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TORTOISES AND TURTLES

South African Bowsprit Tortoise

Chersina angulata

Chersina angulata is a medium-sized, domed tortoise from the coastal and scrub regions of South Africa. It is recognised by the large, projecting shield under the chin (the gular scute), which males use to overturn rivals. The shell length is typically 17-19 cm. It is hardy in its own Mediterranean-type climate, but copes poorly with cold and damp and needs plenty of space, sun and dry, sandy ground.

Family: Testudinidae Former name: *Testudo angulata; Testudo bellii; Goniochersus angulatus; Neotestudo angulata; Chersine angulata*

KEY FACTS

THE ANIMAL

Adult size	**15-35 cm** total length incl. tail
Lifespan	**30-50 years**
Active	**By day**
Lifestyle	**Terrestrial**
Habitat	**Semi-desert**
Difficulty	**Experienced**

CARE

Min. enclosure	**160 × 80 × 40 cm** L × W × H for 1 adult
Temperature, day	**22-28 °C**
Basking spot	**32-35 °C**
Temperature, night	**12-18 °C**
Humidity	**40-60%**
Water	**Water dish**
UVB	**Essential** Ferguson zone 3
Diet	**Insects and plants**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**120-144 months**
Clutch size	**1-2 eggs**
Clutches per year	**1-6**
Incubation	**94-198 days** at 28-30 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Least Concern (LC)**

About the species

Chersina angulata has an elongated, domed carapace without hinges. Males are larger than females: in south-western South Africa males average 19 cm long and weigh about 900 g, females 17 cm and about 800 g. On Dassen Island, where the animals are markedly larger than on the mainland, the largest male measured was 35 cm and 3.9 kg. All measurements in the text are shell length. Newly hatched young are 3-4 cm and weigh 12-18 g.

The species is easily recognised by the gular scute: a single, large, projecting scute on the plastron under the chin, where all other South African tortoises have a divided one. The front legs have five claws, the hind legs four, and the tail has no spine at the tip. The marginal scutes are pale yellow with a dark, broad-based triangle, and the light areas of the vertebral and costal scutes have dark centres. The plastron has a dark, irregular pattern on a straw-yellow background. In parts of the range the

background takes on an orange to red tint. Colours vary greatly: animals from the west coast are often reddish, animals from the Karoo often dark and some entirely black, and in the east the animals are smaller and paler. With age the pattern fades, and old animals can be almost uniformly straw-coloured.

Males are flatter, longer and often wider than females, and have a longer gular scute, a longer tail and a concave plastron. Females are smaller and rounder, with a flat or slightly convex plastron. The species was described by Schweigger in 1812 and is the only member of the genus *Chersina*. Its closest relatives are the small South African *Homopus*. Genetic studies show two separate lineages, a western and a southern one, but no subspecies are recognised.

Distribution and habitat

Chersina angulata is found in southern and western South Africa and just across the border in south-western Namibia. In South Africa the range runs from East London in the Eastern Cape through most of the Western Cape and into the western part of the Northern Cape. Across the Orange River the species occurs in the Sperrgebiet and surrounding areas, possibly as far north as Lüderitz and Aus. Further north, in Swakopmund and Walvis Bay, small introduced populations live in gardens. About 90 % of the range lies in South Africa. The species also occurs on several offshore islands and reaches very high densities on Dassen Island and Robben Island.

The type locality is unknown.

> **Native range:** South Africa and Namibia.

HABITAT

The species lives from the coastal plains up to about 1200 m, but does not penetrate the interior. The habitats are fynbos (open to dense, fire-prone shrubland), Albany thicket, Succulent Karoo and Nama Karoo, and coastal scrub. Rainfall is low, from under 100 to 600 mm a year, but can exceed 1000 mm along the south coast. The climate ranges from extremely arid with winter rain in south-western Namibia, through a Mediterranean climate with winter rain in the Western Cape, to a temperate climate with rain all year along the south coast. Summers are mild to very hot, and there is little or no frost in winter. The species prefers sandy ground, where it half-buries itself under bushes. It also occurs in rocky terrain, where it hides under large boulders. It is scarce in dense thicket, but can be numerous in partly cleared areas. Where densities are highest there are 30-35 animals per hectare, and home ranges are small.

The species is active all year, but warmth and rain govern its activity. In the winter-rainfall areas the animals are fairly inactive in summer and autumn, but fog or rain brings a clear increase. They feed most in winter and spring, when the rain provides food. In spring they bask for long periods, mostly in the shelter of sparse vegetation, and the males fight to establish a hierarchy. The fights consist of one male overturning another with the gular scute. The species drinks in an unusual way: when it rains, the animal raises its rear end, pushes its head into the ground so that water from the shell collects around it, and sucks the water up through its nose.

The diet is varied and changes with the season. Herbs and grasses make up the bulk, but the animal also eats moss, fungi, insects, snail shells and animal droppings. Young animals are taken by, for example, mongooses, jackals, baboons and birds, and adults are at risk during the large bush fires.

Care

THE ENCLOSURE

Little published knowledge exists on the care of *Chersina angulata* outside South Africa. Care is therefore based on the habitat and on field studies; temperatures and measurements that are estimated or borrowed from tortoises of Mediterranean climates such as *Testudo hermanni* are stated under the individual sections. In South Africa the species is kept and breeds in large outdoor enclosures with grass, dense bushes, shelters, open spaces for basking and sandy patches for egg-laying.

The species is adapted to a warm, dry climate, and cold, wet days are the greatest risk outdoors in a cool, temperate climate: the animals become sluggish and easily develop respiratory infections. On warm, dry summer days they should go out into a sunny, well-drained enclosure, the larger the better, with bushes, grass, stones and a dry shelter from the rain. A small greenhouse or cold frame with a heat lamp provides warmth on cool days. The walls should be at least 30 cm high and opaque. Leave part of the ground as bare sandy soil, because the animal half-buries itself and the female digs her nest. Protect against predators, dogs and birds.

Indoors the minimum is 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; larger animals need more. The substrate is a mixture of sand and loam, 10 cm deep and mostly dry, so that the animal can dig in. Furnish with flat stones, dry shelters at both ends and plants, and provide a low, stable bowl of clean water. Fit an opaque strip along the front glass.

TEMPERATURE

By day the enclosure should be 22-28 °C, with a basking spot of 32-35 °C under a lamp, measured on the substrate. The figures are estimated from the climate of the habitat and borrowed from *T. hermanni*. At night 12-18 °C is suitable. The species does not hibernate and should not be hibernated in captivity. Winters in the range are mild with little or no frost, and in the winter-rainfall areas the animals are most active in the cool, wet season. The animal is therefore kept active with warmth, light and food all year; in winter the night can be kept at the cool end of the range. The animal regulates its temperature by basking, and the body warms faster than it cools, so a basking spot gives activity even on cool days. Use a radiant heat panel or halogen lamps with a thermostat.

Read more: Heat and temperature

HUMIDITY AND WATER

C. angulata belongs to dry to semi-dry habitats and needs a humidity of 40-60 %; the figure is an estimate based on the habitat. Keep most of the substrate dry and make a slightly damper corner under a shelter. Rain and fog boost activity, and misting the enclosure a couple of times a week imitates this. Give a lukewarm bath once a week and fresh water in the bowl daily.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

C. angulata is diurnal and basks a great deal. Sunlight is best, and the animal should be outside in the sun whenever the weather allows. Indoors there should be UVB lighting with a UV index of 2.0-3.0 at the basking spot (Ferguson zone 3). The zone is an estimate based on the open, sunny habitat. The light follows the season with about 12 hours a day. Glass and acrylic block UVB.

Read more: Lighting and UVB

FEEDING

In the wild herbs and grasses are the most important food, and the animal also eats moss, fungi, insects, snail shells and droppings. It feeds selectively and changes its food with the season. Give mostly wild herbs and grasses such as dandelion, plantain, clover and other leafy plants, preferably from your own outdoor area and free of pesticides. The species readily eats vegetables and salad, but they are only a supplement. Keep a cuttlebone available, and dust the food with calcium and vitamins. Give snails or insects only occasionally. Young animals are fed daily and adults every other day.

Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

The species is shy and withdraws under bushes or half-buries itself. Males are aggressive towards one another, especially in spring: they overturn each other with the gular scute, and the weaker one can be left helpless on its back. Keep only one male in each enclosure. The animals can be kept singly or as pairs, and several females can be kept with one male if there is room and plenty of shelter. Females have larger home ranges than males. Do not mix the species with other tortoises.

Breeding

SEXUAL MATURITY AND SEXING

Males are flat, long and larger, with a longer gular scute and tail and a concave plastron. Females are smaller and rounder, with a flat or slightly convex plastron. Both sexes mature after 10-12 years and can live more than 30 years. The lifespan in the box is an estimate.

MATING

Males fight over females in spring. Most courtship takes place in spring and on cool summer days. Give the female plenty of shelter and the chance to get away from the male.

EGG-LAYING AND CLUTCHES

The female usually lays one egg at a time, occasionally two, and under good conditions up to six times a year. Females in south-western South Africa carry eggs for most of the year, and laying takes place from late summer to late spring. The female can retain an egg for 23-212 days, depending on temperature and rain, and rain triggers the laying itself, probably because wet ground is easier to dig in. The egg measures 39-46 × 28-38 mm and weighs 18-39 g. The nest is a shallow depression about 10 cm wide with a small chamber of about 4 cm at the bottom, dug in sandy soil in a sunny, well-drained spot. Give the female such a spot, and moisten the sand when she is due to lay. The female sometimes lays the egg on the surface without digging a nest, so keep an eye out for loose eggs. In very hot summers she can retain the last egg of the season until the hatchling is fully developed, so that the egg hatches shortly after laying.

INCUBATION

Incubation lasts between 94 and 198 days. In the wild the eggs hatch in early autumn, in March and April. The incubation temperature is not documented for the species. The figure in the box, 28-30 °C, is borrowed from related tortoises such as *T. hermanni*. The shell cracks 6-7 days before the hatchling emerges. Place the eggs in an incubator with damp vermiculite, and do not turn them.

Read more: Incubating eggs

REARING THE YOUNG

The young are 3-4 cm at hatching and weigh 12-18 g. Mortality among young animals is high in the wild. Rearing of the young is not described in detail, so the advice here is borrowed from other tortoises: the young need a small, low enclosure with the same temperatures and UVB as the adults, slightly higher humidity, daily feeding with finely chopped herbs and lukewarm baths. Let them grow slowly to avoid pyramiding.

Health and common mistakes

Little is known about diseases in the species. Mass mortality due to an unknown respiratory illness has been reported from the Eastern Cape. In the enclosure the most common problems are dehydration, respiratory infection from cold and damp, and pyramiding (uneven, raised shell growth) from food that is too rich and too little UVB.

- Respiratory infection: runny nose and wheezing breathing, often in cold conditions and with a damp, cold substrate.
- Pyramiding: avoid too much protein, keep the substrate dry and provide UVB and calcium.
- Parasites: have faecal samples checked by a vet, especially in newly acquired animals.

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

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.