

A POCKET GUIDE TO THE

*Chameleons
of
Uganda*



Mathias Behangana
Daniel F. Hughes



Table of Contents

Acknowledgements	3
Introduction to the Guide	4–5
Chameleon Conservation	6
Uganda's Protected Areas	7
Chameleon Habitats.....	8–9

Savannah Chameleons (*Chamaeleo*)

Flap-necked Chameleon (<i>C. dilepis</i>).....	10–13
Slender Chameleon (<i>C. gracilis</i>)	14–17
Smooth Chameleon (<i>C. laevigatus</i>)	18–21

Forest Chameleons (*Kinyongia*)

Rwenzori Helmeted Chameleon (<i>K. carpenteri</i>).....	22–25
Tolley's Forest Chameleon (<i>K. toleyae</i>).....	26–29
Rwenzori Plate-nosed Chameleon (<i>K. xenorhina</i>)	30–33

Pygmy Chameleons (*Rhampholeon*)

Boulenger's Pygmy Chameleon (<i>R. boulengeri</i>)	34–37
--	-------

Side-striped Chameleons (*Trioceros*)

Sudanese Unicorn Chameleon (<i>T. conirostratus</i>)	38–41
Elliot's Groove-throated Chameleon (<i>T. ellioti</i>)	42–45
Kenyan High-casqued Chameleon (<i>T. hoehnelii</i>)	46–49
Ituri Forest Chameleon (<i>T. ituriensis</i>).....	50–53
Johnston's 3-horned Chameleon (<i>T. johnstoni</i>)	54–57
Rwenzori Bearded Chameleon (<i>T. rudis</i>).....	58–61

What is Herpetology	62
About the Authors	63

Acknowledgements

This guide would not have been possible without the generous support of our sponsors: Uganda Wildlife Authority, Wildlife Conservation Society, Nature Uganda, and U.S. Agency for International Development. We owe a huge thanks to Eli Greenbaum for his excellent mentorship and initiating our longterm collaboration. We thank Lukwago Wilber, Isingoma Joseph, and Katabazi Bob for help during fieldwork. We are indebted to Colin Tilbury and Waswa Sadic for sharing their chameleon data. Lastly, we want to thank Grace Nangendo and Sam Ayebare at WCS for help creating the maps.

Uganda Wildlife Authority

Plot 7 Kira Road, Kamwokya
P.O. BOX 3530, Kampala, Uganda
+256 414 355000



Wildlife Conservation Society

2300 Southern Boulevard
Bronx, New York 10460, USA
+1 (718) 220-5100



Nature Uganda

Plot 1 Katalima Crescent, Lower Naguru
P.O BOX 27034, Kampala, Uganda
+256 414 540719



U.S. Agency for International Development

Ronald Reagan Building
Washington, DC 20523, USA
+1 (202) 712-4810



Introduction to the Guide

Chameleons have long been admired for their unique appearance and remarkable ability to change colors. The first writings on chameleons can be traced back to Aristotle (350 BC), where he regarded them as similar to lizards, but also akin to fish, baboons, and crocodiles. Chameleons have laterally compressed bodies, a prehensile tail that does not regenerate, a telescopic tongue that is longer than their bodies, zygodactylous feet, eyes that move independently, and an unmatched ability to change color. Many people are afraid of chameleons in Uganda, some cultures believe that they bring bad luck, while others believe that they are venomous. In reality, all chameleons are completely harmless and beneficial because they eat insects, including pest species. It is hoped that this pocket guide will help readers better know and understand the chameleons in Uganda.

There are currently 213 species of chameleons in the world, with the highest concentrations of species in Madagascar (almost 50%) and in the highlands of East Africa. Chameleons are found in a wide variety of habitats, including deserts, forests, savannahs, and mountains. The conservation status for these lizards is bleak—over 30% are threatened with extinction. Habitat alteration is the most direct and ubiquitous threat to chameleons. Chameleons are also popular in the pet trade, which provides incentive for poachers. During 2000 to 2006, almost 12,000 chameleons were exported from Uganda. Many trafficked chameleons are harvested from the wild and traded unlawfully, which is done by using a pseudonym for the real species name, something we hope to curtail with the publication of this guide.

Uganda is home to 13 chameleon species across 4 genera. Two of the species in Uganda (*Kinyongia carpenteri* and *K. xenorhina*) are endemic to the Rwenzori Mountains and both are considered Near Threatened with declining populations.

One species previously regarded to occur in Uganda (*Trioceros bitaeniatus*) is not included in this guide because we could not track down reliable records of its occurrence in the country and we suggest that previous claims were likely misidentified specimens of similar species. We have added two species to the list of chameleons that occur in Uganda (*Trioceros conirostratus* and *T. ituriensis*) following the discovery of previously unknown populations for both species from new localities during our fieldwork. We have also included one species (*Chamaeleo dilepis*) that was recorded in 2010 on Lolui Island from Lake Victoria, Uganda, but may also be in far eastern Uganda.

This guide is a reference for non-experts, conservationists, chameleon fans, and tourists that want to identify the wonderful chameleon species that live in Uganda. Our guide is likely incomplete, especially the distribution maps because many more records are needed. However, we are optimistic that chameleon research in Uganda has just begun. Continued financial support of research and conservation organizations will help shed light on these rare lizards in the *Pearl of Africa*.



Sudanese Unicorn Chameleon (*T. conirostratus*) – Male
Photo by Daniel F. Hughes

Chameleon Conservation

Chameleons are facing serious threats from climate change, habitat loss, and overharvesting for the pet trade. An assessment by the International Union for the Conservation of Nature (IUCN) Red list of Threatened Species estimated that 66 (36%) of the world's chameleon species are threatened with extinction, and many Central African species are too poorly known to provide a conservation assessment. Several factors have contributed to chameleon declines, especially deforestation. Rates of tropical deforestation rose 58% from the 1990s to the 2000s. All chameleons are protected by the Convention on International Trade of Endangered Species (CITES), so special permits are required to harvest any species. Nevertheless, the exploitation of wild chameleons for the pet trade is major threat to their survival. Up to 81,000 chameleons were exported to the global market in 2001 alone.

Protection of individual species via CITES is important, but the protection of whole habitats for chameleons will have more wide-reaching impacts on biodiversity conservation. Montane regions, such as the Albertine Rift in western Uganda, are globally important in terms of biodiversity. These forested highlands harbor high levels of vertebrate diversity, including many chameleon species and should be afforded the highest levels of protection. The network of protected areas established by the Uganda Wildlife Authority (UWA) provides critical protection of habitats for many of Uganda's rarest chameleon species. Chameleon farms can also conserve wild chameleons and help local economies.

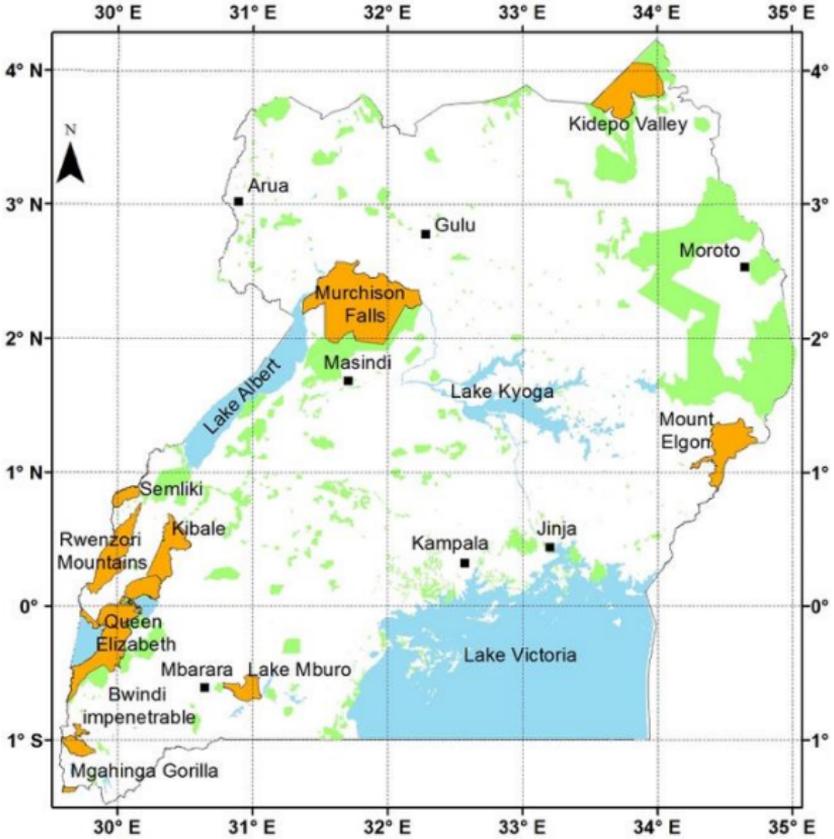
If you are interested in how you can support chameleon conservation in Uganda, check out the websites listed below:

IUCN Red List: <https://www.iucnredlist.org/>

CITES: <https://www.cites.org/>

UWA: <https://www.ugandawildlife.org/>

Uganda's Protected Areas



Legend

- Major towns
- Orange National parks
- Light Green Other Protected areas
- Light Blue Water bodies
- White International boundary



Chameleon Habitats



Montane rainforest in the Rwenzori Mountains

Photo by Daniel F. Hughes



Mid-elevation riparian forest near the Rwenzori Mountains

Photo by Daniel F. Hughes



Lowland wooded savannah near Murchison Falls
Photo by Daniel F. Hughes



Montane grassland with shrubs near Kidepo Valley
Photo by Daniel F. Hughes



Flap-necked Chameleon (*C. dilepis*) – Female
Photo by Bernard Dupont



Flap-necked Chameleon (*C. dilepis*) – Female
Photo by Bernard Dupont

Flap-necked Chameleon

Chamaeleo dilepis

Size—Up to 43 cm in total length (body 13 cm + tail 12 cm).

Range—Known only from Lolui Island in Lake Victoria. Possibly in extreme eastern Uganda.

Description—A large chameleon that is generally shades of green but can be brown, yellow, red, or even grey. This species has large ear-like flaps behind its head. The tail is about the same length as the body. The body can have broad vertical bars that are dark green. A crest of white spikes runs from the throat onto the belly. There is a lateral white stripe that starts behind the arms and ends just past mid-body. The animal will hiss, bite, and raise ear flaps when handled.

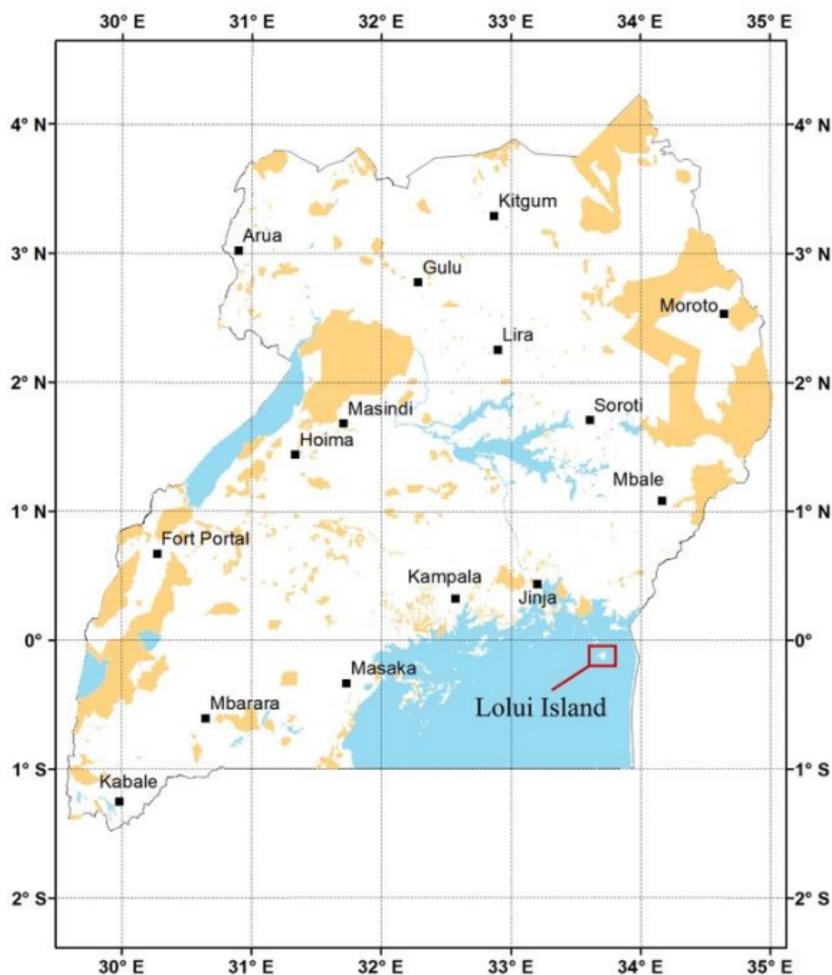
Habitat—Lives in bushes and shrubs, but can be found on the ground, usually while crossing roads during the day. Inhabits savannahs, woodlands, and thickets. Typically found in arid lowlands. Common in savannah habitats across Tanzania and in southern Kenya, also around the eastern and southern shores of Lake Victoria.

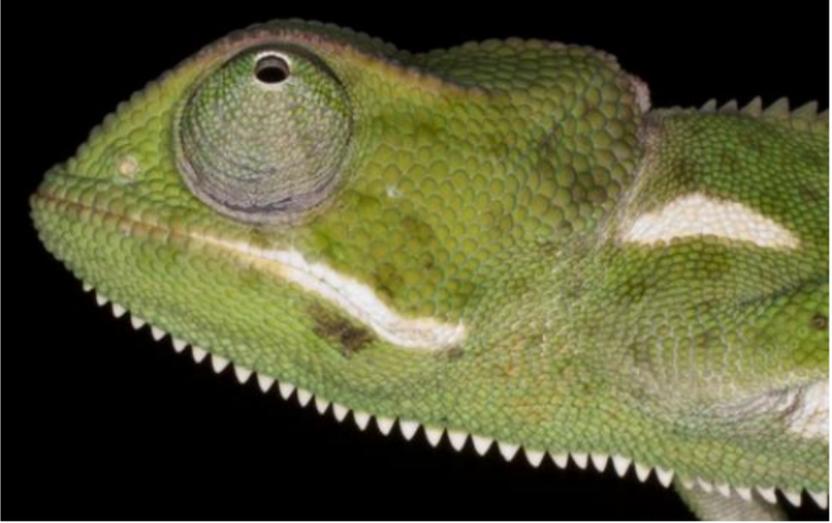
Reproduction—An egg-laying species. Females usually lay 20 to 40 eggs. The eggs often hatch after a few months.

Conservation—This species was reported on Lolui Island and may be present in far eastern Uganda outside of protected areas. Ugandan populations are likely few, so they would be significantly affected by trade, despite a low conservation status for the species range wide. Trade should be highly regulated in Uganda until an assessment of their distribution and abundance has been undertaken. IUCN Redlist – Least Concern; Country – Data Deficient.

Flap-necked Chameleon

Chamaeleo dilepis





Flap-necked Chameleon (*C. dilepis*) – Male
Photo by Brian Gratwick



Flap-necked Chameleon (*C. dilepis*) – Female
Photo by Bernard Dupont



Graceful Chameleon (*C. gracilis*) – Male
Photo by Daniel F. Hughes



Graceful Chameleon (*C. gracilis*) – Female
Photo by Daniel F. Hughes

Graceful Chameleon

Chamaeleo gracilis

Size—Up to 37 cm in total length (body 19 cm + tail 18 cm).

Range—Widespread in the Northern and Eastern regions of Uganda. Common in Karamoja, Acholi, and West-Nile.

Description—A large chameleon with a broad head that is raised towards the body of the animal. The tail is about the same length as the body. The body color is typically green or yellow-green but will become dark when the animal is stressed. Often the body has many black spots when the animal is stressed. A large white stripe is usually present on both sides of the body, just behind the front limbs. When handled, the animal will open its mouth, bite, and inflate its body, sometimes making a hissing sound. A crest of spines extends from under the mouth onto the underside of the body.

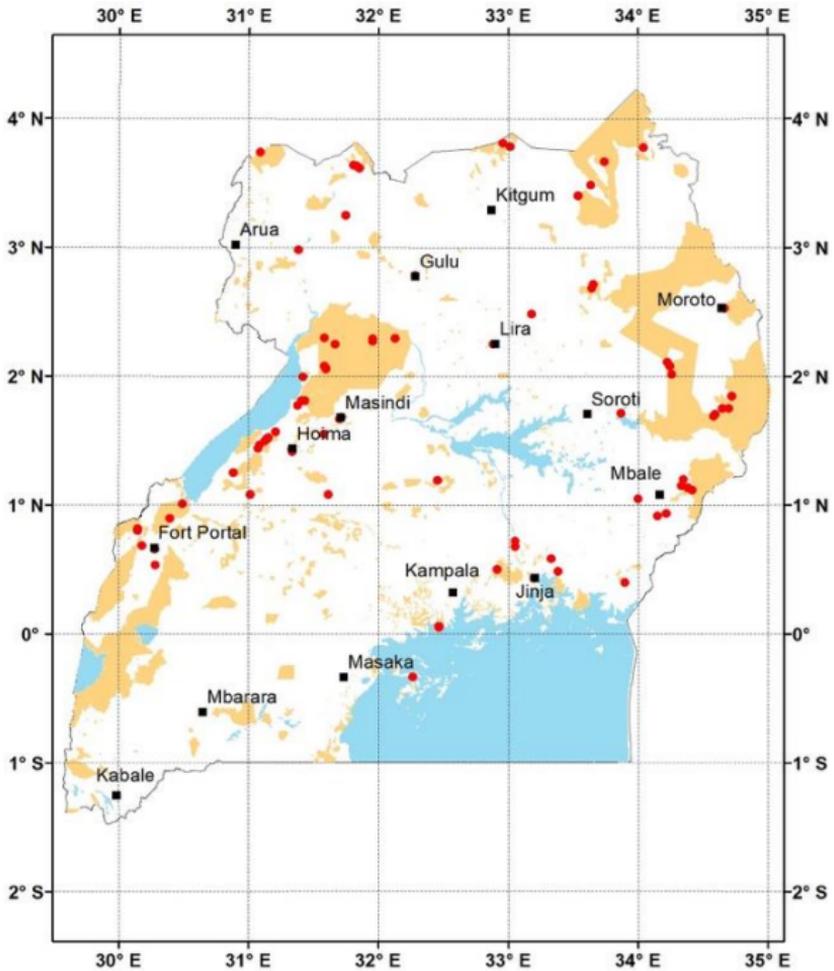
Habitat—Found mostly in arid regions and savannahs, with a preference for dry woodlands and acacia trees. It can be commonly found crossing roads during the day.

Reproduction—An egg-laying species. Egg-laying likely occurs near the end of the rainy season. Eggs are buried in the ground and gestation can be up to 219 days. Recent hatchlings were found in April and May in Karamoja.

Conservation—Widespread in arid lowland habitats across Northern and Eastern Uganda. This species is likely to be unaffected by trade in Uganda and populations are presumably stable. However, large females with eggs should not be collected. IUCN Redlist – Least Concern; Country – Least Concern.

Graceful Chameleon

Chamaeleo gracilis





Graceful Chameleon (*C. gracilis*) – Female
Photo by Daniel F. Hughes



Graceful Chameleon (*C. gracilis*) – Male
Photo by Daniel F. Hughes



Smooth Chameleon (*C. laevigatus*) – Male
Photo by Daniel F. Hughes



Smooth Chameleon (*C. laevigatus*) – Female
Photo by Daniel F. Hughes

Smooth Chameleon

Chamaeleo laevigatus

Size—Up to 24 cm in total length (body 14 cm + tail 10 cm).

Range—Widespread in the Northern and Eastern regions of Uganda. Common in Karamoja, Acholi, and West-Nile.

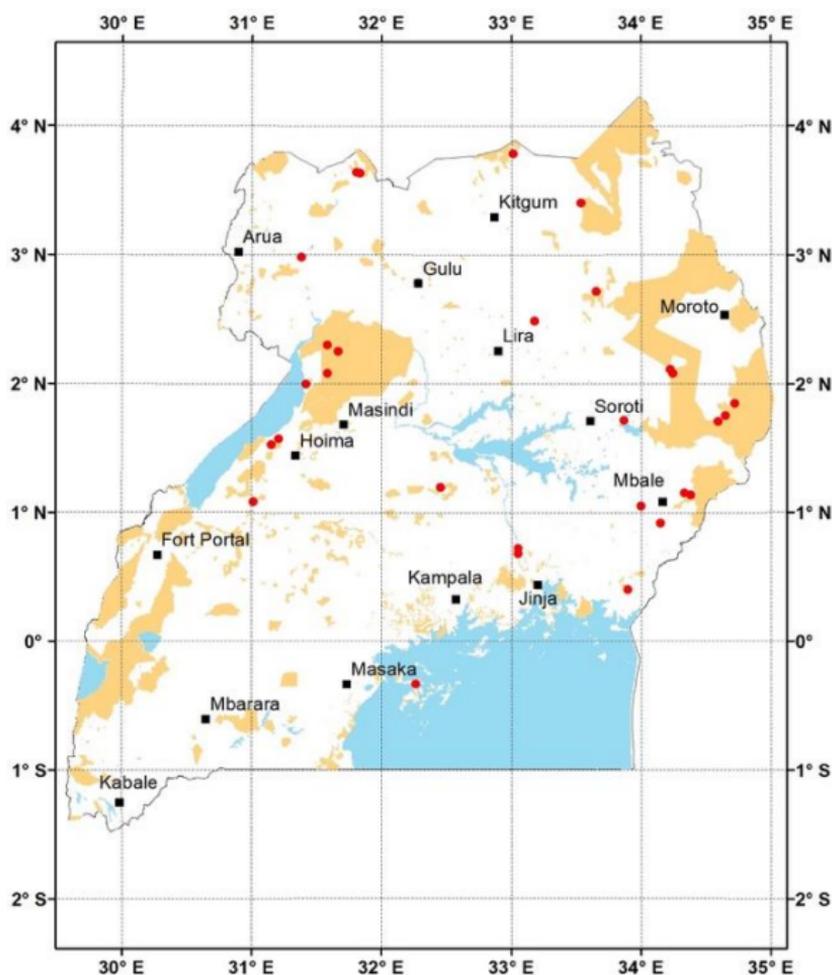
Description—A medium-sized chameleon with a narrow head and slim body. The head is smooth with a slightly raised peak towards the body of the animal. The tail is generally smaller than the body. The body color is typically light green to yellow but will be dark when the animal is stressed. The body can sometimes have many black spots when the animal is stressed. Two white stripes are usually present on both sides of the body. When handled, the animal will open its mouth, bite, and inflate its body, sometimes making a hissing sound. A crest of spines extends from under the mouth onto the body.

Habitat—Found mostly in arid regions and lowland savannahs, with a preference for grasslands or woodlands near wetland areas. It can be encountered crossing roads during the day. Not commonly found on mountains.

Reproduction—An egg-laying species, which likely occurs near the end of the rainy season. Eggs are buried in the ground and hatch about 120–150 days later. Clutch size can be up to 60 eggs. Recently hatched young were found in April and May in several places across Karamoja.

Conservation—Species is widespread in arid lowland habitats across Uganda. The species is likely to be unaffected by trade in Uganda and populations are presumably stable. However, large females with eggs should not be collected. IUCN Redlist – Least Concern; Country – Least Concern.

Smooth Chameleon *Chamaeleo laevigatus*





Smooth Chameleon (*C. laevigatus*) – Female
Photo by Daniel F. Hughes



Smooth Chameleon (*C. laevigatus*) – Female
Photo by Daniel F. Hughes



Rwenzori Helmeted Chameleon (*K. carpenteri*) – Male
Photo by Eli Greenbaum



Rwenzori Helmeted Chameleon (*K. carpenteri*) – Male
Photo by Colin R. Tilbury

Rwenzori Helmeted Chameleon *Kinyongia carpenteri*

Size—Up to 26 cm in total length (body 11 cm + tail 15 cm).

Range—Found only in high elevation forests of the Rwenzori Mountains National Park in western Uganda.

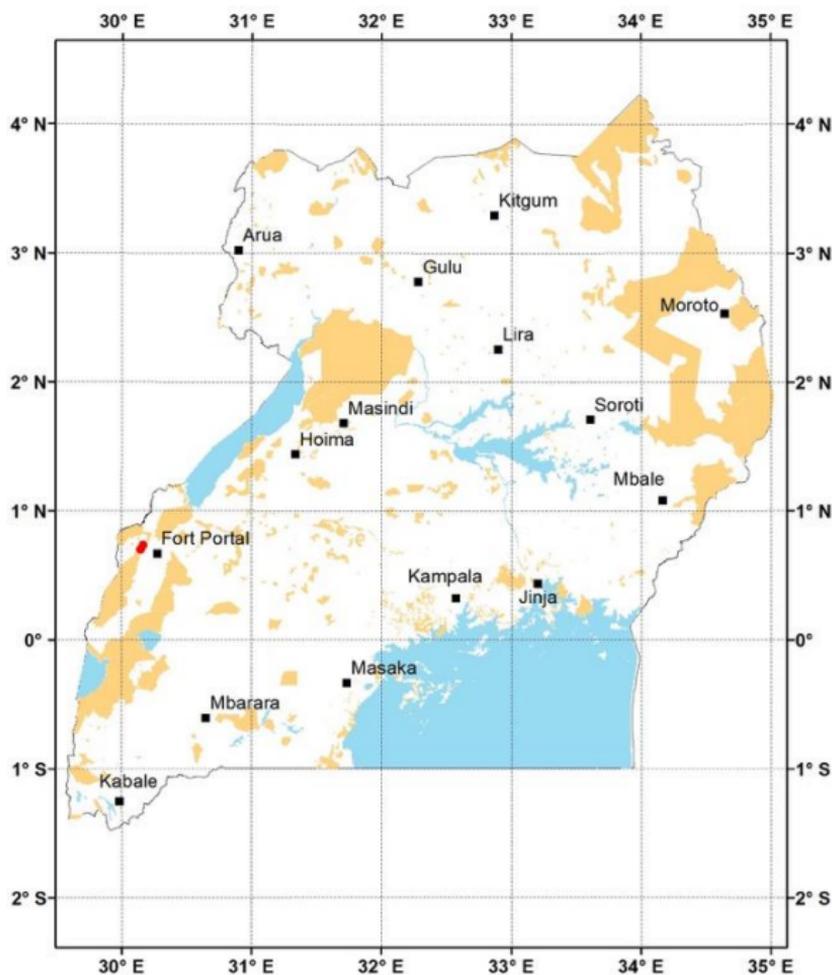
Description—A medium-sized chameleon with a characteristic helmet and vertical nose-like projection in males. Females lack the helmet and projection. Body color is highly variable, and often includes blue, orange, yellow, green, and brown. The tail is much longer than the body in both sexes. Females are generally green in color with darker green bands on the body and prominent light splotches. When handled, the animal frequently jumps and rolls in a ball on its way to the ground.

Habitat—Found only in montane forests usually above 2000 meters elevation. This species prefers undisturbed forest and is seemingly rare within suitable habitat. Perch heights are usually high in the forest canopy but probably average from 3 to 5 meters above the ground.

Reproduction—An egg-laying species. Other information on reproduction is unknown.

Conservation—This species is rare and endemic to the mid-high elevations in the Rwenzori Mountains. This species would be greatly impacted by trade and thus no per-annum quota should be given. IUCN Redlist – Near Threatened; Country – Endangered.

Rwenzori Helmeted Chameleon *Kinyongia carpenteri*





Rwenzori Helmeted Chameleon (*K. carpenteri*) – Female
Photo by Thomas B. Price



Rwenzori Helmeted Chameleon (*K. carpenteri*) – Male
Photo by Thomas B. Price



Tolley's Forest Chameleon (*K. tolleyae*) – Male
Photo by Daniel F. Hughes



Tolley's Forest Chameleon (*K. tolleyae*) – Male
Photo by Daniel F. Hughes

Tolley's Forest Chameleon *Kinyongia tolleyae*

Size—Up to 14 cm in total length (body 6 cm + tail 8 cm).

Range—Found only in the mid- to high-elevation forests of Rwenzori, Bwindi, and Kibale National Parks in Uganda.

Description—A small chameleon with overall green and brown coloration. On the body of females, there is typically one or two large dark patches with white centers. Males can be entirely yellow (Rwenzori). The tail is much longer than the body in both sexes. The head is raised to form a small peak. A small crest of spines begins just behind the head and extends across the neck. A brown stripe usually passes through the middle of the eye, extending from the snout to the neck. When handled, the animal will jump to the ground while rolling into a ball.

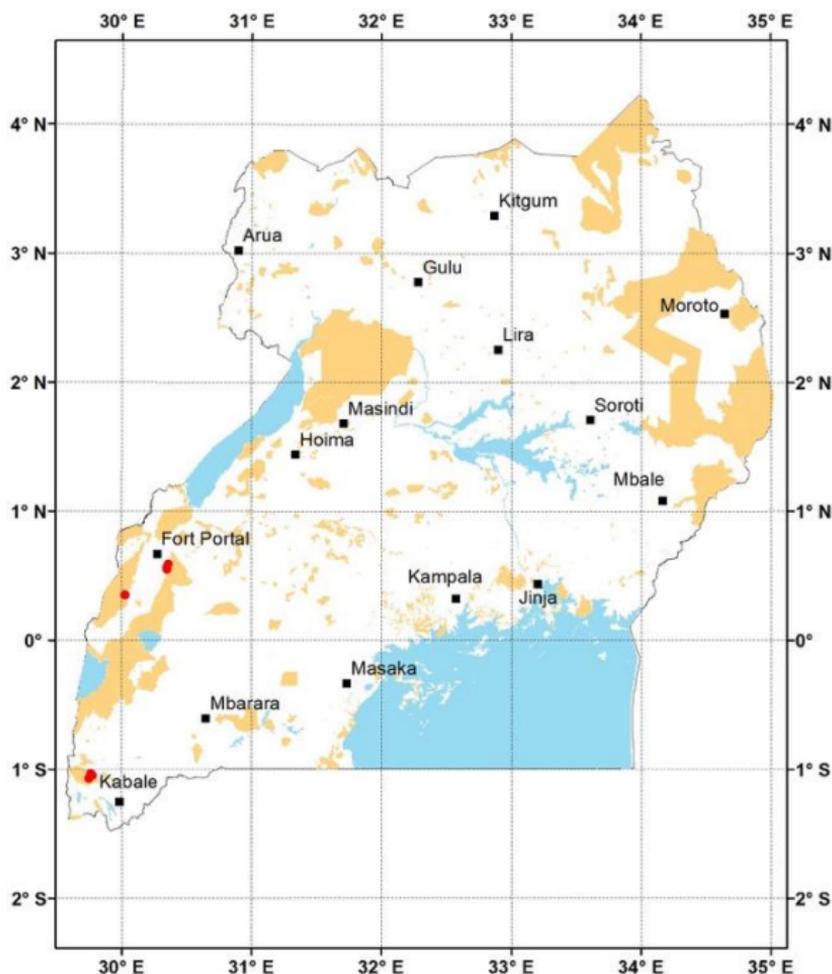
Habitat—Found only in montane and sub-montane forests at an elevation range from 1600–2400 meters. This species seems to prefer primary forest, yet it has been most commonly found along forest edges. Perch heights are usually high in the canopy, but sometimes it can be found at lower perches.

Reproduction—An egg-laying species. Gravid females were found from Bwindi in late-May and September. Clutch size has been reported to be up to 5 eggs, but 4 eggs is likely more common. Recently hatched or small juveniles have been found in October (Rwenzori).

Conservation—This species is endemic to the Albertine Rift in Uganda and would be greatly impacted by trade. No per-annum quota should be given. IUCN Redlist – Not Evaluated; Country – Uganda Endemic.

Tolley's Forest Chameleon

Kinyongia toleyae





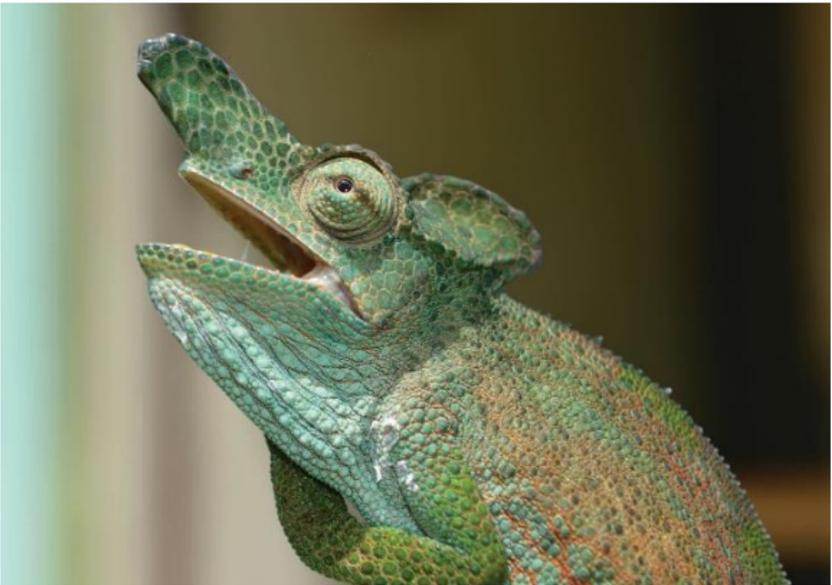
Tolley's Forest Chameleon (*K. toolleyae*) – Male
Photo by Daniel F. Hughes



Tolley's Forest Chameleon (*K. toolleyae*) – Females
Photo by Daniel F. Hughes



Rwenzori Plate-nosed Chameleon (*K. xenorhina*) – Male
Photo by Daniel F. Hughes



Rwenzori Plate-nosed Chameleon (*K. xenorhina*) – Male
Photo by Daniel F. Hughes

Rwenzori Plate-nosed Chameleon

Kinyongia xenorhina

Size—Up to 27 cm in total length (body 11 cm + tail 16 cm).

Range—Found only in the mid- to high-elevation forests of Rwenzori Mountains National Park in western Uganda.

Description—A medium-sized chameleon with a distinctive helmet and flattened plate-like projection off the nose in males. Females lack the helmet and projection. Body color is variable, but mostly shades of green and blue, with a burnt orange throat coloration. The tail is much longer than the body in both sexes. Females are generally green and are more subdued in coloration than males. When handled, the animal will leap to the ground and roll into a ball. Stressed individuals often become very dark.

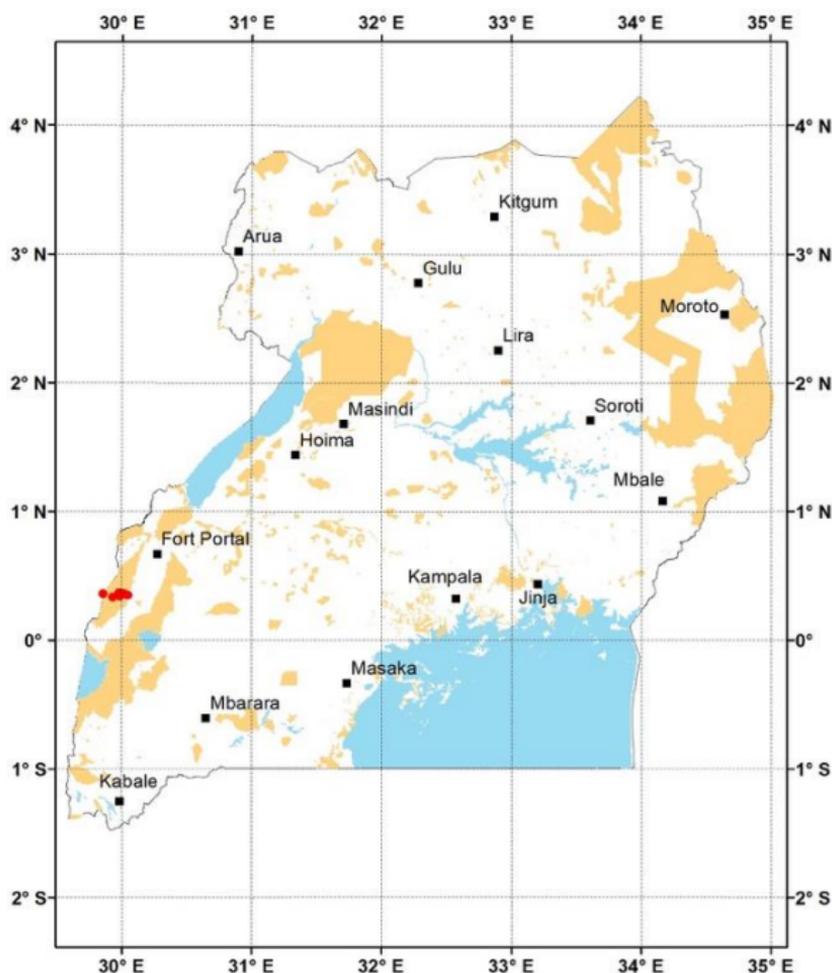
Habitat—Exclusive to montane and sub-montane forests usually above 1500 meters elevation. This species prefers primary forest but can be common in pine-tree plantations and disturbed secondary forest. Perch heights are usually high in the canopy and can range up to 7 meters above the ground.

Reproduction—An egg-laying species. One gravid female contained 6 eggs and was found in January. Most other aspects of reproduction in this species are poorly known.

Conservation—This species is rare and endemic to the Rwenzori Mountains. This species would be greatly impacted by trade and thus no per-annum quota should be given, unless sustainable chameleon farms could be established in the Rwenzori area. IUCN Redlist – Near Threatened; Country – Endangered.

Rwenzori Plate-nosed Chameleon

Kinyongia xenorhina





Rwenzori Plate-nosed Chameleon (*K. xenorhina*) – Female
Photo by Daniel F. Hughes



Rwenzori Plate-nosed Chameleon (*K. xenorhina*) – Male
Photo by Daniel F. Hughes



Boulenger's Pygmy Chameleon (*R. boulengeri*) – Female
Photo by Daniel F. Hughes



Boulenger's Pygmy Chameleon (*R. boulengeri*) – Male
Photo by Daniel F. Hughes

Boulenger's Pygmy Chameleon
Rhampholeon boulengeri

Size—Up to 8 cm in total length (body 6 cm + tail 2 cm).

Range—Found in the forests of Bwindi, Kibale, and Rwenzori National Parks, and Budongo Forest Reserve.

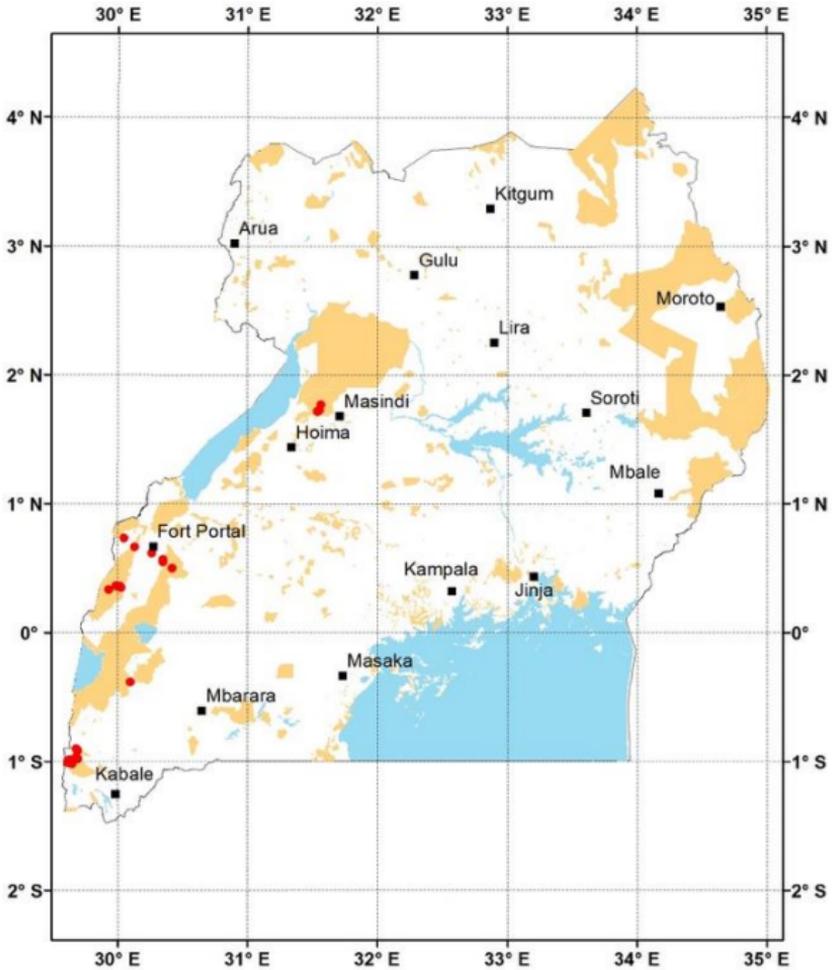
Description—A tiny, brown chameleon with a very short tail. Males and females look similar except males have slightly longer tails and females are typically more robust. Body color is somewhat variable, but mostly shades of brown. A small nose-like projection extends off the snout in both sexes. When handled, the animal will vibrate its body.

Habitat—Found in montane and sub-montane forests usually above 1000 meters elevation. This species prefers primary forest but can be found in minimally disturbed forested areas. Perch heights are usually near the forest floor. This species hunts by day on the forest floor and so resembles a dead leaf.

Reproduction—An egg-laying species. Females usually lay between 1 and 3 eggs. Gravid females have been found from April–September. A Budongo female laid 3 eggs in July.

Conservation—Recent research has shown that this is actually a species complex made up of several genetically distinct lineages and thus likely several undescribed species. As a result, populations of this species complex would be impacted negatively by unsustainable trade as they represent unnamed species with unknown conservation statuses. Any trade in this species complex should be minimal until a new taxonomy can be enacted, species distributions reassessed, and new conservation assessments given. IUCN Redlist – Least Concern; Country – Least Concern.

Boulenger's Pygmy Chameleon
Rhampholeon boulengeri





Boulenger's Pygmy Chameleon (*R. boulengeri*) – Female
Photo by Daniel F. Hughes



Boulenger's Pygmy Chameleon (*R. boulengeri*) – Male
Photo by Daniel F. Hughes



Sudanese Unicorn Chameleon (*T. conirostratus*) – Male
Photo by Daniel F. Hughes



Sudanese Unicorn Chameleon (*T. conirostratus*) – Female
Photo by Daniel F. Hughes

Sudanese Unicorn Chameleon

Trioceros conirostratus

Size—Up to 13 cm in total length (body 7 cm + tail 6 cm).

Range—Found in the mid to high elevations of Mount Kadam, Mount Moroto, Mount Napak Forest Reserves of Karamoja, and Agoro-Agu Forest Reserve of Acholi.

Description—A small chameleon that is generally brown or green. Males have a prominent cone-like horn on tip of their snout and females do not. The head is raised to a peak towards the body. The tail is about the same size as the body. The body color is light to dark brown, but sometimes with yellow or green, especially in males. The body usually has diamond patterns up to the dorsal crest. Two lateral light stripes are sometimes present on the body. When handled, the animal will open its mouth, sometimes making a hissing sound. A crest of spines extends from the mouth onto the belly.

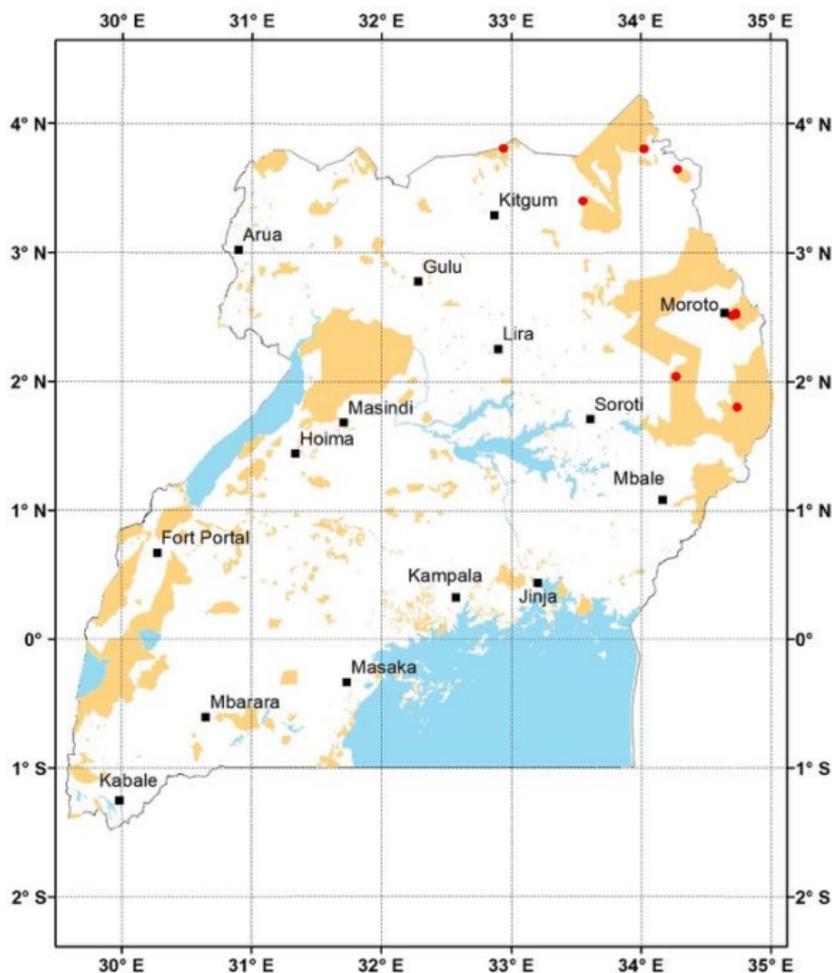
Habitat—Occurs only at mid-high altitude sites, with a preference for shrubs open-canopy areas and can be common along forest edges. At Mount Kadam, it was commonly found in the savannah woodlands above 2000 meters. The species is generally uncommon at elevations below 1600 meters.

Reproduction—A live-bearing species. Recently birthed individuals were found at Mount Moroto and Agoro-Agu in May and July, respectively.

Conservation—This species has a restricted range in Uganda. Trading in this species should be restricted because the biology of the populations are unknown and they may actually represent multiple species. IUCN Redlist – Least Concern; Country – Data Deficient.

Sudanese Unicorn Chameleon

Trioceros conirostratus





Sudanese Unicorn Chameleon (*T. conirostratus*) – Female
Photo by Daniel F. Hughes



Sudanese Unicorn Chameleon (*T. conirostratus*) – Male
Photo by Daniel F. Hughes



Elliot's Groove-throated Chameleon (*T. ellioti*) – Female
Photo by Daniel F. Hughes



Elliot's Groove-throated Chameleon (*T. ellioti*) – Male
Photo by Daniel F. Hughes

Elliot's Groove-throated Chameleon

Trioceros ellioti

Size—Up to 19 cm in total length (body 10 cm + tail 9 cm).

Range—Found in the highlands of southwestern Uganda, especially in open swamp habitats near Bwindi Impenetrable and Rwenzori Mountains National Parks.

Description—A small chameleon that is generally green in color. Males and females look similar, but males often are more brilliantly colored. The head is raised in a peak towards the body. The tail is roughly the same size as the body. The body color is typically green, with shades of light blue, yellow, and orange, especially males. Sometimes females are entirely brown. The body usually has a large stripe at mid-body, which is sometimes adorned with orange and reddish colors. The throat has several grooves, usually in a dark color, which are obvious when the animal is agitated. A crest of spines extends from the mouth onto the belly. When handled, the animal will open its mouth and hiss.

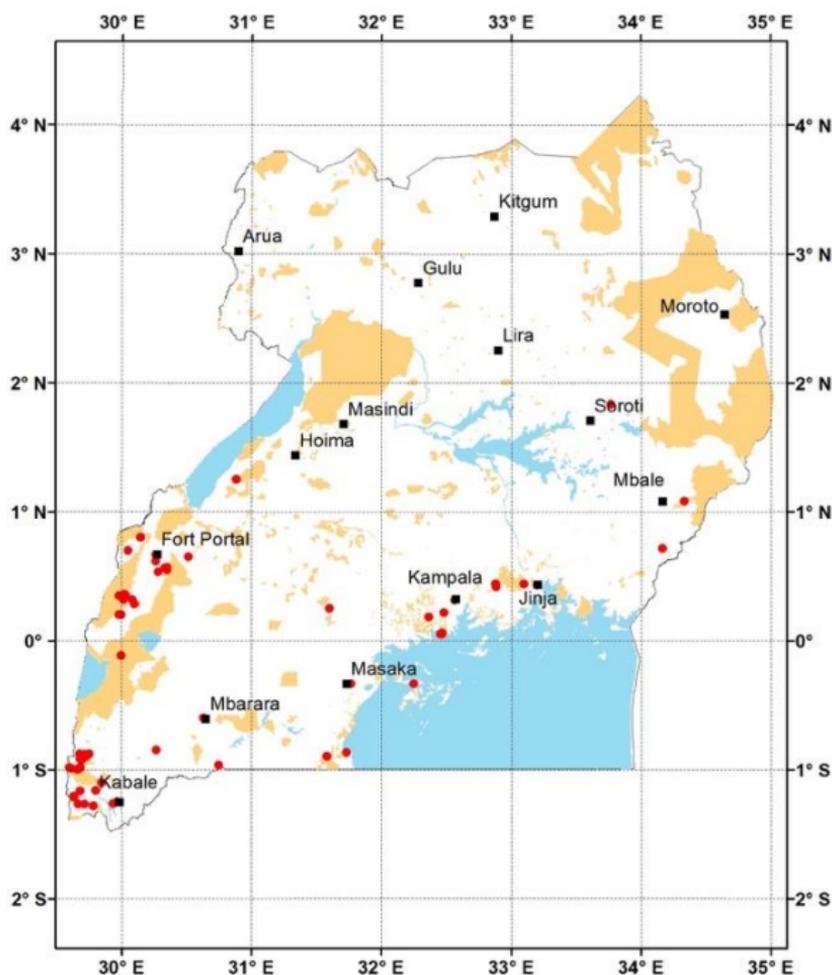
Habitat—Found in mid-elevation areas, with a preference for wetland and swamp vegetation near forests. At Rwenzori, it is common in the wetland vegetation near Ruboni.

Reproduction—A live-bearing species. Young were found in January and September in western Uganda.

Conservation—This species seems to have a specific habitat preference for moist areas but can be locally abundant in many places in Uganda. The species would not likely be significantly affected by sustainable trade and is found in several national parks. IUCN Redlist – Least Concern; Country – Least Concern.

Elliot's Groove-throated Chameleon

Trioceros ellioti





Elliot's Groove-throated Chameleon (*T. ellioti*) – Male
Photo by Daniel F. Hughes



Elliot's Groove-throated Chameleon (*T. ellioti*) – Male & Female
Photo by Daniel F. Hughes



Kenyan High-casqued Chameleon (*T. hoehnelii*) – Female
Photo by Daniel F. Hughes



Kenyan High-casqued Chameleon (*T. hoehnelii*) – Male
Photo by Daniel F. Hughes

Kenyan High-casqued Chameleon

Trioceros hoehnelii

Size—Up to 20 cm in total length (body 10 cm + tail 10 cm).

Range—Found only in the highlands of Mount Elgon in southeastern Uganda.

Description—A medium-sized chameleon with a helmet (high casque), nose-like projection, and beard (crest under mouth). Males are often brilliantly colored, with a bright yellow head and neck, large reddish triangles on the body with a light, sometimes white, lateral band. The back of the head is raised into a blade-like peak pointing towards the body. The tail is roughly the same size as the body. The background body color is typically green, with shades of yellow, white and red. Females are generally green in color. When handled, the animal will open its mouth and make a hissing sound.

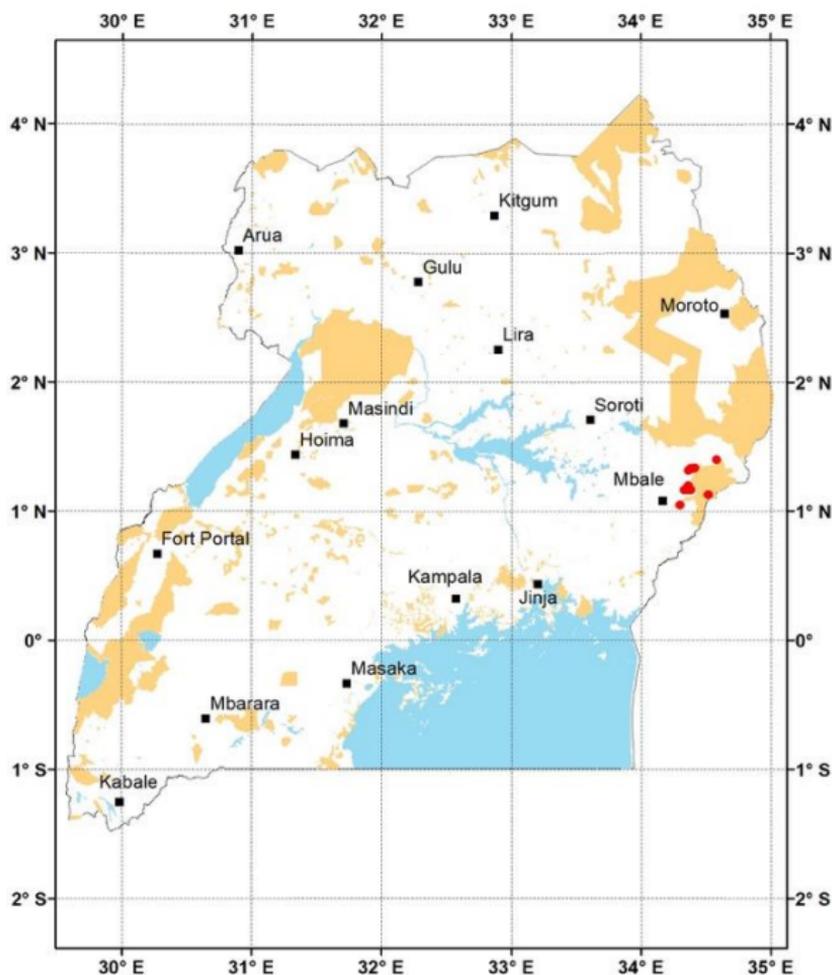
Habitat—Found in mid-high elevation forests at Mount Elgon. It is common among disturbed vegetation and coffee plantations near Sipi Falls around 1900 meters elevation.

Reproduction—A live-bearing species. Most reproductive information comes from populations in Kenya. Clutch size ranges 8–11 young, and neonates are about 5 cm in length. Young and juveniles were found in late-May near Sipi.

Conservation—Although this species can be common in disturbed habitats, it is restricted to high elevation sites at Mount Elgon in Uganda. Ugandan populations of this species would likely be affected by trade and thus should be closely monitored. IUCN Redlist – Least Concern; Country – Near Threatened.

Kenyan High-casqued Chameleon

Trioceros hoehnelii





Kenyan High-casqued Chameleon (*T. hoehnelii*) – Male
Photo by Daniel F. Hughes



Kenyan High-casqued Chameleon (*T. hoehnelii*) – Male
Photo by Daniel F. Hughes



Ituri Forest Chameleon (*T. ituriensis*) – Female
Photo by Daniel F. Hughes



Ituri Forest Chameleon (*T. ituriensis*) – Female
Photo by Daniel F. Hughes

Ituri Forest Chameleon

Trioceros ituriensis

Size—Up to 25 cm in total length (body 11 cm + tail 14 cm).

Range—Found in mid- to lowland forests in Semuliki and Kibale National Parks, and Budongo Central Forest Reserve.

Description—A large chameleon that is generally shades of green with black patterns. The upper side of the body is covered in large scales that can be bright blue and this pattern is also present on top of the head. The back of the head is raised to a peak. The tail is slightly longer than the body. The body color is typically green, with patches of black and brown. Females are larger than males but look similar. When handled, the animal will open its mouth and hiss.

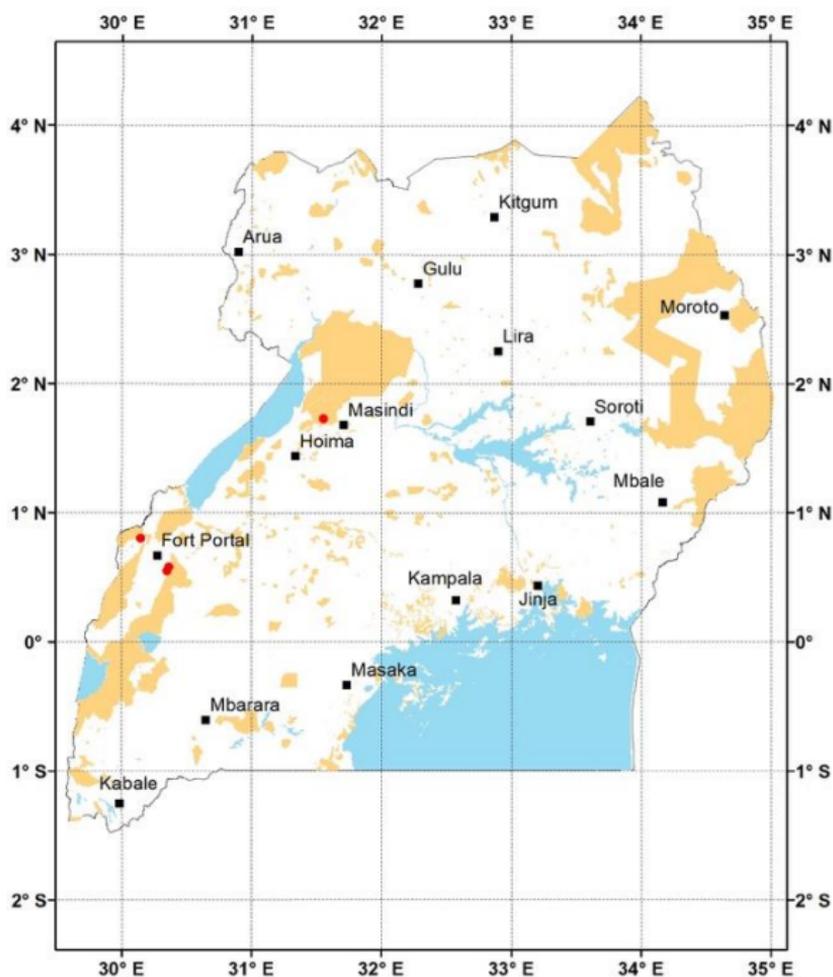
Habitat—Found in largely undisturbed forests in western Uganda. The species is rare, even in apparently good habitat, but seems to prefer forest edges around 1000 meters in elevation. It may spend most of its time high in the forest canopy, but most individuals sleep on vegetation 2–3 meters above the ground in Budongo and Kibale.

Reproduction—An egg-laying species. Other reproductive information is unknown. Usually adults are found, while juveniles and young are rare. One large female from Budongo was gravid in early July.

Conservation—This species is restricted to only a few sites in Uganda and seems to be rare within those sites. Ugandan populations of this species would likely be significantly affected by trade and thus trade should be highly regulated. IUCN Redlist – Least Concern; Country – Endangered.

Ituri Forest Chameleon

Trioceros ituriensis





Ituri Forest Chameleon (*T. ituriensis*) – Female
Photo by Daniel F. Hughes



Ituri Forest Chameleon (*T. ituriensis*) – Male
Photo by Daniel F. Hughes



Johnston's 3-horned Chameleon (*T. johnstoni*) – Female
Photo by Daniel F. Hughes



Johnston's 3-horned Chameleon (*T. johnstoni*) – Male
Photo by Daniel F. Hughes

Johnston's 3-horned Chameleon

Trioceros johnstoni

Size—Up to 26 cm in total length (body 13 cm + tail 13 cm).

Range—Found in the montane forests Kibale, Rwenzori, Bwindi, and Mgahinga National Parks.

Description—A large chameleon that is shades of green with some darker markings. Males have three bony horns and females do not. Males can have orange (Rwenzori) or yellow (Bwindi) heads, and their bodies usually have large patches of yellows and blues, as do some females. Female coloration is similar to males, but comparatively subdued. The head is raised to form a peak. Black patterning can be present throughout the head and body when the animal is stressed. The tail is about the same size of the body. When handled, the animal will open its mouth, hiss, and vibrate. Males engage in combat using their horns.

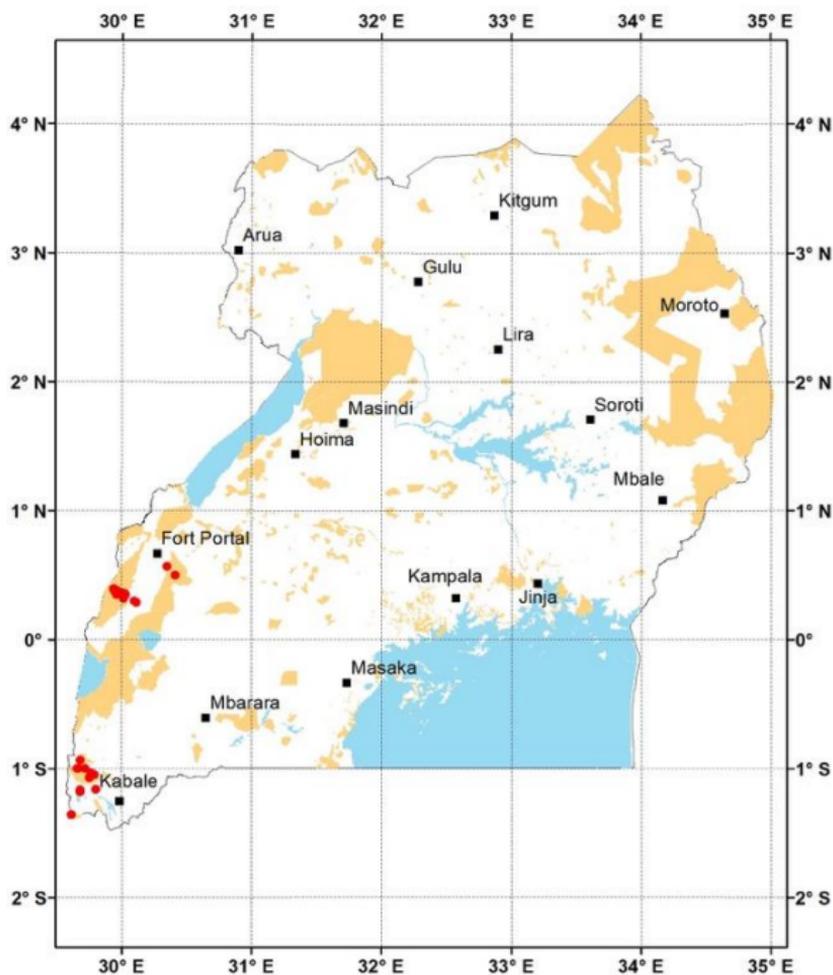
Habitat—Found in mid- to high-elevation forests. It can be common in semi-disturbed areas. Seems to prefer forests around 1800 meters in elevation. Perch heights vary among and within populations, but are usually 2–3 meters.

Reproduction—An egg-laying species. Gravid females were found in Bwindi and Mgahinga in late June. Hatchlings and juveniles were common in Bwindi and Rwenzori in late May–early June. Reported clutch sizes range from 4 to 23 eggs.

Conservation—This species is restricted to the Albertine Rift and is highly coveted in chameleon markets. Trade in Ugandan populations of this species should be regulated and should stem from areas that occur outside of national parks. IUCN Redlist – Least Concern; Country – Least Concern.

Johnston's 3-horned Chameleon

Trioceros johnstoni





Johnston's 3-horned Chameleon (*T. johnstoni*) – Male
Photo by Daniel F. Hughes



Johnston's 3-horned Chameleon (*T. johnstoni*) – Female
Photo by Daniel F. Hughes



Rwenzori Bearded Chameleon (*T. rudis*) – Male
Photo by Daniel F. Hughes



Rwenzori Bearded Chameleon (*T. rudis*) – Female
Photo by Daniel F. Hughes

Rwenzori Bearded Chameleon

Trioceros rudis

Size—Up to 17 cm in total length (body 8 cm + tail 9 cm).

Range—Found in the high-altitude forests of southwestern Uganda, including Rwenzori, Bwindi, and Mgahinga National Parks.

Description—A small chameleon with a distinctive spiny crest under its mouth and down its back. The body usually has patterns of dark diamonds between patches of yellow and brown. There is usually a single white lateral band on the side of the body in males and females. The head is raised to form a small peak. Female coloration is similar to males but comparatively subdued. Males can be almost entirely yellow (Rwenzori). The tail is generally the same size as the body. When handled, the animal will open its mouth, sometimes with a hissing sound and vibrations.

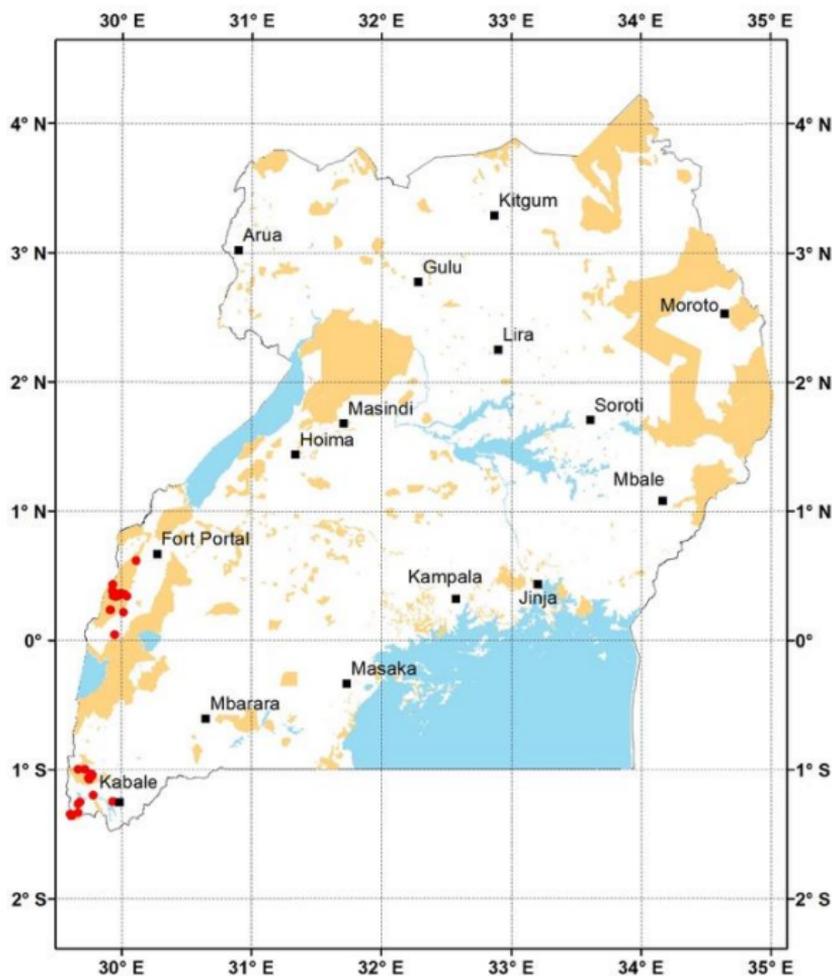
Habitat—Found in high-elevation forests in southwestern Uganda. It can be seen in semi-disturbed or regenerating areas but seems to prefer primary forests and open-canopy shrublands above 2000 meters elevation. Perch heights vary, but are usually 2–4 meters and up.

Reproduction—A live-bearing species. Gravid females were found from Bwindi, Rwenzori, and Mgahinga in June. Litter sizes range from 8 to 15 young.

Conservation—This species is restricted to only three mountain ranges in the Albertine Rift of Uganda. Trade in Ugandan populations of this species should be regulated and should come from areas that occur outside of national parks. IUCN Redlist – Least Concern; Country – Least Concern.

Rwenzori Bearded Chameleon

Trioceros rudis





Rwenzori Bearded Chameleon (*T. rudis*) – Male
Photo by Daniel F. Hughes



Rwenzori Bearded Chameleon (*T. rudis*) – Female
Photo by Daniel F. Hughes

What is Herpetology?

Herpetology is the study of amphibians and reptiles. There are currently 8,090 species of amphibians and 11,050 species of reptiles in the world. Uganda has about 180 reptile and 100 amphibian species, but many more await discovery. See the following sources to learn more about Africa's herpetofauna:

- Branch, B. (2015) *A Photographic Guide to Snakes: Other Reptiles and Amphibians of East Africa*, updated edition. Penguin Random House.
- Channing, A. (2001) *Amphibians of Central and Southern Africa*. Cornell University Press.
- Channing, A., & Howell, K.M. (2006) *Amphibians of East Africa*. Cornell University Press.
- Channing, A., & Rödel, M.-O. (2019) *Field Guide to the Frogs & Other Amphibians of Africa*. Penguin Random House.
- Nečas, P. (2004) *Chameleons: Nature's Hidden Jewels*, 2nd edition. Edition Chimaira.
- Schiøtz, A. (1999) *Treefrogs of Africa*. Edition Chimaira.
- Spawls, S., et al. (2018) *Field Guide to East African Reptiles*, 2nd edition. Bloomsbury Publishing.
- Spawls, S., et al. (2006) *Reptiles and Amphibians of East Africa*. Princeton Pocket Guides.
- Tilbury, C.R. (2018) *Chameleons of Africa – An Atlas*, 2nd edition. Edition Chimaira.
- Tolley, K.A., & Herrel, A. (2014) *The Biology of Chameleons*. University of California Press.

About the Authors

Mathias Behangana (BSc, PGDE, MSc, PhD): Is a lead herpetologist in Uganda, although his interests cover terrestrial biodiversity. He has over 25 years of research on biodiversity with a focus on Uganda's herpetofauna. He has published extensively about the amphibians and reptiles of Uganda. He has had stints as a lecturer in Herpetology, Conservation Biology, and Environmental Conservation at Makerere University and Islamic University in Uganda, and United States International University in Kenya. He also served as Regional Project Coordinator, Botanical and Zoological Taxonomic Network (BOZONET) in East Africa. Currently, he focuses on studying Uganda's poorly known herpetofauna.



Daniel F. Hughes (BSc, MSc, PhD): Earned his doctorate at the University of Texas at El Paso and has post-doctoral experience at the University of Illinois and is now at the Carnegie Museum of Natural History. He has spent over 8 months across four expeditions conducting fieldwork in Uganda, where he has worked in all 10 national parks. During these expeditions, Daniel and Mathias have published on Uganda's herpetofauna in journals such as Zoological Journal of the Linnaean Society and Molecular Phylogenetics and Evolution. They have discovered new chameleon species, documented unknown populations, and described new aspects of their natural history. Daniel's research emphasizes the ecology and evolution of the chameleons in Uganda. Stay up to date with his research at: <https://www.danielfhughes.org/>



In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught – Baba Dioum



Ituri Forest Chameleon (*T. ituriensis*) – Female
Photo by Daniel F. Hughes

