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CHAMELEONS

Johnston's Chameleon

Trioceros johnstoni

Trioceros johnstoni is a medium-sized, egg-laying chameleon from the mountain forests of Uganda, Rwanda, Burundi and eastern Congo. The male has three horns, two above the eyes and one on the snout, and is green with turquoise or yellow crossbands; the female has no horns. The species needs a cool day, a clear drop in temperature at night, mist and high night-time humidity, and it is sensitive to excess vitamin supplements.

Family: Chamaeleonidae Former name: *Chamaeleo johnstoni; Chamaeleo laevigularis*

KEY FACTS

THE ANIMAL

Adult size	**25-38 cm** total length incl. tail
Weight	**50-110 g**
Lifespan	**5-6 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Montane forest**
Difficulty	**Experienced**

CARE

Min. enclosure	**60 × 60 × 120 cm** L × W × H for 1 adult
Temperature, day	**20-24 °C**
Basking spot	**26-28 °C**
Temperature, night	**10-15 °C**
Humidity	**60-100%**
UVB	**Essential** Ferguson zone 3
Diet	**Insects**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**10-12 months**
Clutch size	**8-18 eggs**
Clutches per year	**1-2**
Incubation	**100-120 days** at 18-21 °C

PROTECTION AND PAPERWORK

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

About the species

Trioceros johnstoni is a medium-sized arboreal chameleon. Adult males measure about 30 cm in total, including the tail, and weigh 90-110 g; a few males reach 38 cm. Females are about 25 cm and weigh 50-80 g, up to 90 g when gravid. The body is deeper than in *T. jacksonii*, which the species resembles. The male has three ringed horns: two in front of the eyes and one on the snout, up to 3 cm long. The female has no horns. The casque is flat and without lobes, and the body, throat and legs are covered in large, lens-shaped scales. There is no dorsal crest or throat crest.

The base colour is light green with 3-5 vertical bands in turquoise or yellow. Females often have yellow markings on the head. A stressed animal turns dark brown with paler bands. Colour forms follow the locality: the Bwindi form leans towards blue, the Rwenzori form has red in the pattern, while animals from Rwanda and Burundi are more subdued.

The species is egg-laying. The female lays relatively large eggs, which are buried in the soil. The scientific name honours Harry Johnston, the British explorer and colonial administrator who collected the first specimens in the Rwenzori Mountains.

The species is less common in captivity than *T. jacksonii*, but it has been bred in Europe, and its care is well understood.

Distribution and habitat

Trioceros johnstoni occurs in the mountain regions along the border between Uganda, Congo, Rwanda and Burundi, from about 1,000 to 2,400 m above sea level. It is known from the Rwenzori and Virunga Mountains in Uganda, from Bwindi forest, from Rwanda and Burundi and from north-eastern Congo. The type locality is the Rwenzori Mountains in Uganda.

The populations are divided into local forms that differ in colour and pattern. The best known are the Rwenzori and Bwindi forms, both of which occur in Uganda and Congo.

> **Native range:** Uganda, Rwanda, Burundi and Congo - Kinshasa.

HABITAT

The species lives in humid montane forest and at forest edges in the highlands near the equator. Here the seasons alternate between rain and drought rather than between summer and winter. Temperatures range from 13 to 29 °C: 22-28 °C by day and 10-15 °C at night. Mist and rain are the norm.

The animals sit in trees and bushes, most often 3-4 m up, and are often seen in low trees and scrub along roads and tracks, where they bask in the morning sun. Humidity is 60-80 % by day and higher at night.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

An adult needs an enclosure of at least 60 × 60 × 120 cm (length × width × height). Males grow large and benefit from extra width. The size is the same as for other medium-sized montane chameleons of the genus *Trioceros*.

A hybrid enclosure with solid sides and mesh on top holds night-time humidity better than a fully mesh one. Stagnant air leads to bacterial growth and respiratory infections, so a small fan should keep the mist circulating. Solid sides also let heat build up, so the temperature must be monitored.

Furnish the enclosure like a forest edge with two zones: an open basking area at the top and a dense, leafy area where the animal can retreat. The retreat area is essential for its wellbeing. Use live plants and thin branches and twigs that cross at several heights. The animals are kept individually.

TEMPERATURE

By day the temperature should be 20-24 °C, never above room temperature for long periods, with a basking spot of 26-28 °C. The bulb is mounted above the enclosure and at a good distance, so the heat is gentle and there is no fire risk. The animal must be able to warm up in the morning and then move to cooler spots. Temperatures above 30 °C cause heat stress.

At night the temperature should fall to 10-15 °C. This clear drop is a prerequisite for a healthy animal, and if the species is kept warm around the clock it fails to thrive.

Read more: Heat and temperature

HUMIDITY AND WATER

Night is the species' humid time. Humidity should be 80-100 % at night and fall to 60-80 % by day. An ultrasonic fogger runs in the second half of the night, for example alternating 30 minutes on and 30 minutes off between 1.30 and 6 a.m., and a couple of minutes of misting just before the lights come on puts dew on the leaves. A drip system in the afternoon is an extra safeguard. The species drinks droplets, not from a bowl.

The figures are not critical. What matters more is that the air moves when it is humid and that all surfaces are dry during the day. Constantly wet branches cause sores on the feet and mould.

LIGHTING AND UVB

The species is diurnal and needs strong light. Four T5 HO tubes of 6500 K across the width of the enclosure light up a 120 cm high enclosure well. Provide 12 hours of light and 12 hours of darkness all year round. Any light disturbs night-time sleep, so the enclosure must be completely dark at night.

UVB is necessary. Aim for a UV index of 3 at the basking spot and no more than 6, using a T5 HO UVB tube in a single reflector. The figure is borrowed from *T. jacksonii*, which lives at roughly the same altitude; there are no measurements for this species. The animal must be able to find shade. A UV meter is a great help, because the index depends on the distance and the mesh.

Sunlight through a window is strong, can overheat the animal and provides no UVB.

Read more: Lighting and UVB

FEEDING

T. johnstoni is an insectivore and takes the usual feeder insects: crickets, grasshoppers, flies and roaches. Land snails are a particular favourite. The insects should themselves be fed a nutritious diet.

Juveniles are fed as much as they will eat. Once the animal is fully grown, after about a year, it gets 3-4 suitably sized insects every other day; adjust the amount so that the animal stays slim. Gravid females get as many well-fed insects as they will eat, and this continues for about a week after egg-laying.

The species is especially sensitive to over-supplementation. Excess of the fat-soluble vitamins A and D3 causes oedema. Use plain calcium without D3 at every feeding, and let the animal's own D3 production under UVB light cover the rest. Calcium with D3 is given only if the animal does not receive enough UVB, and then no more than once a week.

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

BEHAVIOUR AND HANDLING

The species is kept individually. Males must never be able to see each other. The species is less aggressive than most chameleons, but it tolerates conspecifics poorly in an ordinary enclosure, and gravid females must always be alone. One male with two or three females can go together in a densely planted enclosure of at least 90 × 90 × 180 cm, but keeping them singly is the safe choice.

The species is shy, especially animals from Burundi. It is a display animal, not a pet, and handling should be brief and infrequent. Dark colour is a sign of stress, cold or illness, but in the morning it is normal while the animal warms up.

Breeding

SEXUAL MATURITY AND SEXING

The male is recognised by the horns and the thicker tail base. The female has no horns and is slightly smaller. The animals are sexually mature at 10-12 months. The female should be in good condition but not overweight.

MATING

The female is placed with the male for mating. Separate them once mating is over or the female rejects the male. The male is less aggressive than in many other chameleons, but the animals should still only meet for mating. A fixed mating season is not documented.

EGG-LAYING AND CLUTCHES

Gestation lasts about three months. The female lays 8-18 relatively large eggs in one clutch; young females lay about 12, and the number rises with age. Usually one clutch is laid per year, but two can occur. The female needs a laying bin with moist, loose soil in which she can dig. Gravid females are kept alone, with plenty of food and extra calcium.

INCUBATION

The eggs are incubated in vermiculite or perlite at 18-21 °C, preferably with a slight night-time drop (21 °C by day and 18 °C at night). A constant 22-23 °C is too high and produces weak hatchlings. Hatching takes about 100-120 days. When the eggs begin to darken, they are moved to a hatching container with moss on the bottom and a couple of thin branches, and the eggs are covered with a layer of leaves or grass, so that the hatchlings have to dig their own way up and can climb straight away. Hatchlings must never be pushed out of the egg; hatching can take up to two days. The hatch rate is high, 80-100 %.

REARING THE YOUNG

The hatchlings are relatively large and easy to rear. Keep them in a smaller hybrid enclosure with the same climate as the adults: cool, mist at night and thin branches. Feed them small insects, as much as they will eat, and keep them individually as soon as the sex can be seen. Males must not be able to see each other. The sensitivity to supplements applies to the hatchlings

too.

Health and common mistakes

Typical problems and care mistakes:

- Heat stress at temperatures above 30 °C and from a basking spot that is too hot or sits close to the bulb. Burns can appear as grey areas or melted dorsal spines.
- Oedema from overdosing vitamins A and D3 in supplements. The species is especially sensitive.
- Respiratory infections from stagnant air or surfaces that are too wet. Signs are yawning, open-mouth breathing and mucus.
- Metabolic bone disease (MBD) from too little UVB or calcium: soft jaws and crooked limbs.
- Sores and mould from branches that are wet all the time.
- Obesity in adults that are fed too generously.
- Loss of appetite when the animal is given too much to eat. Skip a meal and then offer the normal diet again.

Longevity in captivity is not documented; 5-6 years in the table is borrowed from the closely related *T. hoehnelii* and *T. werneri*. Contact a vet experienced with reptiles if the animal stops eating, turns dark, goes limp or has 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.