm
Water temperature	**18-22 °C**
UVB	**Recommended** Ferguson zone 2
Winter rest	**10-15 °C** 12-16 weeks
Diet	**Insects, vertebrates and worms/snails**
Kept	**Singly, in pairs or one male with several females**

BREEDING

Reproduction	**Live-bearing**
Sexually mature	**36 months**
Litter size	**2-12 young**
Clutches per year	**1**
Gestation	**240-270 days**

PROTECTION AND PAPERWORK

CITES	**Appendix I**
EU annex	**Annex A**
IUCN	**Endangered (EN)**

About the species

Shinisaurus crocodilurus is a medium-sized, stocky lizard with a short head, strong limbs and a long, laterally compressed tail. The back and tail have rows of enlarged, bony scales reminiscent of a crocodile's. The base colour is brown to olive green, often with pale and dark crossbands and reddish, orange or yellow colours on the throat and head. Males are usually more brightly coloured than females, especially in the breeding season, but the sexes are hard to tell apart.

The total length is 35-46 cm, and most adults are around 40 cm. The species is the only one in the family Shinisauridae, an ancient lineage that was formerly placed in Xenosauridae. It was described in 1930 by Ernst Ahl, and the genus name honours the Chinese biologist Sin Shu-szi, who took part in the Sino-German expedition that found the species. Two subspecies are

known: *S. c. crocodilurus* in China and *S. c. vietnamensis* in Vietnam.

The species is slow and quiet and spends most of its time perfectly still on a branch. It swims well and can stay under water for many minutes. If frightened, it drops from the branch into the water. It is threatened in the wild and rare in the trade, and animals in captivity descend from a small number of captive-bred lines.

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

Distribution and habitat

Shinisaurus crocodilurus occurs in a few scattered populations in southern China, in the provinces of Guangxi, Guangdong, Guizhou and Hunan, and in north-eastern Vietnam in the provinces of Quang Ninh and Bac Giang. The remaining Chinese populations live mainly in Guangxi and Guangdong, in small, isolated habitats.

S. c. vietnamensis is known only from a small area around Mount Yen Tu in Quang Ninh and Bac Giang. The species is listed as Endangered (EN) on the IUCN Red List, and wild populations have fallen sharply because of collection and habitat loss, especially logging.

> **Native range:** China and Vietnam.

HABITAT

Shinisaurus crocodilurus lives along clear, slow streams and small ponds in subtropical evergreen broadleaf forest in hill and mountain country. The banks are densely vegetated, and the animals perch on branches that hang out over the water. Its whole life is tied to the water: the animals sit and wait for prey from the branch, and when startled they drop down into the water. Each pond or stream often has only one animal.

The climate is shaped by the monsoon, with hot, humid summers and cool, dry winters with occasional frosty nights. Rain falls mostly in spring and summer. In winter the animals brumate. In captivity they go down into the water in summer to avoid overheating, and in autumn they sit on branches to find warmth.

Its diet is earthworms, spiders, grasshoppers, shrimp, tadpoles, small fish and occasionally frogs and lizards. The species is live-bearing; mating takes place in August, and the young are born the following spring.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

An adult needs an aquaterrarium of at least 110 × 50 × 60 cm (length × width × height), a pair at least 150 × 50 × 60 cm. The water section should fill most of the floor. The animal does not move much, but it uses all parts of the enclosure, and it climbs well, so extra height gives room for more branches.

A water depth of 15-20 cm is enough for an adult to stand on its hind legs with its head above water. If the water is deeper, there must be horizontal or sloping branches where the animal can rest with its body in the water and its head above. The animal can get stuck between cork, stones and branches under water, so the layout must take this into account. Place branches, cork and plants above the water so that the animal can drop down into it. A basking spot of slate on pillars in the water and plant pots with soil standing in the water provide land areas. Cork tubes can stand partly in the water without going mouldy.

Ventilation is crucial: use mesh on two opposite sides or a small fan, because still, humid air causes skin fungus, especially in juveniles. The animal must be able to dry off completely somewhere, and the floor and hides of the land section must not be constantly wet.

Read more: Heat and temperature

TEMPERATURE

The basking spot should have a surface temperature of 30-35 °C, and the air in the rest of the enclosure is 22-28 °C by day. At night the temperature falls to 16-20 °C; the night temperature is an estimate. The water must be cool, 18-22 °C and preferably around 20 °C. The species tolerates heat poorly: skin sores occur more often at higher temperatures, and pregnant females

kept too warm give birth prematurely. If the room temperature rises above about 27 °C in summer, cool the water by replacing part of it with cold water.

Brumation is recommended for 12-16 weeks at 10-15 °C. Only healthy animals with a full tail base should brumate. From September appetite falls; the temperature of the basking spot and the day length are lowered gradually until the light is switched off completely. The animal must have fasted for at least two weeks before it is placed in a box with 20-30 cm of damp soil and moss, a water bowl and a cork tube. The box first stands for a couple of days at about 15 °C with a little daylight and is then moved to a dark room at 10-15 °C. The water in the bowl is changed regularly, because the animal may wake and move about. After brumation the box is placed at room temperature, and the animal wakes within two days. After that the day length and temperature are raised gradually.

Read more: Brumation and the seasons

HUMIDITY AND WATER

Air humidity is high, 60-80 %, because most of the floor is water. Extra misting is not normally needed, but the animals become active with artificial rain. The land section and the hides must be able to dry out, because a constantly wet floor causes skin problems and fungus. Good ventilation is more important than high humidity.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

Water quality is crucial. Use a powerful filter, e.g. an external filter with ceramic rings, filter sponge and filter wool, and let it run for about a month before the animal moves in. Clean the filter only roughly, and only when the flow drops, so that the bacterial culture is preserved. Siphon dirt from the bottom regularly, and remove dirt from the water surface. Use tap water treated with a water conditioner, and change part of the water every week. The water should be about 20 °C and must not become warmer than about 27 °C. Limescale on the glass is removed with diluted citric acid.

LIGHTING AND UVB

The species is diurnal and perches on branches and stones above the water, but basks only briefly at a time. UVB is recommended in Ferguson zone 2: a combined heat and UVB lamp (metal halide or mercury vapour) or a UVB tube over the basking spot with a UV index of 2-3 at the animal's head. The distance between lamp and animal depends on the type of lamp and is checked with a UV meter. The species can live with weak or no UVB, but UVB is the safest solution. A halogen spot can be used as an extra heat source at the basking spot. The light is on for 10-13 hours a day, longest in summer, and is switched off completely during brumation.

Read more: Lighting and UVB

FEEDING

Shinisaurus crocodilurus is a carnivore and takes both terrestrial and aquatic prey. Earthworms are a good basis for the diet. Also offer crickets, grasshoppers, cockroaches, silkworms and waxworms and, in the water, small fish and shrimp. A pinkie mouse is given only occasionally. Dust the insects with calcium and a vitamin and mineral supplement at some feedings, and gut-load the insects well for a day beforehand.

Juveniles are fed daily with small insects and earthworms, adults 2-3 times a week. The animal can be fussy and often stops eating before brumation and starts slowly again afterwards; some also stop while it is still warm and light. If the animal is alert and active and the tail base is full, this is normal. If the animal loses weight or the tail base becomes thin, there may be another cause, and a vet should examine it.

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

BEHAVIOUR AND HANDLING

Shinisaurus crocodilurus is calm and can become tame, but it is not an animal for handling. Some animals step calmly onto the hand, others flee, and the bite is powerful. Moving stresses the animal, and a stressed animal should not be moved.

The species is territorial. Males may fight, and a male can stress a female with repeated mating attempts. Adults are kept singly, as pairs or as a male with several females in a large enclosure, under supervision, and the animals are separated at signs of aggression.

Shedding is infrequent and can take several days, and the skin often ends up in the water. If it drags on, the animal can be soaked in water and the remains removed carefully.

Breeding

SEXUAL MATURITY AND SEXING

The sexes cannot be told apart in small juveniles. Males usually have stronger colours, but not always, and females have a slightly more elongated head; judged by head proportions, you are right about 9 out of 10 times. Roughly equal numbers of males and females are born. The animals become sexually mature at around 3 years of age. Breed an animal only when it is fully grown, in good condition and has had a brumation period.

MATING

Mating takes place in or near the water in August. The male's colours become stronger, and he nods his head and approaches the female. During mating he bites her on the neck and lies over her. A pair can be kept together, but the male may harass the female with too many mating attempts, and they must then be separated. Alternatively, the females are kept singly and the male is introduced in turn. The female needs plenty of food both before and after mating.

EGG-LAYING AND CLUTCHES

The species is live-bearing. The female gives birth to 2-12 live young, on average about 6, in April and May, and large females have more young than small ones. She gives birth at most once a year. Give her peace and a place where she can easily get out of the water, and do not move her as birth approaches. Females kept too warm in winter may give birth as early as autumn or winter, and the prematurely born young die more often. Keep the temperature at the cool end.

INCUBATION

The species is live-bearing, so there is no incubation. Gestation lasts up to 9 months, from mating in August to birth in April-May, and brumation falls in the middle of it. The young are fully developed at birth and measure about 35 mm from snout to vent.

Read more: Incubating eggs

REARING THE YOUNG

The young are very sensitive to skin fungus and poor air, so they need an enclosure with good ventilation and clean water. Set it up as for adults, but with a lower water level. Feed daily with the smallest insects and small earthworms. Keep the young apart from the adults, and remove the other young if one is bullied or bitten, rather than moving the weak one, because moving stresses it.

Health and common mistakes

The species is hardy when the setup is right, but it is sensitive to humid, still air and to excessive temperatures. The typical problems are:

- Skin fungus and skin sores, especially on the feet, from poor ventilation, high heat and a constantly wet land section. This is the most common problem, especially in juveniles, and needs a vet.
- Illness from water that is too cold or nights that are too cold outside brumation.
- Shedding problems if the animal cannot dry off.
- Loss of appetite, which can also be caused by stress and does not always have to do with brumation.
- Intestinal worms and other parasites in newly acquired animals. New animals are quarantined.

A healthy animal is alert and active and has a full tail base. Reptiles hide illness, so contact a vet with reptile experience if the animal loses weight, does not eat outside brumation or develops changes in the skin.

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.

The full guide with map and updates: herpy.org/en/anguids/shinisaurus-crocodilurus