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TORTOISES AND TURTLES

Brown Roofed Turtle

Pangshura smithii

Pangshura smithii is a small to medium-sized, flat-backed freshwater turtle from rivers, ponds and swamps in the Indus, Ganges and Brahmaputra systems of South Asia. The carapace is olive-brown with a faint, dark keel, and the plastron is dark with a yellow edge. The species basks several times a day, is omnivorous and is rarely kept in captivity, so little is known about its care.

Family: Geoemydidae Former name: *Batagur smithii; Clemmys smithii; Kachuga smithii*

KEY FACTS

THE ANIMAL

Adult size	**15-22 cm** total length incl. tail
Lifespan	**25-50 years**
Active	**By day**
Lifestyle	**Semi-aquatic**
Habitat	**Wetland**
Difficulty	**Intermediate**

CARE

Min. enclosure	**120 × 60 × 60 cm** L × W × H for 2 adults
Temperature, day	**24-29 °C**
Basking spot	**30-35 °C**
Temperature, night	**18-22 °C**
Humidity	**50-80%**
Water	**Aquaterrarium** depth 25-30 cm
Water temperature	**24-28 °C**
UVB	**Recommended** Ferguson zone 2
Diet	**Insects, complete diet, plants and worms/snails**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**3-10 eggs**
Incubation	**70-90 days** at 26-29 °C

PROTECTION AND PAPERWORK

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

About the species

Pangshura smithii is a small to medium-sized freshwater turtle in the family Geoemydidae. The genus *Pangshura* was previously included in *Kachuga*. Carapace length is up to about 22 cm. Females grow larger than males, but figures for the size of males are not documented. The carapace is distinctly flattened and only slightly keeled. It is a pale olive-brown, and the central keel is usually blackish. The plastron is large and dark brown, and each scute is edged with yellow, as is the underside of the marginal scutes.

The head is of moderate size with a short, blunt snout and serrated jaw edges. The forelimbs have large, transverse scales. Males have longer and thicker tails than females, and the plastron is often slightly concave in the male and flat in the female.

There are two subspecies: *Pangshura smithii smithii* from the Indus, Ganges and Brahmaputra systems and *Pangshura smithii pallidipes* from the northern tributaries of the Ganges in India and Nepal. The species is also known under the older names *Batagur smithii*, *Clemmys smithii* and *Kachuga smithii*. The scientific species name honours the Scottish zoologist Andrew

Smith. How sex is determined has not been settled: an older claim of sex chromosomes has been refuted by more recent studies, and the role of temperature has not been investigated. Lifespan is not documented for the species, but freshwater turtles generally live 25-50 years in captivity.

Distribution and habitat

Pangshura smithii lives in northern South Asia: Pakistan (the Indus system, including Punjab and Sindh), northern India from Jammu and Kashmir, Himachal Pradesh and Punjab to Assam, Nepal and Bangladesh, where it is rare in the Ganges. The type locality is the Chenab River in Punjab. Whether the species occurs in Bhutan is unresolved.

The species is assessed as near threatened (NT). Populations may decline where watercourses are polluted, regulated or converted to farmland.

> **Native range:** Pakistan, India, Bangladesh and Nepal.

HABITAT

Pangshura smithii lives in fresh water: larger rivers, ponds, lakes, wetlands and swamps with slow-flowing or still water. The bottom is often soft and muddy, and there must be good basking spots on the bank, on sandbanks or on driftwood. The species basks several times a day.

The climate is subtropical to temperate with hot, wet summers and cooler, dry winters. The species is omnivorous: it takes aquatic plants, small invertebrates and carrion. Hatchlings eat more animal food, while adults make more use of plant matter. The female lays her eggs in sand or loose soil near the water.

Care

THE ENCLOSURE

Little is known about keeping *Pangshura smithii*, and the species is rarely kept. It is kept like other small and medium-sized Asian freshwater turtles that live in the water and regularly come onto land to bask and dry off. The closest relatives are *Pangshura tecta* and *Pangshura tentoria*.

A pair of adults needs an aqua-terrarium of at least 120 × 60 × 60 cm, corresponding to about five times the shell length in length and half of that in width. The third and fourth turtle need at least 10% more floor area, and from the fifth 20% more. About two thirds is water and a third land. Provide a basking spot where the animal can climb completely out of the water, and hides underwater. The bottom can be bare or covered with gravel that is too large to be swallowed. The aqua-terrarium must have a rim or lid so that the animals cannot climb out. An outdoor pond with secure fencing can be used in summer in warm weather, provided the animals are protected from predators and escape.

Read more: Heat and temperature

TEMPERATURE

By day the air should be 24-29 °C and the water 24-28 °C. Over the land area a heat lamp provides a basking spot of 30-35 °C, measured on the surface with an IR thermometer. At night the air can drop to 18-22 °C. The figures are an estimate based on the climate of the species and the requirements that apply to Asian freshwater turtles. Keep the water warm with a thermostat-controlled heater, and provide a cooler zone so that the animal can choose. Use thermometers in both water and air. A true hibernation is not necessary.

Read more: Brumation and the seasons

HUMIDITY AND WATER

Humidity should be 50-80%. The figure is an estimate that follows from a large water surface and a lightly ventilated lid. *Pangshura smithii* lives in the water and must always have clean water to drink and live in. The land area must be able to dry out, so that the animal can dry off completely under the heat lamp.

Read more: Humidity, misting and ventilation

WATER AND WATER QUALITY

The water should be 24-28 °C and about twice as deep as the shell is wide: 25-30 cm for adults. The animal must always be able to reach the surface and right itself if it ends up on its back. A powerful filter is necessary, because the animal eats a lot and fouls the water with leftover food and droppings. Change part of the water every week, and remove leftover food immediately. Clean the filter and bottom as needed.

LIGHTING AND UVB

Pangshura smithii basks several times a day and is entirely diurnal. The UVB requirement is not documented, but weak to moderate UVB (Ferguson zone 2) over the basking spot is recommended. Plenty of shade and hides in the rest of the aqua-terrarium is important. Replace the UVB tube according to the manufacturer's instructions.

The light is on 12 hours a day, and a heat lamp over the basking spot provides the local heat. Outdoor sun provides both heat and UV.

Read more: Lighting and UVB

FEEDING

Pangshura smithii is omnivorous. Adults can be given a mix of low-fat commercial aquatic turtle food, earthworms, water snails, insects and small fish, as well as aquatic plants such as duckweed and water lettuce. Hatchlings get more animal food: mosquito larvae, small worms and chopped fish. Dust meaty food with calcium, and provide a calcium source such as cuttlefish bone. Feed hatchlings daily and adults two to three times a week in the water. Remove leftovers to keep the water clean, and do not give more than the animal eats up.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Pangshura smithii is diurnal and often comes onto land to bask. Asian freshwater turtles of this type can usually be kept together, but males may be incompatible. Keep a pair or a small group with only one male, provide plenty of space and hides, and watch for biting and stress. The species is not suited to handling. It can bite and void its bowels when picked up, and handling stresses the animal.

Breeding

SEXUAL MATURITY AND SEXING

Males of *Pangshura smithii* have longer and thicker tails than females, and females grow larger. Age and size at sexual maturity are not documented.

MATING

Courtship and mating are not documented for *Pangshura smithii* in captivity. In the wild mating takes place in the dry part of the year, from about October to March.

EGG-LAYING AND CLUTCHES

The female of *Pangshura smithii* lays about 3-10 eggs per clutch in sand or loose soil near the water. The figure is uncertain, and the number of clutches per year and egg size are not documented. The female needs a land area with a thick layer of damp sand or loose soil, otherwise she may retain the eggs.

INCUBATION

Incubation lasts about 70-90 days, depending on temperature. The best temperature for *Pangshura smithii* is not documented; 26-29 °C in damp vermiculite is an estimate. Sex determination is unresolved, so incubation temperature may influence the sex ratio.

Read more: Incubating eggs

REARING THE YOUNG

Rearing of *Pangshura smithii* hatchlings is not documented. Keep them in a small aqua-terrarium with shallow water, which is made deeper as they grow, with an easily accessible land area and UVB, and feed them daily with animal food.

Health and common mistakes

There are no species-specific health data for *Pangshura smithii*. Typical problems in freshwater turtles are:

- Poor water quality and infections of the skin and shell. Use a filter, and change the water often.
- Lack of warmth or UVB, which causes poor shell growth and a soft shell. Provide a warm basking spot and UVB.
- Swollen or sunken eyes, poor appetite, the animal being unable to dive, or sitting basking all the time.
- Overfeeding and a one-sided diet.
- Stress in wild-caught animals. Choose captive-bred animals if they are available.

See a vet with reptile experience if the animal is not eating, has swollen eyes, soft shell or changed behaviour.

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.