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CHAMELEONS

Jackson's Chameleon

Trioceros jacksonii

Trioceros jacksonii is a medium-sized chameleon from the mountain forests of Kenya and Tanzania. The male bears three forward-pointing horns, and the female gives birth to live young instead of laying eggs. The species needs cool nights, high night-time humidity and careful care, so it is mostly for the experienced keeper.

Family: Chamaeleonidae Former name: *Chamaeleo jacksonii; Chamaeleon jacksonii*

KEY FACTS

THE ANIMAL

Adult size	**15-38 cm** total length incl. tail
Lifespan	**5-9 years**
Active	**By day**
Lifestyle	**Arboreal**
Habitat	**Montane forest**
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 60 × 120 cm** L × W × H for 1 adult
Temperature, day	**20-24 °C**
Basking spot	**27-30 °C**
Temperature, night	**10-15 °C**
Humidity	**40-100%**
UVB	**Essential** Ferguson zone 3
Diet	**Insects**
Kept	**Singly**

BREEDING

Reproduction	**Live-bearing**
Sexually mature	**5-12 months**
Litter size	**8-30 young**
Gestation	**150-180 days**

PROTECTION AND PAPERWORK

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

About the species

Trioceros jacksonii is a medium-sized, arboreal chameleon. Adults typically measure 15-25 cm. The male grows to 38 cm and bears three forward-pointing horns on the head. The female reaches at most about 25 cm and has no horns or only small ones. The ground colour is light green with darker markings, and the colours change with mood, temperature and intent, not with the surroundings.

The species consists of three subspecies. *T. j. xantholophus* from the Mount Kenya area is the largest and the one seen most often in the trade. The female has no horns. *T. j. jacksonii* covers the other Kenyan populations, which are varied and reach 20-25 cm; the females have one or three small horns, and the subspecies will probably be divided further. *T. j. merumontanus* from Mount Meru is the smallest, 17-20 cm, and has long, slender horns in proportion to the body. The female has one small horn. The subspecies is rare in captivity.

At the jaw joint there is a temporal gland that gives off a sharp smell. It is probably used to lure insects and to deter predators. The gland can become inflamed when the immune system is weakened, so the mouth should be checked regularly.

T. j. xanthолophus was introduced to Hawaii in 1972. The population there descends from about 36 animals, and the narrow stock shows as smaller animals and crooked horns. In the USA most animals in the trade come from Hawaii, while the animals in Europe come from Africa.

The species is less territorial than many other chameleons, and conflicts consist mostly of threats. Young animals are often more ready to defend themselves than adults. Body language is more subdued than in many other chameleons, and this makes stress easy to overlook.

Distribution and habitat

Trioceros jacksonii lives in southern and central Kenya and in northern Tanzania. In Kenya the species is found in the highlands around Nairobi and Kikuyu, in the central highlands and on Mount Kenya. In Tanzania it is found only on Mount Meru, where the subspecies *T. j. merumontanus* lives.

In Hawaii, California, Florida and a few other places there are introduced populations of *T. j. xanthолophus*, and in Hawaii it is an invasive species. They are not part of the species' natural range.

> **Native range:** Kenya and Tanzania.

HABITAT

The species lives in forest and forest edge, scrub and gardens in humid mountain areas, typically at 1,600-2,440 m elevation. Rainfall is seasonal and over 1,270 mm a year, with two rainy seasons and two dry seasons. The daytime temperature is most often 16-27 °C, and nights are cool, down to about 4-18 °C.

Humidity follows a clear daily rhythm. At night it rises towards 100 %, and mist lays dew on the leaves. By day it falls to about 30-50 %. Live-bearing is probably linked to the cool highland climate. The species also manages close to people, in hedges, small trees, gardens and plantations.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

An adult needs a terrarium of at least 60 × 60 × 120 cm (length × width × height). Height matters more than floor area, because the species uses the full height. Juveniles thrive in 40 × 40 × 75 cm until they are 10-12 months old and are then moved up. Males and females are kept separately. In the breeding season the male becomes restless, especially when a female is in sight, and then no terrarium is large enough.

Mesh or hybrid terrariums give good ventilation. Three closed sides retain night-time humidity better than a pure mesh terrarium. Stagnant air causes bacterial growth and respiratory infections, so a small fan is necessary if the air stands still.

Furnish the terrarium 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 crucial to its well-being. Use thin branches, cork and natural vines crossing each other at several heights. Artificial vines must not be used. Live plants such as rubber plant and pothos give cover and retain humidity. A substrate is not necessary. A drain in the base with a bucket underneath removes the excess water, so no dirty water stands in the terrarium.

TEMPERATURE

The species is a highland animal and tolerates heat badly. The daytime temperature in the terrarium should be 20-24 °C. At the basking spot under the lamp it should be 27-30 °C. Signs of heat stress are seen as soon as the whole terrarium rises above 27 °C.

The night temperature should fall to 10-15 °C, that is, 5-10 °C below the daytime temperature. Without a clear drop the animal is gradually weakened, probably because its rest becomes too poor. In a warm flat air conditioning may be necessary.

Hang the heat lamp above the terrarium instead of on the lid and use a stronger bulb at a greater distance, so the heat becomes gentle. Chameleons sense burns poorly. Test with the back of your hand where the animal's head sits. If the animal sits under the bulb for more than half an hour, hangs in the mesh under the lamp or stays dark and sluggish, the basking spot

is too cold. Too much heat shows first as damage: grey, burnt patches, sores and melted dorsal spines. It is therefore better to start too low than too high.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should follow the species' daily rhythm: about 90-100 % at night and 40-50 % by day. A constant 60-80 % is not correct and can make the animal ill. All surfaces must be dry during the day. Branches that are constantly wet cause sores on the feet and are a breeding ground for bacteria and mould.

Place two digital hygrometers, one at each end of the terrarium. Mist from an ultrasonic fogger and a spray bottle or a sprinkler system at night create the night-time humidity. Dew on the leaves just before the light comes on gives the animal the chance to drink in the morning. The air must be moving while the humidity is high. Do not run the fogger while the heat lamp is on, and use distilled water in the fogger.

The animal drinks water droplets from the leaves, not from a dish. A dripper that runs for a few hours late in the afternoon is an extra option. Misting by day is not necessary, and the species does not like being sprayed directly.

LIGHTING AND UVB

The species is diurnal and needs a lot of light. A T5 HO tube of 6500 K or a powerful LED lamp across the whole width of the terrarium provides the light. The day length is 12 hours all year, because Kenya lies close to the equator.

UVB is necessary. Use a T5 HO UVB tube in a single reflector and aim for a UV index of 3-4 at the basking spot, at most about 6. The species is counted in Ferguson zone 2-3. The subspecies *T. j. merumontanus* lives higher and needs at least 4. The index depends on the distance and on how much mesh lies between tube and animal, so a UV meter is a great help. The animal must be able to retreat down into the shade under the leaves.

Direct sunlight through a window is strong and can overheat the animal. UVB tubes are replaced according to the manufacturer's instructions, because output falls with age.

Read more: Lighting and UVB

FEEDING

T. jacksonii is insectivorous. Prey must be no larger than the distance between the eyes. Vary the food: grasshoppers, crickets, cockroach nymphs, flies and small beetles. Mealworms, waxworms and superworms are treats, at most once a week. Adult cockroaches are too rich in uric acid and can cause gout. Insects from the wild must not be used.

Young up to three months should have all the food they can eat, twice a day. At 3-6 months it is 10-12 small insects daily, at 6-12 months 8-10 medium-sized insects daily. Adults get 3-8 insects every other day. Obesity is common and causes problems for females. Gravid females get slightly more, for example five insects every other day.

The feeder insects must themselves have a rich diet of vegetables and grain. Calcium without D3 is dusted on every feeding. The rest of the D3 requirement is covered by UVB. A multivitamin is given only sparingly, with low vitamin A and D3 content, because the species is sensitive to overdosing and can develop oedema. An animal that will only take its favourite food is usually full. Skip a meal and offer the regular food again.

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

BEHAVIOUR AND HANDLING

The species is kept singly for life. Males are territorial and should never be able to see each other. Two animals are only brought together when a female is taken to a male for mating.

The animal is calm, and most tolerate a short trip out of the terrarium, but the species is a display animal, not a pet. Give a new chameleon 1-2 weeks in peace. Afterwards train it to take food from the hand or tweezers, and let it climb onto the hand itself. Never grab it, because the ribs are fragile. At most 5-10 minutes of handling 1-2 times a week is plenty.

Body language is subdued. Bright colours and an open mouth mean threat. Dull colours mean calm or submission. Almost black is a sign of illness or stress.

Breeding

SEXUAL MATURITY AND SEXING

The male can be recognised by the three horns. Females of *T. j. xantholophus* have no horns, while females of *T. j. jacksonii* have one or three small horns and females of *T. j. merumontanus* one. The male grows larger than the female. Sexual maturity is reached after 5-12 months, and the animals are fully grown at about one year. The female must not be overweight, because the fat pads at the hips can press on the oviducts and make birth difficult.

Females that have been with a male can give birth to young for up to two years afterwards, even without a new mating. If there is a female in the house, young can suddenly appear.

MATING

There is no fixed breeding season. The species comes from an area with two rainy seasons and two dry seasons a year, and mating occurs all year, with the most frequent activity in spring and early summer. A female that is receptive lets the male climb onto her. If she is not ready, she gapes, sways threateningly and shows spotted colours.

Take the female to the male's terrarium, and separate the animals when mating is over or the female shows rejection. The male becomes restless and climbs constantly on the sides when a female is in sight.

EGG-LAYING AND CLUTCHES

The species is live-bearing. The female carries the eggs inside her body, and the young are born in a thin membrane shortly before they would have hatched. Gestation lasts about 5-6 months, and a litter is 8-30 young. In *T. j. merumontanus* the litter is 5-10. The female can have several litters after one mating.

The female stops eating a couple of days before birth. This is a sign that the young are on the way. During gestation she should have slightly more food than usual, and the terrarium should have the same conditions as before. A laying box is not needed.

INCUBATION

There is no incubation, because the eggs develop inside the female's body. The temperature in the terrarium must be the same as usual, with cool nights and high night-time humidity, because the female's condition during gestation determines the health of the young. Gestation lasts about 5-6 months.

Along with the young the female can pass unfertilised eggs, and she may have difficulty getting rid of them if she is overweight. If the female is tense, dark and stops eating without giving birth, she must see a vet.

Read more: Incubating eggs

REARING THE YOUNG

Newborn young are not as hardy as the young of many other chameleons. The young are kept in a mesh or hybrid terrarium of 40 × 40 × 75 cm with the same climate as the adults and with plenty of foliage and many branches. Feed them generously twice a day, with small insects such as flies and small crickets. A newborn can eat up to 20 of them a day. Dust the food with calcium.

Young born at an importer after a wild-caught mother have seldom had the same good start as young from an experienced breeder. Plan where the young are to go before a female is mated. Animals from Kenya and from Hawaii should not be crossed if you want to keep the stocks pure.

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

Health and common mistakes

Typical problems and care mistakes:

- Respiratory infections: frequent yawning, open-mouth breathing, a red mouth. Usually caused by stagnant air, surfaces that are too wet or a night temperature that is too low.
- Inflammation of the temporal gland at the jaw joint when the immune system is weakened. Check the mouth regularly.
- Metabolic bone disease (MBD) from too little UVB or calcium. The animal develops soft jaws, uneven limbs and crooked horns.
- Oedema from overdosing with vitamins, especially A and D3. Give only a little multivitamin.
- Burns from the heat bulb: grey patches, sores and melted dorsal spines.
- Foot sores and mould from constantly wet branches and dirty terrariums.

- Obesity and difficulty giving birth in females. The oviducts are squeezed by the fat pads.
- Gout from frequent feeding of adult cockroaches.

Weigh the animal every month. A weight loss of 10 % or more suggests illness. Contact a vet experienced with reptiles if the animal stops eating, turns dark, becomes 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.