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CHAMELEONS

Meller's Chameleon

Trioceros melleri

Trioceros melleri is the largest chameleon on the African mainland. It grows up to 60 cm long, carries a single small horn on its snout and lives in bushy savannas and open woodland in Tanzania, Malawi and Mozambique. The species needs a great deal of space, plenty of water and cool, humid nights, and belongs only with an experienced keeper.

Family: Chamaeleonidae Former name: *Chamaeleo melleri; Ensirostris melleri*

KEY FACTS

THE ANIMAL

Adult size	**30-60 cm** total length incl. tail
Weight	**300-500 g**
Lifespan	**5-14 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Savanna and dry forest**
Difficulty	**Expert**

CARE

Min. enclosure	**120 × 90 × 150 cm** L × W × H for 1 adult
Temperature, day	**22-28 °C**
Basking spot	**29-32 °C**
Temperature, night	**15-20 °C**
Humidity	**40-100%**
UVB	**Essential** Ferguson zone 2
Diet	**Insects**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**15-80 eggs**
Clutches per year	**1**
Incubation	**180-270 days** at 24-26 °C

PROTECTION AND PAPERWORK

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

About the species

Trioceros melleri is the largest chameleon outside Madagascar. Adults typically measure 30-60 cm in total, tail included, and weigh 300-500 g. A few very large animals reach 76 cm and over 600 g. The female is slightly smaller than the male and has less developed crests.

The body is heavily built, and the tail is relatively short, about a third of the body length. The head is small and elongated, with a sharp central ridge running from the eyes to the snout, which carries a single small horn. The occipital lobes are strongly enlarged, and the throat bears lengthwise rows of large, granular scales. The base colour is dark forest green with yellow and white bands and blotches on the flanks.

Colour change reflects mood and health. Mild unease shows as dark spots, which turn into black marbling as the animal becomes more agitated. Severe stress turns the animal first charcoal grey and then white with yellow stripes. A sick chameleon may be blotched in brown, grey, pink or white, while a gravid female is black, cream and grey and visibly rounded with eggs.

The species name *melleri* honours the physician and botanist Charles James Meller (1836-1869), who travelled with Livingstone in what is now Malawi and obtained the animal from which the species was described in 1865.

Males are highly aggressive towards conspecifics, and females somewhat less so. Towards people, behaviour ranges from shy to moderately aggressive. Wild-caught animals often carry a heavy parasite load and do poorly in captivity, so the species should only be acquired as captive-bred.

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

Distribution and habitat

Trioceros melleri lives in eastern Africa: in the coastal lowlands of Tanzania, in Malawi and in northern Mozambique. It occurs mainly from sea level up to about 800 m, but higher in southern Malawi, and the type locality is Mount Zomba. The species is considered common within its range. In towns such as Blantyre in Malawi, the animals are often seen in gardens and on roads, especially in the rainy season.

The climate varies between populations. If the animal's area of origin is known, conditions can be matched more closely.

> **Native range:** Malawi, Mozambique and Tanzania.

HABITAT

The species lives in bushy savannas, forest edges and open woodland, where it stays high up in trees and bushes. It moves slowly around the branch so that the branch is always between it and an observer. Its eyesight is sharp, and it spots danger from a long way off.

The climate has a rainy season from October to May and a dry season for the rest of the year. Day length is close to 12 hours all year and at most about 13 hours in December. In Tanzania, daytime temperatures in the rainy season reach about 32 °C and nights are 21-23 °C. In the dry season it is 27-28 °C by day and 16-17 °C at night. Malawi is slightly cooler, with up to about 29 °C by day and 20 °C at night in the rainy season and about 24 °C by day and 14-15 °C at night in the dry season. In the rainy season the males go looking for females and the females seek nest sites, so the animals spend more time on the ground.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 120 × 90 × 150 cm (length × width × height), and bigger is better. The species grows large and heavy, and a whole room or a large aviary is not too much. Young animals can live in 60 × 60 × 60 cm for a short period but quickly outgrow it. Keep one animal per enclosure, females too, and the animals must not be able to see each other. Free-ranging in a large room with several separate basking spots and watering points is an option for the experienced keeper, but it demands a lot of space and supervision.

Choose a mesh enclosure with a metal or wooden frame, so that ventilation is good and mould cannot take hold in the high night-time humidity. Place the enclosure high enough that the animal's eyes are above yours, as this helps it stay calm.

Furnish it with many sturdy branches and vines at several heights, large live plants such as ficus and pothos, and both an open basking area and shaded, dense areas. The branches must be able to carry a heavy animal. Do not use soil or moss as a substrate, as they hold on to water; a solid base with a drain and a bucket underneath removes excess water.

Read more: Humidity, misting and ventilation

TEMPERATURE

The daytime temperature in the enclosure should be 22-28 °C, and 29-32 °C at the basking spot under the lamp. Animals from coastal Tanzania do best at the warm end of the range. At night the temperature should drop to 15-20 °C. The clear drop between day and night is part of the species' rhythm, and a warm flat may require cooling in summer.

Too much heat dries the animal out and causes heat stress, while too low a temperature disturbs digestion. Hang the heat lamp above the enclosure at a distance where the heat is gentle, and check the basking spot's surface temperature with an IR thermometer. Chameleons are poor at sensing burns, so start too low rather than too high.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should follow the daily cycle: 40-50 % by day and over 90 % at night. Constant humidity causes respiratory infections and fungal problems, so all surfaces must dry out during the day. Provide air movement when humidity is high.

Night-time humidity is created with a fogger or an ultrasonic humidifier and misting. The animal drinks water droplets from the leaves, not from a bowl, and is a slow drinker. A drip system with a large water reservoir or a sprinkler system ensures that droplets are available several times a day. The animal needs plenty of water every day, as it declines quickly if the water fails. Two digital hygrometers at opposite ends of the enclosure show whether the daily rhythm is holding.

LIGHTING AND UVB

The species is diurnal and needs strong light for 12 hours a day. Use a T5 HO UVB tube in a single reflector along the length of the enclosure, and supplement with full-spectrum or plant lighting so that the plants thrive.

UVB is necessary for calcium uptake. The species is placed in Ferguson zone 2: it basks occasionally and otherwise sits in partial shade. Aim for a UV index of 2-3 at the basking branch and lower in the rest of the enclosure. The distance depends on the tube: a 6 % tube sits about 15 cm from the basking branch, a 12 % tube at least 30 cm. The animal must be able to retreat into shade. Check with a UV meter, and replace the tube according to the manufacturer's instructions.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

T. melleri is insectivorous. Offer varied, large feeder insects: crickets, grasshoppers, cockroaches, silkworm pupae, stick insects and black soldier fly larvae. The species may take small vertebrates in the wild, but this is not necessary in captivity.

Juveniles are fed fruit flies and small crickets several times a day and switch after about three weeks to houseflies and larger crickets. Adults get 1-2 large insects daily or every other day. Offer the food with tweezers among branches and leaves, so that the animal hunts naturally and does not swallow substrate.

The feeder insects must be gut-loaded with greens and grain. Dust most meals with calcium without D3, give calcium with D3 about once a week and a multivitamin no more than once a month. The species tolerates overdosing poorly and can develop oedema.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The species is kept singly for life. Males are strongly territorial, and even a pair in a large enclosure causes problems; two animals are brought together only briefly for mating. The female is slightly milder but not suited to group housing either.

The animal is a display animal and not a pet. Towards people it can be shy or moderately aggressive and shows this by gaping, puffing itself up and turning dark. Give a new animal 1-2 weeks of peace and avoid handling unless necessary. Stress shows as dark spots and black marbling, and in the long run it leads to illness.

Breeding

SEXUAL MATURITY AND SEXING

The female is slightly smaller than the male and has a smaller central ridge in front of the eyes and weaker dorsal crest and occipital lobes. The male is sturdier and has larger occipital lobes. Age and weight at first breeding are not documented.

Females can store sperm and lay several clutches months after a single mating.

MATING

Breeding is difficult and requires very stable conditions. The rainy and dry seasons in the wild create a seasonal rhythm, and mating follows the rainy season, when the males seek out the females. The animals must not be kept together as a pair. Take the female to the male's enclosure and separate the animals as soon as mating is over or the female rejects him. A pair kept together permanently rarely shows good mating behaviour.

EGG-LAYING AND CLUTCHES

The female lays one clutch a year of 15-80 eggs. The gravid female turns black, cream and grey and becomes visibly rounded. Give her a laying container about 30 cm deep, filled with moist sand or perlite so that she can dig. Without a suitable site she may retain the eggs, which can be fatal.

After laying, the female needs nourishing food and extra calcium to recover.

INCUBATION

The eggs are moved to an incubator with a moist, airy substrate such as perlite or vermiculite. The temperature should be stable at 24-26 °C and the humidity about 70 %. Incubation takes 6-9 months. Fluctuations in conditions cause dead embryos, so use a thermostat and check daily.

Whether a cool period during incubation helps, as in several other chameleons, is not known.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched young are about 10 cm long. They need small feeder insects, fruit flies and small crickets several times a day for the first three weeks, then houseflies and larger crickets. Dust the food with calcium so that the skeleton develops properly.

Keep each young animal separately in a hybrid enclosure with the same climate as the adults, with high night-time humidity and plenty of foliage. The young animals are moved up to larger enclosures as they grow.

Health and common mistakes

Typical problems and husbandry errors:

- Parasites in wild-caught animals, both intestinal worms and filarial worms under the skin. Medical deworming that kills all the filariae at once can cause a life-threatening shock, and surgical removal is often safer. The animal should therefore always be captive-bred.
- Dehydration if dripping or misting fails; the species declines faster than many other chameleons.
- Respiratory infections and fungal problems with constant high humidity and still air.
- Metabolic bone disease (MBD) from too little UVB or calcium.
- Oedema and injuries from overdosing vitamins, especially A and D3.
- Burns from the heat lamp.
- Egg binding in females without a suitable laying site.

Weigh the animal every month. Contact a vet experienced with reptiles if the animal stops eating or becomes limp, dark in colour 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.