

# The reptiles of the Socotra archipelago with special remarks on the slender blind snakes (Leptotyphlopidae: *Leptotyphlops*)

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**Abstract.** We provide a list of the reptiles of the Socotra archipelago with comments on the respective number of taxa and the percentage of endemism. Special attention is laid on the Socotran species of *Leptotyphlops*, the morphological variability of which is addressed in some detail.

## Introduction

The Socotra archipelago is part of the Republic of Yemen and situated in the north-western part of the Indian Ocean. It covers a land area of about 3800 km<sup>2</sup> and comprises the main island Socotra (3600 km<sup>2</sup>), Abd al Kuri (162 km<sup>2</sup>), Samha (45 km<sup>2</sup>), Darsa (10 km<sup>2</sup>) and some guano-covered rocks (Jazirat Sabuniyah, Ka'1 Fir'awn).

Though the data are based on fifteen visits to the archipelago between 1982 and 2005, two expeditions on which the authors went together (3.11.1997-12.11.1997 and 13.02.1999-5.03.1999) proved particularly informative.

## The herpetofauna of the Socotra archipelago

So far no traces of amphibians have been found on the archipelago. There have been records or sightings in the sea of four species of marine turtles (Cheloniidae), and three of them (*Chelonia mydas*, *Eretmochelys imbricata bissa*, *Caretta caretta*) are supposed to use sandy beaches on the islands for egg laying (Schätti and Desvoignes 1999, Rösler and Wranik 2003).

Twelve genera of terrestrial reptiles occur on the islands of the archipelago. At the generic level endemism is 42%. Some 30 terrestrial species and forms have been reported and 86,7 % of them are thought to be endemic.

The taxonomy of several species (such as *Haemodracon riebeckii*, *Hemidactylus homoeolepis*, *Mesalina balfouri*, *Hemerophis socotrae*) requires further research. Most

diverse are the reptiles on the main island Socotra (26 species and forms). Endemism is 65,4%. Six species occur on Samha and four species on Darsa. Five of the recorded species on Samha from the genera *Haemodracon*, *Hemidactylus*, *Trachylepis*, *Mesalina* and *Hemerophis* are also known from Socotra. Endemic to Samha and Darsa is only a species of the genus *Pristurus*. However, the knowledge on the reptiles of these two smaller islands is still incomplete, and in case of Darsa it is unknown, if the genus *Hemidactylus* is present or not. Six species have been reported from Abd al Kuri. Endemism is 50 %. Recorded from Abd al-Kuri and Socotra are only *Pristurus abdelkuri* and *Hemidactylus homoeolepis*. The latter is also known from Samha. No traces of snakes have yet been found on Abd al Kuri.

The only species recorded on all four islands is *Trachylepis socotrana* (Table 1).

## Lizards (Sauria)

The lizards of the archipelago belong to the families Chamaeleonidae, Gekkonidae, Scincidae and Lacertidae.

## Chamaeleonidae

There is only one endemic species, *C. monachus* (Subfamily Chamaeleoninae) known from the main island Socotra.

## Gekkonidae

The geckos comprise about 16 species and two forms of uncertain status in three genera (*Pristurus*, *Hemidactylus*, *Haemodracon*). All belong to the subfamily Gekkoninae. Endemic are the genus *Haemodracon* and all species of the genus *Pristurus* recorded on the islands of the archipelago. The genus *Pristurus* is distributed in East-West direction from Iran to Ethiopia and in North-South direction from Jordan to Kenya. The genus *Hemidactylus* has a worldwide distribution and comprises 9 species on the archipelago, 5 of them considered endemic. Further

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Taxon	Sokotra	Samha	Darsa	Abd al Kuri
Chamaeleonidae				
<i>Chamaeleo monachus</i>	yes	no	no	no
Gekkonidae				
<i>Haemodracon riebeckii</i>	yes	yes*	no	no
<i>Haemodracon trachyrhinus</i>	yes	no	no	no
<i>Hemidactylus dracaenacolus</i>	yes	no	no	no
<i>Hemidactylus flaviviridis</i>	yes	no	no	no
<i>Hemidactylus forbesii</i>	no	no	no	yes
<i>Hemidactylus granti</i>	yes	no	no	no
<i>Hemidactylus homoeolepis</i>	yes	yes	no	yes
<i>Hemidactylus oxyrhinus</i>	no	no	no	yes
<i>Hemidactylus pumilio</i>	yes	no	no	no
<i>Hemidactylus</i> form A	yes*	no	no	no
<i>Hemidactylus</i> form B	yes*	no	no	no
<i>Pristurus abdelkuri</i>	yes	no	no	yes
<i>Pristurus insignis</i>	yes	no	no	no
<i>Pristurus insignoides</i>	yes	no	no	no
<i>Pristurus guichardi</i>	yes	no	no	no
<i>Pristurus obsti</i>	yes	no	no	no
<i>Pristurus samhaensis</i>	no	yes	yes	no
<i>Pristurus sokotranus</i>	yes	no	no	no
Scincidae				
<i>Hakaria simonyi</i>	yes	no	no	no
<i>Trachylepis socotrana</i>	yes	yes	yes	yes
Lacertidae				
<i>Mesalina balfouri</i>	yes	yes	yes	no
<i>Mesalina kuri</i>	no	no	no	yes
Typhlopidae				
<i>Typhlops socotranus</i>	yes	no	no	no
Leptotyphlopidae				
<i>Leptotyphlops filiformis</i>	yes	no	no	no
<i>Leptotyphlops macrurus</i>	yes	no	no	no
<i>Leptotyphlops wilsoni</i>	yes	no	no	no
Colubridae				
<i>Hemerophis socotrae</i>	yes	yes	yes	no
<i>Dityophis vivax</i>	yes	no	no	no
Trogonophidae				
<i>Pachycalamus brevis</i>	yes	no	no	No

\* Taxa could not clearly be attributed to any known species.

**Table 1.** The terrestrial reptiles of the Socotra archipelago (**fat** marks - endemic species).

research is required in order to establish the status of two forms (*Hemidactylus* Form A und B).

### Scincidae

Only two species of skinks inhabit the archipelago; both are endemic. One belongs to the genus *Hakaria* (Subfamily Scincinae) and the other to the genus *Trachylepis* (Subfamily Lygosominae). The genus *Hakaria* is monotypic and endemic to Socotra, while species of the genus *Trachylepis* are widespread in Africa and Madagascar.

### Lacertidae

The Lacertidae are also represented by two endemics, closely related species of *Mesalina*, a genus with a Saharo-Sindian distribution.

### Snakes (Serpentes)

The snakes of the archipelago belong to the families Colubridae, Typhlopidae and Leptotyphlopidae.

### Colubridae

The colubrid snakes are represented by two endemic species. They belong to the genera *Hemerophis* (Subfamily Colubrinae) and *Ditytophis* (Subfamily Pseudoxyrhophiinae), which are both endemic to the Socotra archipelago.

### Typhlopidae

*Typhlops socotranus*, the only known species from the main island Socotra, is endemic. The genus *Typhlops* occurs worldwide, except Australia.

### Leptotyphlopidae

Three endemic Socotran species are reported of the genus *Leptotyphlops*. However, in order to establish their status, further research will be necessary (see below). Species of the genus *Leptotyphlops* are known from America, Africa and in Asia up to India.

### Worm Lizards (Amphisbaenia)

The worm lizards of the archipelago belong to the Family Trogonophidae.

### Trogonophidae

The monotypic genus *Pachycalamus* is endemic to Socotra.

### The Socotran species of the genus *Leptotyphlops* Fitzinger, 1843

Three endemic species of the genus *Leptotyphlops* are reported from Socotra. These are *L. filiformis* Boulenger, 1899, *L. macrurus* Boulenger, 1899 and *L. wilsoni* Hahn, 1978.

On the basis of some new samples [collections W.

Wranik (CWWR), Museum für Tierkunde (MTD D), Naturhistorisches Museum Wien (NMW), Zoologisches Forschungsmuseum Alexander Koenig, Bonn (ZFMK)] a preliminary, short view on some morphological peculiarities is given. A detailed description of the new material, including a discussion of taxonomical questions, is under preparation.

#### *Leptotyphlops* cf. *filiformis* Boulenger, 1899

Material: n = 1

ZFMK 82508 — Wadi Zeeriq, 12°31'08" N, 53°59'09" E, Dixam plateau, Socotra.

*Glauconia filiformis* (= *Leptotyphlops filiformis*) was described on the basis of four specimens by Boulenger (1899). Two specimens of the type series are destroyed (see Schätti and Desvoignes 1999).

Characters of specimen ZFMK 82508: total length 182 mm; tail length 15 mm; diameter at midbody 1,5 mm; diameter at tail 1,1 mm; index total length/tail length 12,13; total length/midbody diameter 121,33; total length/tail diameter 13,64. Rostral hooked; 529 dorsals and 45 subcaudals; caudal spine small, not curved.

Remarks: ZFMK 82508 matches the lectotype of *L. filiformis* BMNH 1946.1.11.1 in the following characters: form of rostral, tip of tail, form and arrangement of head scales, number of scales at midbody and at the middle of tail. ZFMK 82508 differs from *L. filiformis* in a substantial bigger total length, a smaller diameter at midbody and more dorsals (own findings).

#### *Leptotyphlops macrurus* (Boulenger, 1899)

Material: n = 4

ZFMK 82533 — Qaareh, Noged plain, 12°20'10" N, 53°37'56" E, Socotra; ZFMK 82551-3 - Khayrha mountains, 12°38'50" N, 53°27'45" E, Socotra.

*Glauconia longicauda* was described on the basis of four specimens by Boulenger (1899). *G. longicauda* is a younger homonym of *Stenostoma longicaudum* (Peters, 1854) (= *Leptotyphlops longicaudus*). Boulenger (1903) replaced the name *Glauconia longicauda*, in an almost identical description, by *Glauconia macrura* (= *Leptotyphlops macrurus*).

*L. macrurus* differs from *L. filiformis* in the proportional bigger diameter at midbody and the strong caudal spine. According to Hahn (1978) *L. wilsoni* differs from *L. macrurus* in the following features: a hooked snout, divided occipitals (?).

ZFMK 82533 and ZFMK 82551-3 show the following width of variation in size, body proportions and scales: total length 105-153 mm; tail length 18-25 mm; head length (= tip of snout to end of mouth) 1,5-2,1 mm; head width 1,7-2,6 mm; rostral length 0,9-1,3 mm, rostral width 0,6-0,8 mm; diameter at midbody 2,0-3,5 mm; diameter at tail 1,6-2,7 mm. Total length/tail length 5,83-6,59; head length/head width 0,77-0,88; rostral

length/rostral width 1,25-1,63; total length/diameter at midbody 41,43-55,00; tail length/tail diameter 8,15-12,50. Dorsalia 256-274, subcaudalia 46-54, scales at midbody 14, scales at middle of tail 10, number of dark dorsals 5-7.

Remarks: Snout not hooked in ZFMK 82533 and ZFMK 82553. Occipitals usually  $\frac{3}{4}$  of the size of parietals, but in ZFMK 82552 on the right occipital same size as parietal, on the left occipital divided. Usually eyespot, but in ZFMK 82551 pupil and iris.

#### *Leptotyphlops wilsoni* Hahn, 1978

*Leptotyphlops wilsoni* was described on the basis of two specimens by Hahn (1978) (see also Corkill and Chochrane 1966). *L. wilsoni* differs from *L. filiformis* and *L. macrurus* by a short, rounded, not hooked snout and a proportional smaller rostral; from *L. filiformis* it differs additionally in a lower number of dorsals. According to Hahn (1978) the occipitals in *L. wilsoni* are undivided, but divided in *L. filiformis* and *L. macrurus*, which was not confirmed by Schätti and Desvoignes (1999).

Remarks: The nostril in the paratype (BMNH 1957.1.10.27) of *L. wilsoni* is near to the anterior supralabial, the frontal is bigger than the supraoculars, frontal and postfrontal are equally in size, the interparietal is about 1  $\frac{1}{2}$  times bigger than the frontal. The rostral is proportionally clearly smaller (0,4x0,25 mm) than in *L. filiformis* and *L. macrurus*. Caudal spine acute, not tapering, twice as long as width. Six rows of dorsalia olive green (own findings). For further characters of paratype see Hahn (1978).

#### *Leptotyphlops* sp.

Material: n= 6

CWWR (two specimens, no number) - Hasaant, 12°29'N 54°08'E, 170 m., Socotra; CWWR (no number) - Farmihin, 12°32'N 53°59'E, Socotra; CWWR (no number) - Wadi Ayhaft, 12°36'N 53°57'E, Socotra; MTD D 41253 - Hasaant, 12°29'N 54°08'E, 170 m., Socotra; NMW 13305 - Hakari, Socotra.

These six specimens, characterized by smaller diameter

at midbody and some peculiarities in body proportions (total length/diameter at midbody, number of dorsals) were provisionally designated *Leptotyphlops* cf. *wilsoni* (Rösler and Wranik 2004). In some of the compared specimens of *Leptotyphlops* single characters are beyond the variation in *L. wilsoni* given by Hahn (1978). The differences are individual and involve the following characters: body proportionally smaller, tail proportionally slender, tail proportionally shorter, tip of snout not rounded and short, pupil and iris present, lower number of dorsals, higher or lower number of subcaudals, lower number of dark coloured dorsals. From our investigations we can state a great variation in the compared specimens (see Rösler and Wranik 2004).

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