Chameleon expedition to the northern mountain regions of Tanzania

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Report

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With currently 47 species, Tanzania is the country with the second-largest chameleon diversity in the world after Madagascar (reptile-database.de, as of February 2024). The aim of the expedition was to explore the northern mountain regions of the country for chameleons and, above all, to find the local endemic species, to update their distribution area and to assess the threat situation.

Arusha National Park

We were able to find the first chameleons of our expedition in the garden of our accommodation, African View Lodge. It was the Kilimanjaro two-horned chamaeleon *Kinyongia tavetana* (STEINDACHNER, 1891) and we were able to find it at night at a height of approx. 3 - 6 m in the bushes and trees on the lodge grounds and also at a nearby stream. Among them were individual, particularly magnificent males with bright red nose extensions, which we had not yet seen in this form. The species also lives at the foot of Kilimanjaro and, as a cultural follower, can also cope with habitats that are heavily anthropogenically influenced.

Within the national park we have intensively searched for chameleons both in the bush savannah and on Mt. Meru at approx. 2500 to 2700 m above sea level, but unfortunately without success. Since we were not allowed to enter the national park at night, we could only search during the day, which significantly reduces the chances of discovering these camouflage artists.

On the drive to the airport towards the end of the trip, a flapneck chameleon *Chamaeleo dilepis* was seen crossing the road. This species is widespread in the lowlands of Central Africa and also inhabits drier habitats such as savannahs.

Found chameleon species:

- *Kinyongia tavetana*

- *Chamaeleo dilepis*

Lushoto – West Usambara Mountains

The West Usambaras have been populated and used for timber production since colonial times due to the pleasant climate and low risk of malaria. Accordingly, the jungle had to give way to fast-growing eucalyptus forests, which cannot be inhabited by most chameleon species. Lushoto, formerly Wilhelmstal, is located at 1380 m above sea level and with the help of a data logger,

temperature and relative humidity were measured over two days in order to better understand the climatic needs of the mountain chameleons. This shows that during the day at a maximum measured 26.2 °C (in the shade), the cold-blooded animals can easily reach "operating temperature", but at night they can save energy at a minimum of 11.9 °C and at over 90% rel. humidity can also minimize your water consumption or even absorb water. The species density of chameleons is highest in mountainous regions - in contrast to most other reptile taxa.

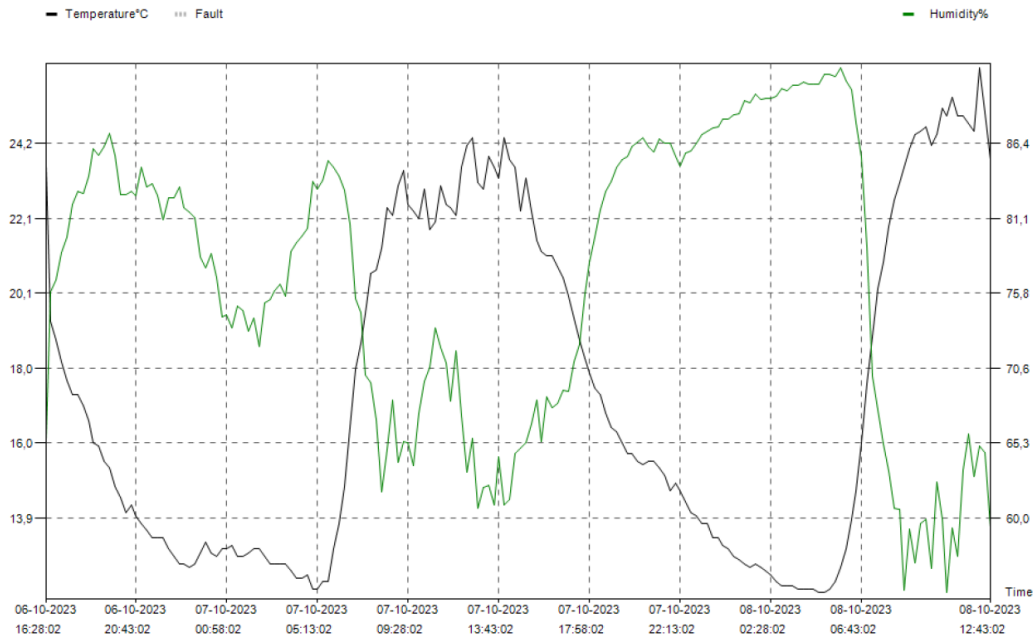

Figure 1: Data logger temperature and relative humidity in Lushoto over two days in sunny weather

Our search began on the first night in the hotel garden and again we were able to find a *Kinyongia* species with horned males, here the West Usambara two-horned chamaeleon *Kinyongia multituberculata* (NIEDEN, 1913). This medium-sized species is quite common and, thanks to a local guide, we were even able to spot it in bushes next to a road during the day. At a higher altitude, near a view point (1830 m above sea level), we found an unusually black and white colored and slightly smaller variant of a male animal. Further investigations must show whether it is just a color variant or possibly a genetically differentiated mining population.

Again further down in the valley at approx. 800 m above sea level the local guide Abu showed us a pair of Africa's largest chameleon species, Meller's chameleon *Trioceros melleri* (GRAY, 1865). These chameleons, up to 60 cm long, live in tall mango trees in slightly wetter valleys at the foot of the West Usambaras. During the day we were able to observe a young male shooting flies at a height of approx. 10 m.

The mountains of the West Usambaras have now been largely deforested and only small remnants of the original forest can be found. One such forest patch is Magamba Forest, near Lushoto. Here we wanted to find the rosette-nosed pygmy chameleon *Rhampholeon spinosus* (MATSCHIE, 1892) - a bizarre-looking species of stub-tailed chameleon. After a long search, we found several specimens, including a young animal with a head and torso length of approx. 15 mm. Surprisingly, this species lived on thin branches on trees at a height of 2 - 4 m - an unusual habitat for stump-tailed chameleons. The ecological niche on the forest floor was therefore still unoccupied and no other chameleon species were known from this forest. There should be a ground-dwelling species here too, so we specifically set out to search in a particularly moist habitat near a stream. And we were actually able to find another species of stub-tailed chameleon, previously unknown in this area, on

fern stems a few centimeters above the ground: *Rhampholeon* cf. *temporalis* (MATSCHIE, 1892). This is a new record of this species for Western Usambara or it could even be a new species - further investigation is required.

Found chameleon species:

- *Kinyongia multituberculata*

- *Trioceros melleri*

- *Rhampholeon spinosus*

- *Rhampholeon* cf. *temporalis*

Amani – East Usambara Mountains

In the area around our accommodation, the Emau Hill Resort, we were able to spot the Usambara stumptail chameleon *Rhampholeon temporalis* (the "real ones", because the holotype comes from this region, i.e. this is where the species was described) and the wavy chameleon *Trioceros deremensis* (MATSCHIE, 1892) - a spectacular medium-sized species with a dorsal sail and three horns in the males. Emau Hill lies at 1030 m above sea level and, despite this relatively low altitude, already has a typical montane climate with warm, dry days and cool, damp nights - as many chameleon species prefer.

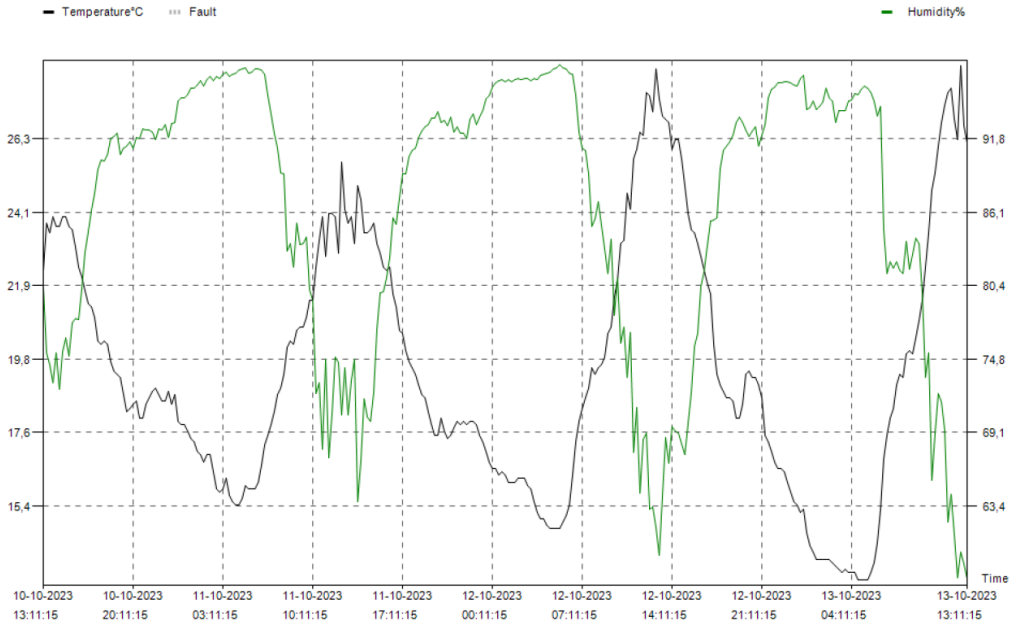

Figure 2: Data logger temperature and relative humidity in Emau Hills over three days in sunny weather

The nighttime search at approx. 800 m above sea level yielded additional chameleon species. On the one hand, the widespread *Chamaeleo dilepis*, which has now penetrated the originally dense forest of the East Usmabaras due to deforestation. On the other hand, the Usambara soft-horned chameleon *Kinyongia tenuis* (MATSCHIE, 1892), *Rhampholeon spinosus* and the locally endemic species the Matschie's two-horned chamaeleon *Kinyongia matschiei* (WERNER, 1895). Thanks to the very motivated and well-informed guide Rasta, we were able to admire adult male three-horned chameleons near Amani Hill and photograph another species of stubby-tailed chameleon, the Bearded pygmy chameleon *Rieppeleon brevicaudatus* (MATSCHIE, 1892), with surprisingly colorful

markings. The most difficult to find was the last local endemic species on our list, the Vosseler's chameleon *Kinyongia vosseleri* (NIEDEN, 1913). But here too, Rasta knew the right habitat and we were able to find two males, two females and a young animal in the tall grass.

Found chameleon species:

- *Chamaeleo dilepis*

- *Kinyongia tenuis*

- *Kinyongia matschiei*

- *Kinyongia vosseleri*

- *Trioceros deremensis*

- *Rieppeleon brevicaudatus*

- *Rhampholeon spinosus*

- *Rhampholeon temporalis*

Although we were able to find eleven chameleon species and all local endemic chameleon species in high densities, their habitat is becoming smaller and smaller and we sometimes had to travel long distances to find original primary rainforest. Most Usambara chameleon species rely on pristine rainforest that is as undisturbed as possible. Only a few species can survive in secondary forest or plantations. Unfortunately, the screeching of chainsaws could be heard almost constantly during our stay and we were able to find numerous freshly felled jungle giants that the local population used to make firewood. Tanzania's montane forests have many times higher biodiversity than the famous Serengeti or other national parks in the savannah and deserve more attention and better protection to preserve the last remnants of the forest.