

LACERTIDS

Family LACERTIDAE

This family, found only in the Old World, is made up of small to medium sized, diurnally active, usually slender lizards, with long tails and well-developed limbs. The head is distinct from the rest of the body and usually covered with large, symmetrical shields, which can be smooth, striated or rough. A number of species bear a rather distinctive collar of enlarged plates beneath the neck. The body is usually covered with small smooth or keeled, granular scales but medio-dorsal (vertebral) rows can be enlarged as in *Philochortus*, or enlarged overall, overlapping and keeled as in *Ichnotropis*. Belly scales are large, quadrangular and arranged in longitudinal rows. The tail is long, slender and usually covered with whorls of keeled scales; it is semi-prehensile in the arboreal *Gastropholis*. African species are frequently striped in pattern, although *Gastropholis prasina* is a uniform, bright green. In many species, breeding males are brightly coloured. Femoral pores are present.

The majority of species are very active, terrestrial predators on insects; their terrestrial habits are often reflected in various modifications of the fingers and toes, such as the presence of fringing or keeling beneath the toes. Some species favour rocky habitats, and both *Gastropholis* and *Holaspis* are arboreal; the latter has some unique morphological adaptations allowing it to glide steeply from tree to tree. All African members of the family are egg-layers, and in one genus, *Ichnotropis*, some species have been shown to be "annual" reproductively. Such species live just long enough to attain sexual maturity (up to 8 months) and lay one or two clutches of eggs, after which they die. Communal egg deposition is known in the genus *Adolfus*.

There are 29 genera and about 215 species; the lacertids are found throughout Africa and Eurasia, east to the islands of the Sunda Shelf. Some 19 species, in nine genera, occur in East Africa; three species are endemic.

KEY TO THE EAST AFRICAN GENERA OF LACERTIDS

1a: A vertebral series of enlarged scales down the middle of the back. (2)

1b: No vertebral series of enlarged scales down the middle of the back, dorsal scales roughly homogeneous. (3)

2a: Tail strongly depressed and fringed laterally, in woodland of Tanzania and Uganda. *Holaspis guentheri*, Blue-tailed Gliding Lizard. p.163

2b: Tail cylindrical, not depressed or fringed, in dry country of northern Kenya. *Philochortus rudolfensis*, Turkana Shield-backed Ground Lizard. p.164

3a: Ventrals keeled. *Gastropholis*, Keel-bellied Lizards. p.161

3b: Ventrals smooth. (4)

4a: Subdigital lamellae smooth or tubercular. (5)

4b: Subdigital lamellae keeled. (6)

5a: Nostril bordered by 2 or 3 nasals and the first labial, or separated from the latter by a narrow rim, largely arboreal, in montane habitats. *Adolfus*, Forest and Alpine-meadow Lizards. p.165

5b: Nostril bordered by two or three nasals only, in savanna. *Nucras*, Scrub Lizards. p.170

6a: Nostril bordered by 3 – 5 nasals and the first labial, or narrowly separated from the latter. *Latastia*, Long-tailed Lizards. p.180

6b: Nostril bordered by 2 – 4 nasals, well separated from the first labial. (7)

7a: Collar present, head shields smooth, slightly rugose or pitted. (8)

7b: Collar absent, head shields keeled or striated. *Ichnotropis*, Rough-scaled Lizards. p.172

8a: Ventral scales in 6 longitudinal rows. *Heliobolus*, true sand lizards. p.175

8b: Ventral scales in 8 – 10 longitudinal rows. *Pseuderemias*, false sand lizards. p.178

FIELD IDENTIFICATION OF EAST AFRICAN LACERTIDS

The key above will seem rather forbidding to the field naturalist. However, the East African lacertids can often be identified to genus level quite quickly by some usable field characters. Both the keel-bellied lizards are spindly, long-limbed, long-tailed tree lizards on the East African coast. The Blue-tailed Gliding Lizard is unmistakable, due to its blue, fringed tail. The Alpine-meadow Lizard is only in montane moorland. The three forest lizards are all brownish, with stripes and/or bars, all will be on trees or rocks in high woodland or forest. The rough-scaled lizards are virtually unknown in East Africa, save in extreme south-east Tanzania. The scrub lizards are striped; in savanna, Boulenger's is the only common species and favours high grassland. The long-tailed lizards are big, with long tails; the sand lizards are small, with long tails, usually in dry savanna or semi-desert; the only really common sand lizard is Speke's. The shield-

backed lizard has a row of enlarged central back scales.

KEEL-BELLIED LIZARDS

Gastropholis

A central and East African genus of fairly large, slim, secretive, long-tailed tree lizards. They have long heads and pointed snouts, a medium sized eye and an obvious ear opening. The limbs are well developed and long, the digits thin and spindly, with hook-like claws. The body scales are rectangular, mostly small and granular, in regular longitudinal rows. Unusually for a lacertid, the belly scales are keeled. They are diurnal. They are superbly adapted for climbing with their long limbs, hooked claws and long tail. Secretive and hard to spot, they tend to live high in trees. Diet is insects and other arthropods. They lay eggs. Three species are known: two occur in East Africa, one of which is endemic. All three were originally placed in different genera: *Lacerta*, *Bedriagaia*, and *Tropidopholis*.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *GASTROPHOLIS*

1a: Uniform green. *Gastropholis prasina*, Green Keel-bellied Lizard. p.161

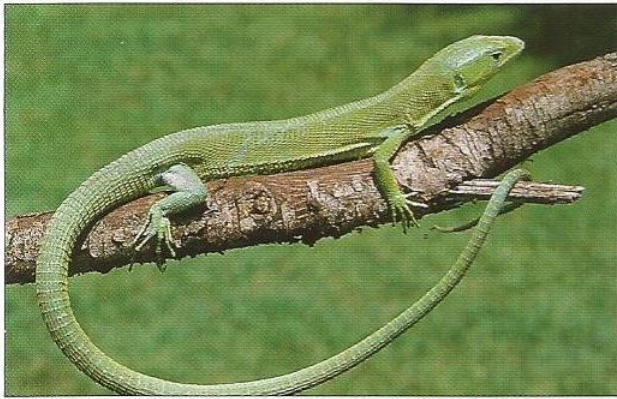
1b: Brown with pale stripes. *Gastropholis vittata*, Striped Keel-bellied Lizard. p.162

GREEN KEEL-BELLIED LIZARD - *GASTROPHOLIS PRASINA*

IDENTIFICATION:

A medium sized, slim, bright green lizard with a huge prehensile tail. The head is long and narrow, the eye fairly large with a black pupil and a small golden iris. The ear opening is large and vertically oval. The body is sub-rectangular in cross-section, the limbs long, rear limbs quite stout, digits long and spindly with a hooked claw on each. The tail is very long and smoothly tapering, about 70 % of

total length. Dorsal scales are smooth, non-overlapping, small and granular, in 28 to 40 rows at midbody. The ventral scales are keeled, eight to 12 rows. Femoral pores 13 to 15 per side. Maximum size is about 40 cm, average 25 to 35 cm, hatchlings 11 to 12 cm. Colour: emerald green above, yellow-green below, patches of turquoise around the limb-body junction, sometimes fine black speckled lines on the flanks. The tongue is bright red.



GREEN KEEL-BELLIED LIZARD
(*GASTROPHOLIS PRASINA*),
ARABUKO-SOKOKE FOREST.
Stephen Spawls

Similar species: no other bright green arboreal lizard occurs on the East African coastal plain. Taxonomic Notes: Previously known as both *Gastropholis vittata* (now a separate species) and *Bedriagaia moreaui*.

HABITAT AND DISTRIBUTION:

Endemic to East Africa. Forests, woodland and thicket of the coastal plain and the Eastern Arc. Few records; known localities include Watamu, Arabuko-Sokoke Forest, Amani

(Usambara Mountains), Tanga, Zaraninge Forest. Recently recorded in the Nguru Mountains. Probably in the Shimba Hills, but unrecorded. From sea level to 1200 m. Conservation Status: Probably under threat, as its already small coastal forest habitat is rapidly disappearing, but it appears to be adaptable as it is known from cashew nut plantations near Watamu.

NATURAL HISTORY:

Diurnal, arboreal and secretive, living in holes in trees; one such refuge was 12 m above ground level. They move about the branches using their prehensile tails as balancing organs; observed to sleep in the branches supported by the tail. Habits poorly known but agonistic behaviour between captive males has been noted, resulting in a tail being bitten off. Mating behaviour included a male biting the female's neck, entwining their tails; the male then encircled the female's pelvic region and appeared to lick her vent. Clutches of 5 eggs, roughly 1.5 cm long, were laid in captivity in September and October at Watamu. Clutches also found in moist tree holes. One clutch took 61 days to hatch, at a temperature of 26 to 29 °C. Diet insects and other arthropods, in captivity known to attack and eat smaller lizards.

STRIPED KEEL-BELLIED LIZARD - *GASTROPHOLIS VITTATA*



STRIPED KEEL-BELLIED LIZARD
(*GASTROPHOLIS VITTATA*),
PRESERVED SPECIMEN.
Stephen Spawls

IDENTIFICATION:

A medium sized, slim, striped lizard with a huge prehensile tail. The head is long and narrow, the eye fairly large. The ear opening is large and vertically oval. The body is sub-rectangular in cross-section, the limbs long, rear limbs quite stout, digits long and spindly with a hooked claw on each. The tail is very long and smoothly tapering, about 70 % of total length. Dorsal scales are smooth, non-overlapping, small and granular. The ventral scales are keeled. Femoral pores present. Average size 25 to 35 cm. Colour: brown to dark brown, with two dorsal and two lateral blue-white or white lines, paler below; the lower surface of the tail has rows of distinct dark flecks for about one-quarter of its length before these break up into unpatterned brown flecks. A white collar of scales is present.

Similar species: should be identifiable by its spindly limbs and white stripes.

HABITAT AND DISTRIBUTION:

Forests, woodland and thicket of the coastal plain south of Mombasa. Few records; known localities include Diani Beach, Shimba Hills, Tanga, Dar es Salaam, Bagamoyo, Liwale and (oddly) Kilosa – if this is correct then they might be in riverine woodland. Probably occurs all the way along the Tanzanian coast, but no records between Dar Es Salaam and Liwale. Elsewhere, known from northern Mozambique. Conservation Status: Probably

under threat from coastal forest fragmentation and destruction.

NATURAL HISTORY:

Nothing really known, but probably similar to the Green Keel-bellied Lizard, i.e. diurnal, arboreal and secretive, living in holes in trees, move about the branches using their prehensile tails as balancing organs. Must descend to ground level; the Kilosa specimen was found in a house, others have been taken in pitfall traps and one was caught on the forest floor. Presumably lays eggs. Diet: insects and other arthropods.

GLIDING LIZARDS. *Holaspis*

A unique, beautiful lacertid. A single species occurs in west, central and East Africa.

BLUE-TAILED GLIDING LIZARD - *HOLASPIS GUENTHERI*

IDENTIFICATION:

A small, light-bodied lacertid with a long head, pointed snout, an extremely flattened body and tail, the tail being about 50 to 60 % of total length. The combination of its flattened shape and distinctive coloration distinguish it from all other East African lizards. The extreme flattening of the body and the tail, as well as projecting scales on the side of the tail increase surface area and appear to be related to the remarkable ability of this species to glide from tree to tree for distances of more than 10 m. Midbody scale count 80 to 90, of which six are ventrals. A single preanal plate is present. On each thigh 17 to 25 femoral pores are present. Maximum size about 12 cm, average 9 to 11 cm, hatchlings are about 5 cm long. It has a black back with cream stripes along the side of the body and the upper surface of the tail is black with a central row of bright blue spots and yellow lateral scales. Below the throat, chest, limbs are cream; the belly is orange in males, orange-grey in females; the underside of the tail is black. The head is distinct from the neck; a collar is present. The eyes are moderate in size; each lower eyelid has three to five translucent scales in its centre. The long toes have a ring of flattened scales. Taxonomic Notes: Two subspecies occur, see the section on Habitat and Distribution below.

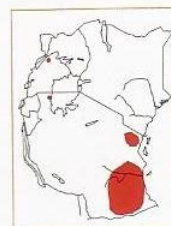
HABITAT AND DISTRIBUTION:

Largely a closed lowland forest species, but



BLUE-TAILED GLIDING LIZARD
(*HOLASPIS GUENTHERI*),
MALAWI.

JP Coates Palgrave / Don Broadley



may be found in more open woodland adjacent to forest, and in some coastal forests. The western subspecies, *Holaspis guentheri guentheri*, is recorded from Uganda (Budongo Forest) and Bukoba, in Tanzania, and ranges widely in West Africa, south-west to Angola, north-west to Sierra Leone. The eastern subspecies, *Holaspis guentheri laevis*, is quite widespread in north-eastern and eastern Tanzania in forest, ranging south to central Mozambique and west to southern Malawi; Tanzanian localities include Liwale District; 6 miles west of Liwale Boma, upper reaches of

Mangi River, Tunduru District, Hahata River, Kilombero Valley, Udzungwa Mountains National Park, Magrotto Mtn., Amani, Zaraninge forest reserve. Conservation Status: Widespread, probably under no immediate threat, but it does not tolerate deforestation.

NATURAL HISTORY:

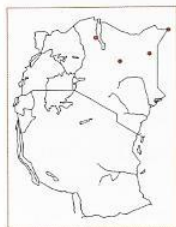
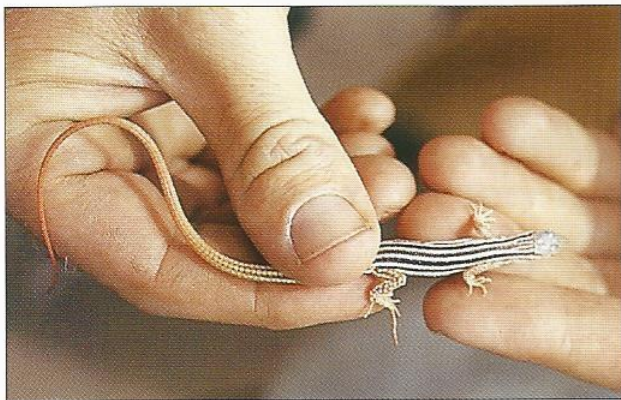
Diurnal; spends much of the time on vertical tree trunks and on trees which have fallen over but which are not lying completely on the ground. Not an easy species to see in its habitat, lowland forest and rich woodland. Animals are most easily seen when on lighter-coloured bark as they bask and forage among cracks and crevices in the bark for small

arthropods. The species is extremely active and agile; it can leap between trees and branches, easily evading capture. It can use the flattened body as an aerofoil to break its fall and has been seen to glide between trees. Hides under loose bark. Lays 2 eggs, roughly 0.5 x 1 cm, under loose bark or in leaf litter. Captive specimens from Tanzania laid eggs in November, December, January and April; specimens from north-eastern Democratic Republic of the Congo laid eggs in June. Feeds on invertebrates such as insects and spiders. Despite its adaptations to a tree-dwelling existence, it also comes down to the forest floor and is taken in pitfall traps.

SHIELD-BACKED GROUND LIZARDS *Philochortus*

A genus of moderate sized lacertids defined by the presence of two to six longitudinal rows of enlarged, smooth or keeled plate-like scales on the back; the collar is well-marked; the nostril is pierced between two nasal scales and in contact with, or very narrowly separated from the first upper labial scale. Femoral pores are present; lamellae beneath the toes are smooth or keeled. There are seven species of this genus known from low-lying arid areas of the Somali horn, North Africa and Saudi Arabia; a single species occurs in our area.

TURKANA SHIELD-BACKED GROUND LIZARD - *PHILOCHORTUS RUDOLFENSIS*



TURKANA SHIELD-BACKED GROUND LIZARD

(*PHILOCHORTUS RUDOLFENSIS*),
WAJIR BOR.

Robert Drewes

IDENTIFICATION:

A long-tailed, slender, moderate sized lacertid known from but five specimens. The total length of the type specimen (intact) is 17.6 cm (4.6 cm snout-vent). The specimen from Laisamis, Kenya has a snout-vent length of 5 cm, and a

total length of 18 cm. Distinguished from all other lacertids in East Africa by the presence of two longitudinal, mid-dorsal rows of enlarged scales (about twice the width of the rest of the body scales). The remaining body scales are small, granular and smooth, very feebly keeled posteriorly, and in 30 to 32 rows across the middle of the body, including the enlarged mid-dorsal series. The shields on the head are smooth; the interparietal scale is less than twice as long as it is broad. The collar consists of seven to nine enlarged scales. The ventrals are arranged in six transverse and 28 longitudinal rows. The tail is nearly three times longer than the snout-vent length, covered by a series of regular whorls of strongly-keeled scales. The lamellae beneath toes bear two keels (bicarinate). There are 10 to 14 femoral pores on each thigh. The top of the head is uniform greyish tan; the dorsal pattern, which begins abruptly at the back of the head, consists of six sharply defined, narrow, longitudinal whitish stripes, alternating with five, wider brown stripes. The mid-dorsal brown stripe is the narrowest and cinnamon coloured in the adults; the four more lateral bands are darker brown;

each is continuous and unbroken by spotting or other marking. Each of the median pair of light stripes is bifurcated in a "V" shape at its origin at the occiput, for about 15 scale rows, then united into a pair of single stripes; these continue posteriorly but eventually coalesce into a single, mid-dorsal stripe above the base of the tail. Together with the lateral striping, this pattern continues onto the tail for a distance roughly equal to length of the hindlimbs. The dorsolateral whitish stripes originate at the posterior margin of the eye. The Shield-backed Ground Lizard is immaculate white below; the posterior four-fifths of the tail is an unmarked, yellowish tan, which contrasts greatly with the dorsal pattern; coloration is identical in the juveniles (two specimens, c. 23.5 mm snout-vent length).

Until recently, this lizard was known from a single specimen collected in 1932 on the west shore of Lake Turkana and described as a subspecies of a form known elsewhere from northern Somalia: *Philochortus intermedius*. Since then, five additional specimens of *P. i. rudolfensis* have been identified from four other widely separated localities in northern Kenya. Examination of the new material indicates that the differences cited by the describer in the original specimen are consistent; these include a much longer tail, fewer mid-dorsal scale rows, an interparietal scale less than two times longer than broad, and fewer femoral pores in *P. rudolfensis*. There are additional differences in colour pattern: in *P. rudolfensis*, the dorsal stripes are unbroken by spotting or other markings; in *P. intermedius*, the juvenile colour pattern includes black striping, whereas it is identical to the adult's in *P. rudolfensis*. As an inhabitant of mountainous areas, *P. intermedius* is unlikely to be closely related to the Shield-backed Ground Lizard, which is clearly an inhabitant of low-lying arid environments.

HABITAT AND DISTRIBUTION:

The Shield-backed Ground Lizard is known only from the west shore of Lake Turkana near Ferguson's Gulf, and Laisamis (one adult), Wajir Bor (one adult), Hamiye, Tana River (one adult, not shown on map) and Mandera (two juveniles), all in arid northern Kenya. These localities are low-lying and within either the Somali-Masai *Acacia-Commiphora* deciduous bushland or semi-desert bushland vegetation types. Each of these localities is sparsely vegetated, open and fairly rocky. The Shield-backed Ground Lizard is probably not an East African endemic and may be expected in similar arid to semi-arid habitats in southern Somalia, south-eastern Ethiopia, and south-eastern Sudan.

NATURAL HISTORY:

Nothing is known of the biology of the Shield-backed Ground Lizard. From accounts of the other species in the genus, it can be inferred that *P. rudolfensis* is a diurnal, active predator on insects, probably shuttling between sun and shade while feeding. It likely fills an ecological trophic niche intermediate between those of the smaller Speke's Sand Lizard *Heliobolus spekii* and the larger Southern Long-tailed Lizard *Latastia longicaudata*; it is sympatric with these species at the three most recent localities, and undoubtedly so at the type locality as well. Whether this species is truly rare, existing only in small, scattered populations or rather that it is extremely shy or secretive (see *Nucras*) remains a perplexing question. The Shield-backed Ground Lizard coexists with species of very similar appearance (e.g. *Heliobolus spekii*), and it should be noted that in the case of the Wajir Bor juveniles, these were not recognised as being members of the genus *Philochortus* until long after they had been preserved and mis-identified with a series of *Heliobolus spekii*.

FOREST AND MEADOW LIZARDS. *Adolfus*

This African genus of slim lizards is typified by the lack of a parietal foramen, postnasal scale single, frontoparietal scale not fused to occipital, keeling of ventral scales, if present, only on outermost rows, unmodified scales on the tail, collar and femoral pores present. Relationships within this group of medium sized, semi-arboreal lizards are not well understood, but all four East African representatives are basically montane species associated with woodlands and forests (except *A. alleni*). They are good climbers on standing and fallen timber, rocky walls, holes and crevices but tend to hunt on the ground.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *ADOLFUS*

1a: Midbody scale rows 18 – 24. (2)

1b: Midbody scale rows more than 35. (3)

2a: Mid-dorsal (vertebral) scales not noticeably larger than those on the flanks, in high grassland at altitudes over 2600 m. *Adolfus alleni*, Alpine-meadow Lizard. p.167

2b: Mid-dorsal (vertebral) scales noticeably larger than those on the flanks, found below 2600 m. *Adolfus africanus*, Multi-scaled Forest Lizard. p.166

3a: Femoral pores 7 – 10, in Albertine Rift Valley. *Adolfus vaureselli*, Sparse-scaled Forest Lizard. p.169

3b: Femoral pores 12 – 21, widespread in medium- to high-altitude forest, deforested areas and riverine forest. *Adolfus jacksoni*, Jackson's Forest-lizard. p.168

MULTI-SCALED FOREST LIZARD - *ADOLFUS AFRICANUS*



MULTI-SCALED FOREST LIZARD
(*ADOLFUS AFRICANUS*),
BWINDI IMPENETRABLE NATIONAL
PARK.

Jens Vindum

IDENTIFICATION:

A medium sized (snout-vent to 6.4 cm; total length to about 20 cm) slender forest lacertid, with bright, lime-green underparts, and nostril separated from first upper labial. The body scales are rhombic and with strong diagonal keels which converge towards the mid-line of the back; the mid-dorsal scales rows are distinctly larger than on flanks, in transverse row of 18 to 24 at midbody. The ventral scales are in six longitudinal rows, the median and outermost rows narrower than the others; the

outermost ventral scale rows are incomplete and faintly keeled. Collar present and composed of seven to nine plates; there are 17 to 19 lamellae beneath the fourth toe and 12 to 17 femoral pores under each thigh. The entire top of the head is metallic, copper-bronze in colour, and a continuous mid-dorsal band of the same colour and the width of the head passes the length of the body and tail. Within the mid-dorsal broad band are a series of randomly distributed black spots, usually beginning near the origin of the forelimbs and extending slightly beyond the base of the tail. A longitudinal series of white round spots borders the mid-dorsal band laterally; these coalesce into thin narrow stripes on the tail. The sides of the body are dark chocolate-brown bands originating on the side of the head and extending posteriorly onto the tail. In some specimens there are additional but more diffuse rounded white spots aligned along the lower edge of the dark lateral band, between it and the immaculate, lime-green ventral coloration.

HABITAT AND DISTRIBUTION:

A true Guineo-Congolese primary forest dweller usually associated with clearings where sunlight penetrates within forest, at middle elevations (from 580 m to about 1200 m). In East Africa, the Multi-scaled Forest Lizard is known only from localities in

Uganda, including Mabira, Budongo, Kibale, and Mpanga forests, and Bwindi Impenetrable National Park and Nyungwe Forest in Rwanda. The type locality is Entebbe, near Kampala, but whether the species still exists there is not known. Elsewhere, *A. africanus* is known from the Ituri Forest, Democratic Republic of the Congo and southern Cameroon and is likely distributed in remaining forest habitats in between.

NATURAL HISTORY:

Adolfus africanus is found together with *A. jacksoni* and *A. vauereselli* at Bwindi

Impenetrable N.P. Most individuals recently observed there were found basking in dappled sunlight on fallen tree limbs, trunks and exposed roots within a few metres of the ground in clearings within the forest. Only two were seen on vertical tree trunks more than 3 m above ground, suggesting that this species is primarily an inhabitant of undergrowth. The Multi-scaled Forest Lizard is probably less tolerant of cool conditions than the Sparse-scaled Forest Lizard found at higher elevations, and more dependent upon primary forest conditions than Jackson's Forest Lizard.

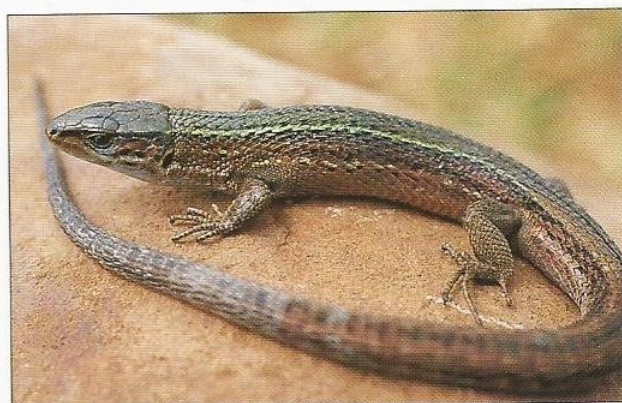
ALPINE-MEADOW LIZARD - *ADOLFUS ALLENI*

IDENTIFICATION:

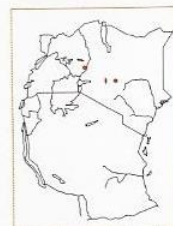
A fairly slim, long-tailed lizard, conspicuously striped, known only from montane moorland. The head is short, the snout pointed, the eyes medium sized. The limbs are stout, the rear limbs powerful and short. The tail is stout, tapering smoothly, two-thirds of the total length. There are six or more longitudinal rows of ventral scales; if six, outermost complete, mid-dorsal (vertebral) scales not noticeably larger than on flanks. It has lanceolate, strongly imbricate dorsal scales and overlapping ventral scales. There are few temporal scales (3 – 12), 18 to 24 dorsal scales in transverse rows at midbody, no granules beneath collar. Maximum size about 18 cm, average 12 to 16 cm, hatchlings 5 to 7 cm. Ground colour brown or olive, with a broad or fine dark vertebral stripe; there are two black-edged dorsolateral stripes, either lime-green or red-brown. The flanks are rufous or warm brown; the belly may be vivid orange, orange-pink or blue.

HABITAT AND DISTRIBUTION:

A very high altitude species, occurring between 2700 and 4500 m usually in montane moorland above the tree line, although rather doubtfully reported from bamboo forest on Mt. Kinangop in Aberdares. More often in alpine moorland, and heather and *Hagenia-Hypericum* zones. An East African endemic, known only from the high moorlands of the Aberdare Mountains, Mt. Kenya and Mt.



ALPINE-MEADOW LIZARD,
GREEN-STRIPED PHASE,
(*ADOLFUS ALLENI*),
ABERDARE RANGE.
Stephen Spawls



Elgon. Might be on the Mau Escarpment, although unrecorded there. Apparently absent from Mt. Kilimanjaro. Conservation Status: Very restricted habitat, but it all lies within national parks.

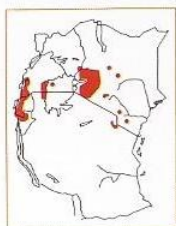
NATURAL HISTORY:

Diurnal, more terrestrial than other members of the genus, living in tussock grass and on the open patches between. Emerges to bask as the morning warms up, and will then hunt. Active and fast moving, active between about 9.30 a.m. and 5 p.m., but will retire earlier if it clouds over. Takes shelter in grass tussocks or spiny vegetation. Presumably



ALPINE-MEADOW LIZARD, BROWN-STRIPED PHASE,
ABERDARE RANGE.
Bill Branch

JACKSON'S FOREST LIZARD - *ADOLFUS JACKSONI*



JACKSON'S FOREST LIZARD,
WESTERN COLOUR PHASE,
(*ADOLFUS JACKSONI*),
BWINDI IMPENETRABLE NATIONAL
PARK.

Jens Vindum



JACKSON'S FOREST LIZARD, EASTERN COLOUR PHASE,
MT. MERU.

Stephen Spawls

lays eggs, but no details known. Diet probably insects and other arthropods, known to feed on beetles and beetle larvae.

IDENTIFICATION:

A dark coloured, medium sized, fairly robust forest lacertid (snout-vent to 8.5 cm, total length to about 25.6 cm) characterised by mid-dorsal (vertebral) scales not noticeably larger than those on flanks, smooth or very feebly keeled, arranged in 37 to 48 dorsal scales in transverse row at midbody. Six or more longitudinal rows of ventral scales present; if six, then the outermost rows are complete and not keeled; numerous small scales in the region of the temple (only 3 – 12 in *A. alleni*). Scales on the tail are strongly keeled, the keels aligning in straight longitudinal rows. A collar present, made up of seven to 10 plates beneath which are numerous granules (absent in *A. alleni*). There are 22 to 26 lamellae beneath the fourth toe and 15 to 21 femoral pores under each thigh. Jackson's Forest Lizard is brown to olive on the top of the head, with the same colour extending in a broad dorsal band (as broad as the head) posteriorly the length of the tail; within the band are randomly scattered black spots or in some cases, oblique black dash-marks. The flanks are much darker than the dorsum, even blackish in higher elevation specimens from Uganda, and usually bear several series of white or blue, black-edged ocelli, the uppermost and most lateral usually in regular longitudinal rows. The underparts are sometimes spotted, more frequently immaculate, and vary from yellow to dull bluish.

HABITAT AND DISTRIBUTION:

Jackson's Forest Lizard is a highland form

associated with forests or forest remnants from 450 to perhaps 3000 m (on Mt. Kilimanjaro). It is almost always found in clearings, forest edges, even on trees in narrow gallery vegetation situations such as along the Telek and Mara Rivers in Masai Mara national reserve, Kenya. Among the forest lizards, it is the most tolerant of human encroachment and can be found in clearings and along road banks where deforestation has occurred; in fact, it seems to avoid closed canopy situations where sunlight does not penetrate. In East Africa, Jackson's Forest Lizard is fairly common in highland situations from the slopes of Mts. Kilimanjaro and Meru in northern Tanzania, the Taita Hills, Chyulu Hills, Loita Hills and the Masai Mara, north to the Cherangani Hills and Mathews Range in north-central Kenya and west, including the Mau Escarpment, common in some of the wooded suburbs of Nairobi such as Karen, Mt. Elgon in suitable habitats, in western Uganda forests to the Ruwenzori Mountains, and Bukoba District, north-eastern Tanzania, isolated localities in Rwanda (including

Nyungwe Forest) and northern Burundi. Elsewhere, Jackson's Forest Lizard is known from eastern Democratic Republic of the Congo.

NATURAL HISTORY:

Jackson's Forest Lizards are active, diurnal foragers; individuals were observed daily on the walls of rocky road cuts at 2356 m in Bwindi Impenetrable N.P. at ambient temperatures from 20.4 to 36.8°C. At Bwindi, an important predator on this forest lizard is the Great Lakes Bush Viper *Atheris nitschei*, many of which were found hidden at the base of the lizard foraging areas. The association is confirmed by analysis of the stomach contents of the vipers. Female Jackson's Forest Lizards usually lay from 3 to 5 eggs per clutch. Observations at Bwindi indicate that this forest lizard uses communal nests there, usually located in crevices on exposed vertical road cut walls; seven oviposition sites were located, the largest of which contained 16 newly laid eggs and 574 additional eggs/shells of increasing age deeper in the crevice.

SPARSE-SCALED FOREST LIZARD - *ADOLFUS VAUERESELLI*

IDENTIFICATION:

A medium sized (snout-vent to 6 cm; total length to about 23.5 cm), rather slender forest lacertid similar in appearance to the Multi-scaled Forest Lizard, but differing from it in the absence of bright green coloration of the underparts, nostril in contact with first upper labial scale, and dorsal scales smooth, not finely and convergently keeled. The medio-dorsal (vertebral) scales are distinctly larger than on flanks; body scales are arranged in 38 to 50 transverse rows at midbody, and the ventral scales are in six longitudinal rows, the outermost rows incomplete and smooth, not keeled. A collar is present, made up of six to 11 plates. There are seven to 10 femoral pores under each thigh. In coloration, the top of the head and a continuous mid-dorsal band (four to nine scales broad at its narrowest) are light yellowish to copper coloured; the sides are rich reddish-brown, edged with black above, with one or two series of white, black-edged ocellar spots. There are small dark spots on the back, which may form a longitudinal, vertebral series; and a light streak from the cheek to the



SPARSE-SCALED FOREST LIZARD,
(*ADOLFUS VAUERESELLI*),
BWINDI IMPENETRABLE NATIONAL
PARK.

Robert Drewes



side of the neck passes through the ear opening.

HABITAT AND DISTRIBUTION:

Like the Multi-scaled Forest Lizard *A. africanus*, the Sparse-scaled is a true inhabitant of Guineo-

Congolian forest habitats and also like the former, *A. vauereselli* is found only in clearings and openings within the forest, not on the periphery or in deforested areas like *A. jacksoni*. *A. vauereselli* seems to replace *A. africanus* at higher elevations between 1000 and 2400 m. In East Africa, the Sparse-scaled Forest Lizard is known from forests in western Uganda, including the Budongo and Kibale Forests, the Ruwenzori mountains, the Uganda side of the Virunga volcanoes and Bwindi Impenetrable

National Park and Kagera in adjacent regions of Rwanda. Tanzania, the type locality. Elsewhere, to the eastern slopes of the Albertine rift in the Democratic Republic of the Congo.

NATURAL HISTORY:

Little is known of the biology of the Sparse-scaled Forest Lizard, but observations in Bwindi Impenetrable N. P., Uganda, indicate that its habits are very similar to *A. africanus*, which it evidently replaces at higher elevations.

SCRUB LIZARDS. *Nucras*

Rather blunt-snouted, terrestrial lacertids with fairly long tails and a distinct collar. The nostril is pierced between two to three nasal scales and does not contact the upper labial scales, and the subocular scale contacts the upper labials. Body scales are small, smooth and juxtaposed. The toes lack a serrated or fringed edge, and the lamellae beneath the toes are smooth. The temporal scale is rounded and femoral pores are present. These species are diurnal, oviparous dwellers of sandy soils in various savanna habitats. They are quite secretive; although often common, they are rarely seen. Evidently activity periods are crepuscular, i.e. they are active early in the morning and in the evening. Seven species are known, all African, and they are usually identified by colour pattern, as various scale parameters overlap greatly among the species. The only widespread East African species is Boulenger's Scrub Lizard.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS NUCRAS

1a: No granules between supraoculars and supraciliaries, lamellae beneath fourth toe 16 – 24. *Nucras boulengeri*, Boulenger's Scrub Lizard. p.170

1b: A series of 2 – 8 granules between supraoculars and supraciliaries, lamellae beneath fourth toe 20 – 33. *Nucras ornata*, Ornate Scrub Lizard. p.171

BOULENGER'S SCRUB LIZARD - *NUCRUS BOULENGERI*

IDENTIFICATION:

A medium sized (snout-vent length to 6.5 cm, total length about 18 cm) blunt-snouted lizard of brownish coloration. A collar is present, and it is most easily distinguished from its nearest relative, the Ornate Scrub Lizard *N. ornata* by the length of the foot being shorter than the length of the head. The nostril is pierced between three nasals, the posterior pair are symmetrical; the subocular is in broad contact with the upper lip between the fourth and fifth upper labial scales; no granules present between the supraocular and supraciliary scales. The dorsal scales are small, smooth and juxtaposed, somewhat larger

on the lateral surfaces of the body, and slightly pointed posteriorly. There are 45 to 53 scales around the middle of the body; the ventral scales are in 6 to 8 longitudinal rows, and 27 to 34 transverse series. There are 16 to 24 smooth lamellae beneath the fourth toe and from 10 to 12 femoral pores on each thigh.

The adult Boulenger's Scrub Lizard has a khaki-brown head and a broad, mid-dorsal stripe of the same colour, about the width of the head scales, that extends the entire length of the body and tail; within the stripe is a faint, light-coloured, mid-dorsal line from the occiput to

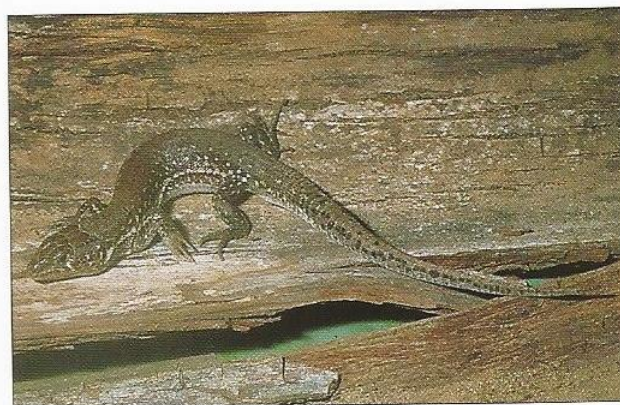
near the middle of the back, and numerous random, small darker brown spots which extend posteriorly beyond the base of the tail. The dorsal stripe is bordered on either side by a lateral, darker brown stripe of about equal width, both of which are bordered ventrally by a fine white stripe originating beneath the eye and continuing posteriorly the length of the tail. Within each lateral stripe is a median, longitudinal series of evenly spaced, white dash marks that terminate at the hindlimbs. Ventral coloration beneath is ivory-white, including the tail. Dorsal spotting is absent in juveniles; the mid-dorsal stripe is complete and continuous to the base of the tail; there are three additional longitudinal stripes, the mid-lateral one made up of the same dash marks as present in the adult colour pattern.

HABITAT AND DISTRIBUTION:

Boulenger's Scrub Lizard is known from a few localities in southern Tanzania, including Songea and Kilwa Districts, but is evidently more widespread in mid-elevation habitats found in a diagonal belt of localities from the south-eastern shore of Lake Victoria, south-east to near Dar es Salaam, and in intervening territory in southern Kenya, north in the Gregory Rift in central Kenya to just north of Mt. Kenya. There are no confirmed Ugandan records, and the species is absent from northern Kenya and south-western Tanzania. Known localities range from coastal mosaic to evergreen miombo bushland, Somali-Masai Acacia-Commiphora deciduous scrub and Acacia wooded grassland. Elsewhere, Boulenger's Scrub Lizard is known from north-eastern Zambia.

NATURAL HISTORY:

Very little is known of the biology of these



BOULENGER'S SCRUB LIZARD,
(*NUCRAS BOULENGERI*),
KILOSA.

Lorenzo Vinciguerra



BOULENGER'S SCRUB LIZARD, JUVENILE,
MASAI MARA GAME RESERVE.

Stephen Spawls

secretive lizards. It has been speculated that they are crepuscular, dawn – dusk foragers, possibly reflecting a lower thermal tolerance than in other lacertid lizards. It is assumed they are egg-layers and insectivorous.

ORNATE SCRUB LIZARD - *NUCRUS ORNATA*

IDENTIFICATION:

A fairly large (snout-vent length to 8.5 cm; total length to about 26 cm) blunt-snouted, robust lacertid with a dark colour pattern of stripes and thin bars. The Ornate Scrub Lizard differs from Boulenger's Scrub Lizard in being larger, more robust, in the foot being longer than the head length, and the presence of a row of two to eight granules between the

supraciliary and supraocular scales. A collar is present. The body scales are smooth, round or oval in 40 to 60 rows around mid-body; ventral plates are in six or eight longitudinal rows, 25 to 34 in transverse series. There are 24 to 34 smooth lamellae beneath the fourth toe, and 11 to 16 femoral pores beneath each thigh. The overall colour pattern of the Ornate Scrub Lizard is much darker than in Boulenger's



ORNATE SCRUB LIZARD,
(*NUCRAS ORNATA*),
MOZAMBIQUE.
Bill Branch

Scrub Lizard, and consists of three longitudinal stripes. As in Boulenger's Scrub Lizard, there is a broad, head-scale-width dorsal stripe of slightly lighter colour than the flanks which originates at the occipital region of the head and extends on to the tail beyond its base, about the length of an adpressed hindlimb. The dorsal stripe is bordered laterally by a pair of thin light stripes, and a thicker, light-coloured, medio-dorsal stripe extends down the back from the occiput to about three-fifths the distance to the tail base.

The lateral surfaces of the body are very dark brown to black, and a series of evenly spaced, vertical white markings runs continuously from the upper lip posteriorly to the hindlimbs. These markings are wavy near the ventrum but each has a separate, cleanly vertical, more dorsal component visible from above. The ventral parts of the body are unmarked and whitish; the tail ranges from buff to reddish-brown. Juvenile coloration is similar to the adult, except the mid-dorsal stripe is continuous onto the tail, and the tail is frequently bright coral.

HABITAT AND DISTRIBUTION:

In East Africa, the Ornate Scrub Lizard is known only from the Rondo Plateau in Lindi Region, south-eastern Tanzania, an area typified by drier Zambezian miombo woodland vegetation. Elsewhere, the Ornate Scrub Lizard is found in Malawi and southern Zambia, south through Zimbabwe and eastern Botswana to kwaZulu/Natal and northern Cape Province, South Africa.

NATURAL HISTORY:

In more southern parts of its range this species has been noted to disappear for 8 or 9 months out of a year, and then to appear in numbers following rains and the emergence of termites. This evidently very secretive species lays 4 to 5 eggs.

ROUGH-SCALED LIZARDS. *Ichnotropis*

Medium sized terrestrial lacertids with the collar absent, typified by the presence of enlarged, keeled, overlapping scales on the dorsal and lateral surfaces of the body. The lamellae beneath the toes are strongly keeled, and the shields on the head are rough, striated or keeled. Femoral pores are present. There are seven species distributed in various savanna and miombo habitats in South and central Africa. *Ichnotropis* is basically a southern genus; there are no specimens recorded from Kenya or Uganda. The Mozambique Rough-scaled Lizard is the only one that is at all widespread; nobody has seen the Tanzanian Rough-scaled Lizard in over a century; we don't even know exactly where it came from.

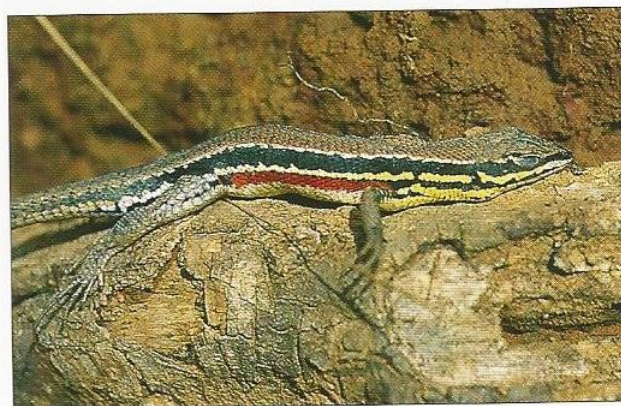
KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *ICHNOTROPIS*

- 1a: Frontonasal single, subocular bordering lip, 34 – 40 scales round middle of the body. (2)
 1b: Frontonasal longitudinally divided, subocular not reaching lip, 46 – 58 scales round middle of the body. *Ichnotropis squamulosa*, Mozambique Rough-scaled Lizard. p.174
- 2a: Dorsal head shields strongly keeled, prefrontal separated from the supraciliaries by small scales. *Ichnotropis bivittata*, Angolan Rough-scaled Lizard. p.173
 2b: Dorsal head shields feebly ridged, prefrontal in contact with superciliaries. *Ichnotropis tanganicana*, Tanzanian Rough-scaled Lizard. p.175

ANGOLAN ROUGH-SCALED LIZARD - *ICHNOTROPIS BIVITTATA*

IDENTIFICATION:

The Angolan Rough-scaled Lizard is a slender, medium sized (snout-vent to 7.8 cm; total length to 24.5 cm) lacertid with a pointed snout and distinctive colour pattern. On the head, the frontonasal scale is single, undivided, the dorsal head shields strongly striated or keeled; the prefrontal scale is separated from the supraciliaries by one or two rows of small scales and the subocular scale borders the upper lip. The dorsal and lateral scales are enlarged, pointed, overlapping and strongly keeled in 34 to 40 rows around the middle of the body; the ventral scales are rounded, hexagonal, arranged in eight to 10 longitudinal rows, 27 to 33 transverse series. There are 18 to 24 spiny lamellae between the fourth toe, and nine to 13 femoral pores on each thigh. The dorsal colour pattern consists of a well-demarcated, broad, bronzy brown to coppery reddish uniform stripe that includes the entire top of the head and width of the back and extends the length of the body to the tip of the tail. The brown dorsal stripe is bordered laterally by an unmarked, jet-black stripe originating at the nostril, passing beneath the eye and extending the length of the body and tail; at midbody, the black stripes are about half the width of the dorsal stripe; these are, in turn, bordered by thin, pure white, lateral stripes about two scales wide, originating on the rostral scale, passing posteriorly through the dorsal half of the upper labial scales, the length of the body (somewhat diffuse at midbody) and onto the



ANGOLAN ROUGH-SCALED LIZARD,
(*ICHNOTROPIS BIVITTATA*),
ZAMBIA.

Robert Drewes



tail beyond its base. A second pair of black stripes, passing through the lower edge of the upper labial scales and the upper edge of the lower labials, originates at the snout, broadens beyond the mouth and terminates at the origin of the forelimbs. Beneath, the Angolan Rough-scaled lizard is whitish, usually unmarked. In breeding males, there is frequently a brilliant orange-red stripe between the fore- and hindlimbs, and the white stripes anterior to midbody can be bright chrome yellow. Juveniles may have similar, less-distinct markings as adults, occasionally pattern-less except for a round white spot above the shoulder.

HABITAT AND DISTRIBUTION:

In East Africa, the Angolan Rough-scaled Lizard is known only from two specimens collected at Ipeni, Udzungwa Mtns; it also occurs just across the Zambian border at the south end of Lake Tanganyika. The species is clearly an inhabitant of both drier and wetter miombo woodland habitats and might be expected in more localities in southern Tanzania. The range of *I. bivittata* extends west from southern Tanzania, through

northern Zambia and Shaba Province, Congo to Angola.

NATURAL HISTORY:

The Angolan Rough-scaled Lizard is probably not an "annual species" (see *I. squamulosa*). It is a diurnal predator on insects and can be found active during the warmest part of the day. Although evidently favouring sandy open areas, specimens have been encountered in wooded *Brachystegia* areas as well.

MOZAMBIQUE ROUGH-SCALED LIZARD - *ICHNOTROPIS SQUAMULOSA*



MOZAMBIQUE ROUGH-SCALED
LIZARD,
(*ICHNOTROPIS SQUAMULOSA*),
BOTSWANA.
Stephen Spawls

IDENTIFICATION:

The Mozambique Rough-scaled Lizard is a medium sized (snout-vent to 7.7 cm; total length to about 23 cm) fairly robust lacertid distinguishable from the Tanzanian (*I. tanganicana*) and Angolan (*I. bivittata*) Rough-scaled Lizards in the frontonasal scale being divided longitudinally, the subocular scale not reaching the lip, and a higher number of scale rows at midbody. The scales of the head are moderately rough and bear rather large, discrete keels. The loreal region is concave, and there is a deep concavity along the upper surface of the snout and the frontal scale, bordered by two, strong elongate keels; a strong keel also occurs below the eye. There is a series of small scales between the supraoculars and the supraciliaries. The body

scales are smaller than in *I. tanganicana* and *I. bivittata*, but strongly keeled, overlapping, rather bluntly pointed and arranged in 46 to 58 scales around the middle of the body. Ventral scales are rounded, hexagonal and arranged in 10 or 12 longitudinal and 28 to 34 transverse series. There are 18 to 20 spinose lamellae beneath the fourth toe and 13 to 15 femoral pores along the ventral surface of each thigh. The Mozambique Rough-scaled Lizard is coppery brown above with two to five longitudinal series of whitish, black-edged spots on each side. In some adult specimens there is a pair of continuous dorsolateral thin beige stripes, originating on the lateral margins of the occipital scales and passing posteriorly the length of the body to the base of the tail. Juveniles typically have two whitish streaks on each side, the upper originating on the edge of the snout, the lower from the below the eye passing through the tympanum to the base of the thigh.

HABITAT AND DISTRIBUTION:

In East Africa, the Mozambique Rough-scaled Lizard is found in a number of localities south of the Rufiji River in southern Tanzania. Two localities in Lindi and Mtwara Regions are coastal, the rest are farther inland extending into Rovuma Region with a single, outlying locality near the southern end of Lake Tanganyika in Rukwa Region, south-western Tanzania. The coastal localities near Kilwa and Mtwara are within the Zanzibar-Inhambane coastal mosaic vegetation type; the rest of the localities are all within the drier or wetter Zambezian miombo woodland zones, a preference typical in the genus. Elsewhere, *I. squamulosa* ranges south through Mozambique

to kwaZulu/Natal, and west though Malawi, Zambia, Zimbabwe, Transvaal and Botswana to Namibia and southern Angola.

NATURAL HISTORY:

Mozambique Rough-scaled Lizards are active, diurnal predators in open flat clearings, feeding on termites, beetles and grasshoppers.

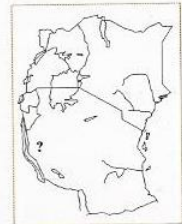
Several individuals may share a branching burrow system, which is frequently dug at the base of a tree. Females lay 8 to 12 eggs. *I. squamulosa* is an annual species; sexual adulthood is reached after only 4 or 5 months, and adults die after laying one or two clutches of eggs.

TANZANIAN ROUGH-SCALED LIZARD - *ICHNOTROPIS TANGANICANA*

IDENTIFICATION:

Known only from the type specimen (possibly a subadult), the Tanzanian Rough-scaled Lizard appears to be a rather small (snout-vent 3.8 cm; tail absent) lacertid similar to the Angolan Rough-scaled Lizard in possessing a single, undivided frontonasal scale and the subocular scale bordering the lip, but differing from it in smaller size, in the prefrontal scale in contact with the supraciliaries, and the head shields being weakly striated or keeled. The dorsal and lateral scales are enlarged, pointed, overlapping and strongly keeled in 36 rows at midbody; the ventral scales are smooth and in eight longitudinal and 25 transverse series. There are 19 lamellae beneath the fourth toe and 11 or 12 femoral pores under the thighs. The original description of the colour pattern includes "bronzy olive above with a few small transverse blackish spots in three longitudinal series on the nape and two on the body; a black streak from the nostril to the eye, and another on the edge of the mouth; a white, black-edged streak from below the eye, through the ear, to above the axil; white, black-edged ocellar spots on the posterior part of the back, on the hind limbs, and on the tail; lower parts white."

TANZANIAN ROUGH-SCALED LIZARD
(*Ichnotropis tanganicana*)



Based on the feeble striation of the head scales and aspects of the arrangement of the head shields, the describer of this species, G. A. Boulenger, considered it to be the most primitive member of the genus.

HABITAT AND DISTRIBUTION:

The Tanzanian Rough-scaled Lizard is known only from a single specimen collected at an unspecified locality on the east coast of Lake Tanganyika, in western Tanzania. This entire area is within the wetter Zambezian miombo woodland vegetation type.

NATURAL HISTORY:

Nothing is known of the natural history of this species.

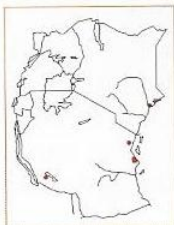
TRUE SAND LIZARDS. *Heliobolus*

Small, active, terrestrial lacertids with well-marked, curved collar present. The dorsal body scales are small, granular; the belly scales are usually in six longitudinal rows; the temporal shield is elongate, and there are usually three nasals, the lowest of which is in contact with the first upper labial scale and the rostral scale. Lamellae beneath the toes are bi- or tricarinate, and femoral pores are present. The genus may be an artificial grouping (the systematics of the small arid-country African lacertids are problematic), at present it contains five species, one in southern Africa and the remainder widespread across the northern half of Africa, two species occur in our area.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *HELIOBOLUS*

- 1a: Frontal not in contact with the supraoculars, head shields flat and strongly but finely striated, widespread. *Heliobolus spekii*, Speke's Sand Lizard. p.177
1b: Frontal in contact with the supraoculars, head shields smooth, not striated, rare. *Heliobolus neumanni*, Neumann's Sand Lizard. p.176

NEUMANN'S SAND LIZARD - *HELIOBOLUS NEUMANNI*



NEUMANN'S SAND LIZARD,
(*HELIOBOLUS NEUMANNI*),
PUGU FOREST.
Kim Howell

IDENTIFICATION:

Neumann's Sand Lizard is a small (snout-vent to 4.4 cm; total length to about 14.5 cm) slender terrestrial lizard with the nostril pierced between three nasals and six longitudinal rows of ventral scales. *H. neumanni* differs from its close relative, Speke's Sand Lizard *H. spekii* in smaller size, more slender habitus and shields on the head smooth, not striated or coarse, frontal scale in contact with the supraocular scales, and lower nasal excluded from the rostral scale. The subocular scale borders the mouth. A straight collar is present, made up of six or seven plates. Body scales are small, strongly keeled but not pointed, not overlapping and arranged in 40 to 42 transverse rows at mid-body. The ventral scales are in six longitudinal and 25 to 26 transverse series; there are 24 to 25 bicarinate lamellae

beneath the fourth toe and 10 or 11 femoral pores under each thigh. The overall coloration of Neumann's Sand Lizard is dark brownish-black with striking orange-red limbs and tail. The top of the head and a longitudinal vertebral stripe about 10 scales wide at midbody are lighter brown than the flanks which are near black (in preservative); the mid-dorsal stripe is bordered laterally by thin beige stripes; within the band are two longitudinal series of small, diffuse black spots either randomly scattered or somewhat longitudinally aligned. The flanks have two diffuse light stripes, interspersed with black spots; one lateral stripe originating on the snout is a series of dash-marks at midbody, but becomes sharply defined at the origin of the hindlimbs, and extends along the tail for much of its length; the lateral-most originates on the lower jaw and terminates at the hindlimbs. Most specimens have a single, conspicuous, lateral light spot on the side of the body above the origin of the forelimbs. The underparts of the body and tail (in preserved specimens) are immaculate and beige in colour.

HABITAT AND DISTRIBUTION:

In East Africa, Neumann's Sand Lizard is known only from Wema, Tana River near the Kenya Coast, in a few localities in Kisarawe District, eastern Tanzania and a single, specimen from Kafukola, Rukwa District, in western Tanzania. The former localities fall within the Zanzibar-Inhambane Coastal Mosaic vegetation type; the latter-most locality is probably within miombo woodland. Elsewhere, Neumann's Sand Lizard is known only from the type locality, north of Lake Stephanie in the Rift Valley, and Nechisar

National Park, Ethiopia.

NATURAL HISTORY:

Virtually nothing is known of this oddly

distributed species. A recently collected specimen was taken on white kaolin sand, in the Pugu Forest, Tanzania.

SPEKE'S SAND LIZARD - *HELIOBOLUS SPEKII*

IDENTIFICATION:

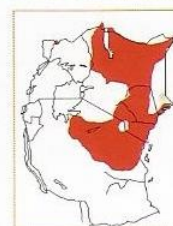
Speke's Sand Lizard is a small (snout-vent length to 5.5 cm; total length to about 18 cm), slender terrestrial lacertid, with the head shields flat, strongly and finely striated. The frontal scale is separated from the supraoculars by small scales; the lower nasal is in broad contact with rostral. A curved collar is present, made up of seven to 10 plates. The scales at midbody are small, rhombic and strongly keeled, usually arranged in 63 to 71 transverse rows; the ventrals are in six straight longitudinal and 23 to 30 transverse series; there are 22 to 24 bicarinate lamellae under fourth toe, and 13 to 18 femoral pores on each side. Adult ground colour is usually pale to medium brown with five or six thin, sharply defined to diffuse white, longitudinal stripes; the median four originate on the occiput, the most lateral pair originates on the upper lip and terminates at the hindlimbs; the median pair coalesces at the base of the tail and passes posteriorly as a single mid-dorsal stripe on the tail a distance equivalent to the length of the hindlimb, while the middle pair continues as lateral stripes on the tail most of its length. On the brown ground colour between the light stripes is a series of equally spaced black marks extending from the head to the base of the tail. In juveniles, the dorsal striping is usually well defined and highly contrasting on a black background; the tail is red. The underparts of Speke's Sand Lizard are white beneath the body, grading to tan posteriorly. In Kenya, north of Mt. Kenya massif and the Tana River, specimens tend to have six longitudinal light stripes and the subocular scale tends to be in contact with the mouth; to the south, the stripes are frequently reduced to five, with the subocular excluded from the mouth. These differences are not consistent, and this variation is probably clinal; northern specimens used to be placed in the subspecies *Heliobolus spekii sextaeniata*.

HABITAT AND DISTRIBUTION:

Speke's Sand Lizard is a common and



SPEKE'S SAND LIZARD,
(*HELIOBOLUS SPEKII*),
LAKE BARINGO.
Stephen Spawls



widespread terrestrial inhabitant of low-lying areas including the coastal mosaic from north of the Tana River Delta (and Lamu Island) south to Kisarawe District, Tanzania. Inland, it occurs in arid, semi-desert and Somali-Masai *Acacia-Commiphora* habitats throughout northern and southern Kenya and northern Tanzania as far south as Kilosa District and west at Tabora and the south shore of Lake Victoria. Speke's Sand Lizard is known from extreme eastern Uganda at Amudat, from Nimule, on the Uganda-Sudan border, and may be expected throughout suitable habitats from there east to Karamoja District, Uganda, although specimens are lacking. It is absent from southern Tanzania, central and southern Uganda, the central highlands of Kenya and western Kenya. Elsewhere, Speke's Sand Lizard is found in southern Ethiopia and Somalia.

NATURAL HISTORY:

Like its distant relative, the Southern Long-tailed Lizard *Latastia longicaudata* with which it often occurs, Speke's Sand Lizard is an active predator and must shuttle between shade and sun in order to avoid lethal high temperatures.

In suitable dry country it may often be seen, waiting in the shade of a bush to ambush passing insect prey. In three localities in northern Kenya, this species is sympatric with the much less common, somewhat smaller

Smith's Sand Lizard *Pseuderemias smithii*. Speke's Sand Lizard is an egg-layer, probably 4 to 6 eggs per clutch; it is common, numerous where found and preyed upon heavily by snakes, and small raptors.

FALSE SAND LIZARDS. *Pseuderemias*

Small active terrestrial lacertids, similar to *Heliobolus*, except the belly scales are in six to 10 longitudinal rows, (eight to 10 in East Africa); the nostril is pierced in four nasal scales, the two lower of which are in contact with the first two or three upper labials and the rostral scale; lamellae beneath the toes are usually uncarinate; femoral pores are present. There are six or seven species in the genus (the status and generic allocation of some species is in doubt); they mostly inhabit arid country in north-east Africa. Two species occur in our area; both are rare; one, Peter's Sand Lizard, occurs somewhere on the lower Tana River, the type locality is described as "from coast to Hamiye" (Hamiye is near Mbalambala), and has not been seen in over a century.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *PSEUDEREMIAS*

1a: Head shields strongly striated, occurs somewhere near the Tana River. *Pseuderemias striata*, Peter's Sand Lizard. p.178

1b: Head shields pitted, not striated, occurs north of the Tana River. *Pseuderemias smithii*, Smith's Sand Lizard. p.179

PETER'S SAND LIZARD - *PSEUDEREMIAS STRIATA*



PETER'S SAND LIZARD
(*Pseuderemias striata*)

IDENTIFICATION:

A small (snout-vent to 4.7 cm; total length to about 16 cm) terrestrial lacertid differing from Smith's Sand Lizard *Pseuderemias smithii* in having head shields that are strongly striated, the snout only weakly concave, and the subocular scale bordering the mouth. The body scales are small, juxtaposed, keeled and arranged in 53 to 67 rows around midbody. The ventral scales are broader than long, except for the outer rows which are narrow, and arranged in eight straight longitudinal and 25 to 28 transverse series. A curved collar present made up of eight to 12 plates;

there are 13 to 18 femoral pores beneath each thigh and 22 to 25 uncarinate lamellae beneath the fourth toe. Adult ground colour is cream to pale buff above with seven brown or black streaks as wide as or wider than the spaces between them; the lower parts are white. The juvenile coloration includes four white streaks separated by black; the belly is black or blackish, at least on the sides (a curious character, shared only with juvenile *Heliobolus lugubris*, a related species in South Africa).

HABITAT AND DISTRIBUTION:

This species was described from southern Somalia, and there is but one locality in East Africa, "coast to Hamiye", which is on the southern section of the Tana River in Kenya; here, Peter's Sand Lizard is sympatric with the poorly known Neumann's Sand Lizard *Heliobolus neumanni*. Peter's Sand Lizard is an inhabitant of the arid, Somali-Masai *Acacia-*

Commiphora deciduous bushland vegetation type. The absence of records of this species in intervening territory in north-eastern Kenya is perplexing. Elsewhere, Peter's Sand Lizard is known only from southern Somalia.

SMITH'S SAND LIZARD - *PSEUDEREMIAS SMITHII*

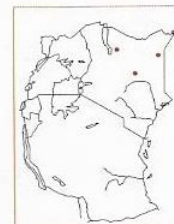
IDENTIFICATION:

Smith's Sand Lizard is a small (snout-vent length to 4.7 cm; total length to about 17.5 cm) striped, terrestrial lacertid with a very narrow, pointed snout, rough, pitted head shields (not striated), and a well-marked concavity on the upper surface of the snout, extending all along the frontal shield. The subocular scale does not reach the mouth. The body scales are smooth, granular and juxtaposed in 68 to 82 rows across the middle of the body; ventral scales are usually in eight, rarely 10, straight, longitudinal and 26 to 30 transverse series. A curved, free collar is present, made up of seven to 11 plates; there are 20 to 24 uncarinate lamellae beneath the fourth toe and 17 to 22 femoral pores under each thigh. The ground colour in more eastern adult Smith's Sand Lizards is light brownish-red to brick red above; there are usually four thin, well-defined or diffuse, longitudinal light stripes, all originating at the back of the head, the middle pair frequently bifurcate at the origin (on the occiput, as in *Philochortus rudolfensis*). These thin stripes border darker, broader areas. The area between the two mid-dorsal stripes is the narrowest, and usually a darker greyish colour than the rest of the body which is reddish; in some specimens the most lateral areas are also somewhat darker greyish colour, in marked contrast with the white underparts. Between the lateral stripes and ventrals, there are usually longitudinal rows of single, equally spaced white dots; in some specimens the stripes are made up of such spotting. The pattern terminates at the base of the tail. The tail is usually more reddish than the body colour; the anterior half of the dorsal surface of the tail is immaculate, but there is a series of fine, well-marked, equally spaced, vertical black lines on the lateral surface of the tail which eventually become transverse across the top of the tail along its posterior-most half. The ventral surfaces are white. Juvenile pattern is basically the same, but the coloration is darker, more greyish. Three adults from the western-most

NATURAL HISTORY:

Nothing is known of the habits and natural history of Peter's Sand Lizard.

SMITH'S SAND LIZARD
(*Pseuderemias smithii*)



locality near Lake Turkana have the typical *P. smithii* pattern but much darker, more contrasting coloration. The mid-dorsal area is dark grey to blackish, the dorsolateral areas are cinnamon-brown, the lateral-most areas a lighter grey, and the intervening, longitudinal lines of light spots are more distinct and larger. In all other respects, they fit the description of Smith's Sand Lizard.

HABITAT AND DISTRIBUTION:

There are but five widely separated localities known for this sand lizard in East Africa, all from arid northern Kenya: Mandera, Wajir Bor, and Garba Tula are all in North-eastern Province, and a locality on the southern fringe of the Koroli desert near Sirima, north of Mt. Nyiru in Marsabit District. Also reported from "Tana River, coast to Hamiye" (not shown on the map). Smith's Sand Lizard appears to be an inhabitant of the low-lying, arid Somali-Masai *Acacia-Commiphora* deciduous bushland and semi-desert shrubland vegetation type. Elsewhere, Smith's Sand Lizard ranges into Somalia and southern Ethiopia.

NATURAL HISTORY:

Little is known of the natural history of this species; it is somewhat smaller than Speke's Sand Lizard but probably similar to it in habits. They are found sympatrically at three localities in north-eastern Kenya. There have been no examinations of stomach contents, but the extremely narrow, pointed snout may indicate that Smith's Sand Lizard may differ from Speke's Sand Lizard in its feeding manner and prey items.

LONG-TAILED LIZARDS. *Latastia*

A group of moderate to large, fast-running terrestrial lacertids with a very long tail and a well-marked collar; the nostril is pierced between three to five nasals and bordered by the first upper labial scale (or very narrowly separated from it). Dorsal scales are small, juxtaposed and usually of uniform size. The lamellae beneath the toes are keeled. An African genus with six species, ranging in low-lying Sahel areas from Senegal east to the Somali Horn, and south to Malawi and Zambia.

KEY TO THE EAST AFRICAN MEMBERS OF THE GENUS *LATASTIA*

1a: Dorsal scales usually keeled, in 39 – 52 midbody rows, only in Tanzania. *Latastia johnstoni*, Johnston's Long-tailed Lizard. p.180

1b: Dorsal scales not keeled, in 52 – 80 midbody rows, widespread in northern Kenya and north-eastern Tanzania. *Latastia longicaudata*, Southern Long-tailed Lizard. p.181

JOHNSTON'S / MALAWI LONG-TAILED LIZARD - *LATASTIA JOHNSTONI*



JOHNSTON'S LONG-TAILED LIZARD,
(*LATASTIA JOHNSTONI*),
USANGU.
Kim Howell

IDENTIFICATION:

A slim, medium sized lizard, with a pointed snout and fairly large eyes. The body is slightly depressed, the limbs short and powerful, the toes are very long and thin. The tail is relatively long, cylindrical and tapers smoothly. There is a well-developed collar. The nostril is pierced between three and four nasals and the first labial, or separated from the latter by a narrow rim. The dorsal scales are strongly keeled, in 39

to 52 rows at midbody. There are 11 to 16 preanal pores. Maximum size about 21 cm, average 15 to 20 cm, hatchling size unknown. Males in breeding condition are reddish-brown, lighter posteriorly and on the tail. The flank spots may be whitish or pale blue, there are several bright yellow ocelli on the anterior flanks. The lips, neck and belly are heavily blotched with bright yellow. In females there is a black-edged, yellow vertebral stripe from the neck to the base of the tail; a yellow line also runs from the outer edge of the parietal to the tail; a third yellow line runs from the lips over both sets of limbs to the tail, between the second and third lines are a series of yellow dashes, surrounded by black.

HABITAT AND DISTRIBUTION:

Moist savanna and high grassland, from 330 to about 1000 m altitude. Quite widespread in a broad band across central Tanzania, sporadic records also from Bukoba, south of Speke's Gulf, south of the Rufiji Delta and Liwale. Elsewhere, to northern Zambia, Shaba in south-eastern Democratic Republic of the Congo and Malawi.

NATURAL HISTORY:

Poorly known. Diurnal and terrestrial, probably similar to other lacertids; i.e. fast moving, lives in a hole under a bush, forages

actively in the open in the heat of the day, shuttles between sunshine and shade.

Presumably lays eggs but no clutch details known. Diet: insects and other arthropods.

SOUTHERN LONG-TAILED LIZARD - *LATASTIA LONGICAUDATA*

IDENTIFICATION:

The Southern Long-tailed Lizard is the largest (snout-vent to 11 cm; total length to over 40 cm) East African lacertid; slender and smooth in appearance with a very long tail, it is typified by the body scales being smooth or very feebly keeled, dorsal and lateral scales of roughly equal size – none noticeably enlarged – and the presence of a group of five to 29 small irregular ventral scales in the middle of the pectoral region, which interrupt the linear arrangement of the ventral plates. Scales on the head are usually smooth, not noticeably keeled or striated, and the nostril is pierced between three or four nasal scales, the nostril sometimes forming a suture behind the rostral scale. The collar is strongly serrated, the posterior edge made up of from seven to 14 plates. There are 55 to 65 usually smooth and equal-sized scales around the middle of the body; the ventral scales are overlapping and arranged in six, rarely eight longitudinal series, and 26 to 29 transverse series in males, 29 to 31 in females. Males have a single enlarged preanal plate; females with small irregular plates. There are 22 to 27 bicarinate lamellae beneath the fourth toe, and six to nine femoral pores beneath each thigh. Throughout its range, the Southern Long-tailed Lizard exhibits extreme variation in colour pattern. In East Africa, the basic ground colour ranges from medium brown to brick red in some northern specimens. Most commonly, the dorsal pattern is made up of a series of thin, beige, longitudinal stripes between which are evenly spaced darker marks. This pattern usually does not extend beyond the base of the tail, which is usually unmarked above. Lateral surfaces between the fore- and hindlimbs are usually a darker brown, below which is a white stripe, both of which extend posteriorly the length of the tail. Frequently, this darker lateral area has a longitudinal series of striking, powder-blue, black-edged ocelli extending between the fore- and hind-limbs. A common lateral pattern is black and white vertical barring extending from the side of the head to the base of the tail. In juveniles, the



SOUTHERN LONG-TAILED LIZARD,
(*LATASTIA LONGICAUDATA*),
OLORGESAILLE.
Stephen Spawls



dorsal stripes are extremely fine and so close together as to give the back a uniform, dull reddish appearance; vertical barring is the usual lateral pattern in juveniles. Southern Long-tailed Lizards are usually immaculate white below. The species in the genus *Latastia* have not been studied recently, and the genus is in need of revisionary work; three subspecies of the genus are currently recognised, and the description and counts given above pertain to the East African, *Latastia longicaudata revoli*.

HABITAT AND DISTRIBUTION:

The Southern Long-tailed Lizard is a common, widespread inhabitant of the Somali-Masai semi-desert shrubland and deciduous *Acacia-Commiphora* bushland environments from the Ethiopian and Sudanese borders south in low elevation habitats throughout northern Kenya, the Great Rift Valley, across the Tana River and southern Kenya, and north-eastern Tanzania, to Ugogo, near Dodoma. There are several records from open areas on the Kenya coast. The East African form discussed here ranges north into southern Sudan, southern Ethiopia and Somalia. It is not recorded from Uganda. The species as broadly (and probably incorrectly) defined is found from Senegal,

east through northern Nigeria to Sudan, and south into East Africa, the southernmost extent of its range.

NATURAL HISTORY:

The Southern Long-tailed Lizard is probably the most commonly seen large ground-

foraging lizard in open flat areas during the heat of the day. It darts out into the sun to capture insect prey, after which it retreats into shady areas beneath bushes. Extremely wary and difficult to approach, it is capable of moving at great speed. It lays eggs, but clutch details unknown.

GIRDLED LIZARDS AND THEIR RELATIVES. Family CORDYLIDAE

An African family of lizards, containing four genera; the grass lizards, *Chamaesaura*, the girdled lizards, *Cordylus*, the flat lizards, *Platysaurus*, and the crag lizards, *Pseudocordylus*. All but the last group occur in East Africa, but there are few species, unlike in South Africa with 54 species recorded. Six species are found in East Africa, representing the northernmost extension of the family. The plated lizards, *Gerrhosaurus*, were originally included as a subfamily of the Cordylidae, but are now treated as a separate family. The Cordylids are the only endemic African lizard family. No true fossils are known.

All the lizards in this family have a short, pointed tongue, which is sometimes notched, coated with long papillae. The body scales lack osteoderms (apart from girdled lizards). The spiky scales are usually arranged in lateral rings around the body and the tail, hence the name girdled lizard. The tail scales may be very spiny. The body is usually flattened, (save in grass lizards), an adaptation for living in a narrow recess. All except the flat lizards give live birth. They largely hunt from ambush, waiting in a suitable crevice until prey goes by.

KEY TO THE EAST AFRICAN CORDYLID GENERA

1a: Snake-like in appearance, legs absent or merely tiny buds. *Chamaesaura*, grass lizards. p.187

1b: Not snake-like in appearance, limbs well-developed. (2)

2a: Body very flattened, no spines on the tail, scales on the back tiny and granular. *Platysaurus maculatus*, Spotted Flat Lizard. p.183

2b: Body only moderately flattened, tail with spines, back scales large. *Cordylus*, Girdled Lizards. p.184

FLAT LIZARDS. *Platysaurus*

An African genus of spectacular, flat-bodied, brightly coloured rock lizards; some species reach more than 35 cm length. The sexes are usually different colours, males with bright primary colours, females dark with stripes. They have fairly large eyes with eyelids, and visible external ears. Their bodies are covered with small granular scales; the limbs are well developed; all fingers have grasping claws; the back legs are powerful and stout. The tail is fairly long but can be shed and regenerated. Femoral pores occur in both sexes. Flat lizards are diurnal, living always on rocks, in structured colonies controlled by a large dominant male. The males compete over territory; in confrontations they circle each other, standing up high and twisting sideways to expose their brightly coloured chests. They also flaunt these chest colours in courtship, the male standing straight up in front of a female. Females lay two eggs in the damp leaf litter of rock cracks; sites may be used communally, up to 30 eggs are recorded in some sites. They feed largely on small insects and other arthropods, but some southern African species also eat plant material, such as flowers, leaves, fruit and seeds. They are quite long-lived; one captive specimen was kept for 14 years.

No flat lizard has ever been found away from a rock face, and hence, in the old dissected landscape of southern and south-eastern Africa, rock outcroppings have become isolated, along with their flat lizard colonies. Small changes accumulate, leading to speciation as there is no genetic exchange with