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TORTOISES AND TURTLES

Bell's Hinge-back Tortoise

Kinixys belliana

Kinixys belliana is a medium-sized African tortoise with an elongated shell and a movable hinge at the rear, which can close the shell over the hind legs and tail. The shell is 15-22 cm long. The species lives in savanna with a distinct rainy and dry season, needs stable warmth and a degree of humidity, and is easily stressed. Newly imported animals often carry many parasites.

Family: Testudinidae Former name: *Cinixys belliana; Kinixys schoensis*

KEY FACTS

THE ANIMAL

Adult size	**15-22 cm** total length incl. tail
Lifespan	**30-50 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Savanna**
Difficulty	**Experienced**

CARE

Min. enclosure	**160 × 80 × 40 cm** L × W × H for 1 adult
Temperature, day	**28-32 °C**
Basking spot	**32-35 °C**
Temperature, night	**22-24 °C**
Humidity	**60-80%**
Water	**Water dish**
UVB	**Essential** Ferguson zone 2
Diet	**Insects, fruit, plants and worms/snails**
Kept	**Singly or in groups**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**1-6 eggs**
Clutches per year	**1-2**
Incubation	**105-200 days** at 28-31 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Not Evaluated (NE)**

About the species

Kinixys belliana is a medium-sized, slightly elongated tortoise with a gently domed, smoothly rounded carapace. The shell is light brown to yellowish with a dark, radiating pattern on each scute, which can become indistinct with age. The characteristic feature of the genus is the hinge over the rear: in adults, a broad band of flexible connective tissue sits between the fourth and fifth costal scutes, so that the rear part of the shell can be closed down over the hind legs and tail. In juveniles the hinge is not yet developed. Most animals have five claws on the front feet. The male has an inwardly curved plastron.

All measurements in the text are shell length. Adults are 15-22 cm.

The species was described by John Edward Gray in 1831 and is named after the English zoologist Thomas Bell. It was formerly regarded as a widespread species with several subspecies. Today *Kinixys spekii*, *Kinixys lobatsiana*, *Kinixys natalensis*, *Kinixys zombensis* and *Kinixys nogueyi* are regarded as separate species, and *K. belliana* is restricted to central and eastern Africa. Much of the older husbandry knowledge applies to the broader group.

Distribution and habitat

Kinixys belliana is found in central and eastern Africa: Angola, the Democratic Republic of the Congo, the Central African Republic, Burundi, Rwanda, Uganda, Kenya, northern Tanzania, Malawi, South Sudan, Sudan, Ethiopia, Eritrea and Somalia. The type locality is unknown.

Older records from West Africa and southern Africa now belong to other species. The species is under pressure from collection for trade and food, from a growing human population and from fires set by people.

> **Native range:** Angola, Burundi, Central African Republic, Congo - Kinshasa, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Uganda, Tanzania and Malawi.

HABITAT

The species lives in tropical and subtropical savanna: plains and grassland with scattered trees and a pronounced rainy and dry season, but not in desert, semi-desert or true forest. Animals with a high shell typically live in open savanna, while animals with a flatter shell are found in rocky terrain. The summers are warm with rain, and the winters are mild and dry.

The animals are active before and during rain and inactive when it is dry. In the driest part of the year they aestivate, but they do not hibernate. Mating and egg laying fall in the rainy season. The species is omnivorous and eats insects, millipedes, snails, dead frogs and tadpoles, herbs, roots, fruit and fungi.

Read more: Rearing tadpoles

Care

THE ENCLOSURE

Little reliable knowledge exists about the husbandry of *Kinixys belliana*, because much of the older knowledge dates from the time when several species were regarded as one. The care is based on the savanna climate and on the genus as a whole; figures that are borrowed or estimated are noted in the individual sections.

Tortoises of the genus *Kinixys* are easily stressed and have strict requirements for temperature, light level and humidity. They are also difficult to handle and treat. It is therefore not a species for beginners, and wild-caught animals require a parasite treatment plan from day one.

The enclosure must provide floor area: 8 times the shell length in length and 4 times in width, that is 160 × 80 cm for an animal of 20 cm, and at least 40 cm high. Less space is often used successfully, but the general recommendation is 8 × 4 times the shell length. Use an enclosed terrarium so that humidity can be maintained. The substrate is 10-15 cm of a moist mixture of peat, bark mulch and soil, where the animal can dig in and lie hidden. Furnish with several hides at both ends, leaf litter and plants, a humid hide with moss and a large, shallow bowl for drinking and bathing. Place an opaque border in front of the glass. In a temperate climate the animal can only go outdoors on the warmest summer days.

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

TEMPERATURE

The animal must be kept warm. During the day the temperature should be 28-32 °C, and the basking spot is 32-35 °C, measured on the substrate. The night temperature is not documented for the species; 22-24 °C suits a tropical climate. The basking spot temperature is borrowed from related tortoises. Use a radiant heat panel or halogen lamps with a thermostat and a cooler end the animal can retreat to.

The species does not hibernate. The dry season in the wild is a summer dormancy, and it should not be imitated in the enclosure.

Read more: Heat and temperature Read more: Brumation and the seasons

HUMIDITY AND WATER

As a savanna species, *K. belliana* is less moisture-dependent than the forest species *Kinixys homeana* and *Kinixys erosa*, but it likes moisture and must be misted regularly. The air humidity is not documented; 60-80 % with a humid hide is an estimate. Give a lukewarm bath at least twice a week and a large bowl of clean water for drinking and bathing. Change the water daily, because algae form easily.

Juveniles dry out quickly and need higher humidity than adults. Swollen, closed eyes and lethargy are signs of dehydration and should lead to more humidity and a bath.

LIGHTING AND UVB

K. belliana is active by day, but is most visible early and late in the day when the light is weak. Sunlight is best, but indoors UVB light is necessary: UV index 2.0-3.0 at the basking spot (Ferguson zone 2). The zone is an estimate, not measured for the species. The species is stressed by bright light, so plants and hides where the animal can withdraw from the light are important. The light follows the season at about 12 hours a day. Glass and acrylic block UVB.

Read more: Lighting and UVB

FEEDING

K. belliana is omnivorous, and juveniles are almost exclusively carnivorous. The diet is about half plant material and half animal food: herbs such as dandelion, plantain and clover, greens such as lettuce, squash and carrots, soft fruits such as melon, banana and tomato, and fungi. Animal food is snails, earthworms, crickets, cockroaches and mealworms and occasionally a little egg or small pieces of cooked fish.

Red and orange fruits are particularly readily taken, and they can be used to get sick animals to eat. Feed on a flat dish or rock. Sprinkle a calcium and vitamin supplement over the food, and leave a cuttlebone out.

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

BEHAVIOUR AND HANDLING

The species is shy and withdraws into its shell or digs in when disturbed. It is most active early in the morning and late in the day. The hinge and the narrow opening between carapace and plastron make the animal difficult to handle and examine. Lift it from below with two hands, and handle it as little as possible.

The animals can be kept singly or in a small group with plenty of space and many hides. For the third and fourth tortoise, add at least 10 % to the floor area. Do not mix the species with other tortoises, because parasites are transmitted.

Breeding

SEXUAL MATURITY AND SEXING

The male has an inwardly curved plastron, and the female has a flat one. Age and size at sexual maturity are not documented for the species, and the sex is difficult to see in young animals. Lifespan is not documented either; the figure in the box is an estimate based on other medium-sized tortoises.

MATING

Mating falls in the rainy season; in the southern part of the genus's former range it is from November to February. The male pursues the female and mounts her. Give the female many hides and the possibility of getting away from the male, and separate the animals if the female is injured. Further details about mating are not documented for the species.

EGG-LAYING AND CLUTCHES

The eggs are laid in the rainy season. The female lays 1-6 eggs per clutch and up to two clutches a year. The figures date from the time when several species were counted as one. Give the female a box with deep, loose, moist soil where she can dig a nest.

INCUBATION

Incubation period and temperature are not documented for the species. The figures of 28-31 °C and 105-200 days in the box are borrowed from *Chelonoidis carbonarius* and are only a starting point. The eggs hatch under humid conditions in the wild. Place them in an incubator with moist vermiculite, and do not turn them.

Read more: Incubating eggs

REARING THE YOUNG

The hatchlings are almost exclusively carnivorous and have no hinge. They dry out quickly and need high humidity, a humid hide, warmth and UVB. Give small snails, earthworms and insects daily together with a little greenery. Further rearing data are not documented for the species.

Health and common mistakes

Newly imported animals are often in poor condition. The genus *Kinixys* is easily stressed and has strict requirements for temperature, light and humidity. The most frequent problems are emaciation and large burdens of intestinal parasites, both worms and single-celled organisms. Signs are loose faeces with mucus and sometimes blood, undigested food, loss of appetite, weight loss, dehydration and lethargy. Untreated, it can develop into enteritis and blood poisoning.

- The first step is to restore the fluid balance with long baths in lukewarm, shallow water. Faecal samples are examined, and the vet treats according to the findings.
- Some of the parasites can infect other reptiles and humans, so hygiene and disinfection are necessary. Follow new animals closely for at least 12 months with weight, fluid balance and faeces.
- Dehydration: especially in juveniles.
- Respiratory infection: runny nose and wheezing breathing with cold and air that is too dry.

Contact a vet with reptile experience if the animal does not eat, loses weight or has loose faeces. A new animal must be quarantined before it is housed with other tortoises.

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.