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CHAMELEONS

Boettger's Chameleon

Calumma boettgeri

Calumma boettgeri is one of the smallest chameleons, only 8-10 cm long, with a soft, round-oval rostral appendage and subdued colours in yellow, greenish brown and beige. It lives in rainforest in north-western Madagascar, including the islands of Nosy Be and Nosy Komba. The species needs warm, humid air with cooler nights and is for the experienced keeper. Its boundaries have been unclear.

Family: Chamaeleonidae Former name: *Chamaeleo boettgeri; Chamaeleon boettgeri; Chamaeleon macrorhinus*

KEY FACTS

THE ANIMAL

Adult size	**8-10 cm** total length incl. tail
Lifespan	**3-5 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Rainforest**
Difficulty	**Experienced**

CARE

Min. enclosure	**40 × 40 × 60 cm** L × W × H for 1 adult
Temperature, day	**22-27 °C**
Basking spot	**27-29 °C**
Temperature, night	**16-20 °C**
Humidity	**70-100%**
UVB	**Recommended** Ferguson zone 2
Diet	**Insects and small invertebrates (springtails, fruit flies)**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**9 months**
Clutch size	**4-5 eggs**
Incubation	**90 days** at 22-24 °C

PROTECTION AND PAPERWORK

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

About the species

Calumma boettgeri is a small, arboreal chameleon of 8-10 cm in total length, including the tail. Both sexes have a soft, round-oval rostral appendage. The casque is flat or only weakly developed, and at the back it has two lobes that, seen from above, are divided only by a slight notch. There is no crest on the crown, under the throat or on the belly, and the dorsal crest is almost absent. The better-developed, fused lobes at the back of the casque and the almost missing dorsal crest set it apart from *Calumma nasutum*.

The colours are subdued. Males are yellow or greenish brown, females beige to slightly orange with green or pale blue scales on the arms and legs. On the head and belly the animals can look almost white, and the head and rostral appendage can have blue spots. Many animals have a dark line from the nose to the eyelids and the lobes at the back. A stressed animal shows a pale pattern on the head.

The boundaries of the species have been unclear. For many years several separate species were treated as *C. boettgeri*, for example *Calumma linotum* from Amber Mountain (Montagne d'Ambre), which was separated in a revision in 2015. Many photos and care figures written under the name *C. boettgeri* may therefore concern other species in the same group.

The species is named after the German zoologist Oskar Boettger (1844-1910).

Distribution and habitat

Calumma boettgeri occurs in north-western Madagascar: on the island of Nosy Be, where the type specimens come from, on the nearby island of Nosy Komba and on the mainland in the last forest remnants around Manongarivo. It has not been found outside closed forest. It is assessed as Least Concern (LC).

> **Native range:** Madagascar.

HABITAT

On Nosy Be the species lives in the last remaining rainforest in Lokobe National Park, with many old trees, dense undergrowth and rock formations. On Nosy Komba it also occurs in dense secondary vegetation at the edge of forest remnants. It prefers dense, gnarled vegetation with small leaves. The soil is a mixture of earth and sand.

The climate is warm all year. Monthly means lie between 20 and 26 °C, and the daily maximum is typically 25-31 °C and can regularly exceed 30 °C. Nights are mildest in the rainy season, when they hardly fall below 22 °C, and in the dry season from April to October they fall to 15-16 °C and occasionally lower. It rains a great deal from December to March (20-24 rain days a month) and less from April to October (7-13 days), but the forest is green all year.

Care

THE ENCLOSURE

Little is known about the care of *Calumma boettgeri*. The climate below is based on measurements from the species' habitats. The enclosure size and UVB zone are borrowed from the closely related *Calumma nasutum*, and the figures for eggs and incubation come from a single older description, in which the species may have been mixed up with closely related species.

At least 40 × 40 × 60 cm (length × width × height) is enough for one adult, and taller is better. Choose a screen or hybrid enclosure with good ventilation.

Furnish with dense planting, thin and gnarled branches at several heights and a layer of leaf litter on the floor. Keep the air moving, so leaves and branches dry before night.

Read more: Lighting and UVB Read more: Incubating eggs

TEMPERATURE

By day the temperature should be 22-27 °C, with a basking spot of 27-29 °C. The temperature must not exceed 29 °C on the warmest branches. Use a gentle heat lamp high up and check the temperature on the branches with an IR thermometer.

At night the temperature must fall 6-8 °C, to 16-20 °C. A clear night-time drop is part of the routine, and in the cooler dry season from April to October the night may well be at the cool end.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity must be high: 70-80 % for part of the day and higher at night, up to 100 % after misting. Mist the enclosure several times a day in short periods, so droplets stand on the leaves; the animal drinks the droplets and does not take water from a bowl. Branches and leaves must be able to dry between mistings, and the air must move.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is diurnal and needs bright daylight for 12 hours a day. UVB is recommended. Aim for Ferguson zone 2, that is a UV index of about 2-3 on the highest branches, with a T5 HO UVB tube and plenty of shade. Check with a UV meter, and replace the tube according to the manufacturer's instructions.

FEEDING

C. boettgeri eats small insects: fruit flies, springtails, small crickets and small grasshoppers. The feeder insects must be small, because the animal itself is so small. Young are fed daily, adults every other day. Amounts for the species have not been documented.

The feeder insects must themselves be fed greens and grain. Dust the meal with calcium, and give calcium with D3 and a multivitamin sparingly on a fixed schedule.

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

BEHAVIOUR AND HANDLING

The species is kept singly, because individuals are aggressive towards one another. Handling should be limited to what is necessary, and a new animal is given two weeks in peace. The animal is small and easy to overlook, so check the enclosure carefully when opening it. Stress shows as dark colours and reduced appetite.

Breeding

SEXUAL MATURITY AND SEXING

The animals are sexually mature after about 9 months. Both sexes have a rostral appendage, so it cannot be used to tell the sexes apart. Males are yellow or greenish brown, females beige to slightly orange.

MATING

Mating has not been described in detail for the species. Place the female with the male under supervision, and separate the animals if the female rejects the male or the male is aggressive. Separate them again when mating is over.

EGG-LAYING AND CLUTCHES

About 45 days after mating the female lays 4-5 eggs. Give her a container of moist leaf litter and soil, where she can dig and hide the eggs. The number of clutches per year has not been documented. The female is exhausted afterwards and needs nourishing food and calcium.

INCUBATION

Carefully dig out the eggs and place them in moist vermiculite in a closed box, in the same position in which they lay. They are incubated at 22-24 °C and hatch after about 90 days. Whether the eggs need a cool resting phase has not been documented.

REARING THE YOUNG

The young are very small and must be kept singly in a densely planted enclosure with the same climate as the adults. They are given fruit flies and springtails every day and drip or light misting several times a day. Amounts and growth have not been documented.

Health and common mistakes

Typical problems and care mistakes:

- Dehydration in dry air or when there are no droplets to drink.
- Respiratory infections and mould in stagnant, wet air.
- Overheating from a heat source that is too strong.
- Metabolic bone disease (MBD) from too little calcium or UVB.
- Parasites and poor condition in animals of uncertain origin, which often arrive weakened.

With such small and easily confused animals it is important to know the species. Ask the seller about the animal's origin and identification. Lifespan has not been documented; the 3-5 years in the box is an estimate. Contact a veterinarian experienced with reptiles if the animal stops eating, or in the case of limpness, dark colour or difficulty breathing.

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.