CHAPTER 18

Family Typhlopidae

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Relationships between the main basal groups within snakes have yet to be resolved. One lineage, the scalecephalians, comprises a number of families of so-called ‘blind snakes’. A recent phylogeny of scalecephalians (Vidal et al. 2010) reveals a long Gondwanan history and an initial diversification of the group following the separation of East and West Gondwana. Subsequent radiation was accompanied by several oceanic dispersal events, while their exceptional diversification in the Cenozoic was probably linked to a parallel radiation of prey (ants and termites). The main clades of scalecephalians diverged in the Jurassic and Cretaceous between 159 and 97 million years ago, and the very deep genetic divergence between these clades has necessitated the recognition of two new scalecephalian families, the Xenopholididae from Madagascar and the Gerophiliidae from Sri Lanka to Papua New Guinea (Vidal et al. 2010).

The Typhlopidae is the most diverse scalecephalian family and comprises small- to large-bodied snakes (252 species in 10 genera, Uetz 2012). Scalecephalians typically have conservative morphologies and it is therefore often difficult to distinguish between species. This has probably led to an under-appreciation of their diversity. A preliminary phylogeny of the family (Vidal et al. 2010) recovered multiple examples of paraphyly that will require non-traditional revision.

The two new genera Afrotyphlops and Megatyphlops, proposed for African typhlopids (Bradley & Wallach 2009) appear to form monophyletic lineages (Vidal et al. 2010). However, greater taxonomic sampling is required to assess species assignments and to compare levels of genetic divergence within and between the identified clades. Where molecular phylogenetic techniques have been used, extensive cryptic radiations have been described (e.g. West Indies, Thomas & Hedges 2007). Current assignments of typhlopids within the Atlas region are based on morphological studies, with molecular phylogenetic analysis at a preliminary stage. It is likely that such assessments will greatly increase the number of African genera and species, as they have done for Australian and Caribbean typhlopids and African leptotyphlopids (Adalsteinsson et al. 2009).

Typhlopids are cosmopolitan, with their core distribution in the tropics. Few species occur in temperate areas in either hemisphere. Within the Atlas region, four genera are known. One of these, Ramphotyphlops, has a single species (Brahminy Blind Snake, R. braminus) introduced from Asia. It is not assessed here although an account is presented. Ramphotyphlops braminus is parthenogenetic and has apparently spread around the world with horticultural products such as potted plants. The other three genera are Afrotyphlops (16 species, two in the Atlas region), Megatyphlops (four species, two in the Atlas region) and Rhinotyphlops (four species, two in the Atlas region). Some species are widespread (e.g. R. lalandei) while others (e.g. A. farrisini) have restricted ranges.

Blind snakes are characterised by tubular bodies, very short tails, uniform scalation around the body, and reduced eyes covered by head shields. Most species are pink or brown, often with irregular dark blotches. Although most species in the family are small, two of the species in the Atlas region, namely M. schlegelii and M. mucros, are among the largest blind snakes, growing to 1 m in length. This is reflected in their new generic name, Megatyphlops (Bradley & Wallach 2009). The mouths of blind snakes are characteristically very small and they use the toothed maxillary bones of their upper jaws to rake in large numbers of small prey very quickly (Webb & Shine 1993; Kley 2001). These harmless snakes are non-venomous and live underground where they prey on social insects such as ants and termites (Webb et al. 2001). In most species, females lay 4–25 eggs per clutch in late summer and these hatch in autumn (Webb et al. 2001). Bibron’s Blind Snake (A. bibronii), however, lays thin-shelled eggs at an advanced stage of development, which hatch in 5–8 days (Erasmus & Branch 1983).

Globally there are currently 61 taxa in this poorly-known family on the Red List, 30 of which are listed as Data Deficient and seven of which are in threatened categories (IUCN 2010b). The species in the Atlas region are mostly widespread and common and none are considered to be of conservation concern. However, little is known about the ecology of most species, including how they might be impacted by alien invasives such as the Argentine Ant Linepithema humile.
Genus *Afrotyphlops* Broadley & Wallach, 2009—African blind snakes

*Afrotyphlops* is a genus of sub-Saharan blind snakes containing 16 species (Broadley & Wallach 2009). The two local species (*A. bibronii*, *A. fornasini*) both occur in the eastern half of the Atlas region. They live underground and feed mostly on ant pupae, which are raided from nests (Webb et al. 2001). Females lay 5–14 eggs per clutch; eggs of *A. bibronii* hatch after only 5–8 days (Erasmus & Branch 1983; Branch 1998). Both species are common and wide-ranging and are thus not considered threatened.

*Afrotyphlops bibronii* (A. Smith, 1846)
**Bibron’s Blind Snake**

G. John Measey

**Global: Least Concern**

**Near-endemic**

**Taxonomy:** Previously known as *Typhlops bibronii*, but placed in the new endemic African genus *Afrotyphlops* by Broadley & Wallach (2009). The taxonomic status of the isolated population in eastern Zimbabwe should be investigated using molecular techniques.

**Distribution:** Endemic to southern Africa, occurring mainly in the eastern half of the Atlas region and in extreme eastern Botswana (Broadley & Wallach 2009). A relict population exists in eastern Zimbabwe and another may be present in adjacent Mozambique (Broadley 1999b). *Atlas* data suggest that this species also occurs in the southernmost parts of Mozambique.

**Habitat:** Burrows in loose soil and apparently moves into surface soils in search of macro-invertebrate prey items, especially after rain (Broadley 1999b). Found in old termite mounds, and in or on soil under rocks and rotting logs (De Waal 1978; Jacobsen 1989). Occurs at altitudes of 0–2 000 m (Broadley & Wallach 2009).

**Biome:** Grassland, Savanna; Indian Ocean Coastal Belt; Albany Thicket.

**Assessment rationale:** Widespread and common.

**Conservation measures:** None recommended.

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*Afrotyphlops bibronii*—near Wolkberg hut, Wolkberg Wilderness Area, Limpopo Province (M. Burger)

*Afrotyphlops bibronii*—Pretoria, Gauteng Province (J. Marais)
Afrotyphlops fornasinii (Bianconi, 1849)
FORNASINI'S BLIND SNAKE
G. John Measey

Regional: Least Concern

Taxonomy: Previously known as Typhlops fornasinii, but placed in the endemic African genus Afrotyphlops by Broadley & Wallach (2009). The taxonomic status of the insular populations off the coast of Mozambique should be investigated using molecular techniques, as should the population in southeastern Zimbabwe.

Distribution: Endemic to southern Africa. Found on the coastal plains of northern KwaZulu-Natal and southern Mozambique as far north as Maputo and the adjacent offshore islands. An isolated population occurs in southeastern Zimbabwe (Broadley 1990b; Branch 1998; Broadley & Wallach 2009).

Habitat: Found in coastal sand associated with leaf litter (Branch 1998), at altitudes of 0–100 m (Broadley & Wallach 2009).

Bioregion: Indian Ocean Coastal Belt; Lowveld.

Assessment rationale: This species has a small EOO (5 000 km², on the Endangered threshold) and fairly small AOO (4 000 km²) within the Atlas region (both estimates made with a low level of confidence). However, it is common and appears to be tolerant of moderate habitat change.

Conservation measures: None recommended.
Genus *Megatyphlops* Broadley & Wallach, 2009—giant blind snakes

*Megatyphlops* is an African genus comprising four species (Broadley & Wallach 2009), two (*M. schlegelii*, *M. mucruso*) of which are present in the *Atlas* region. As their name suggests these are large snakes (up to 1 m long), and *M. mucruso* is the largest of all blind snakes. The other members of the genus occur elsewhere in eastern and southern Africa. These snakes live much deeper underground than other ophidiophiids and are seldom seen. Females usually lay clutches of 12–40 eggs (Branch 1998). They are widespread and not considered to be threatened.

*Megatyphlops mucruso* (Peters, 1854)
ZAMBEZI GIANT BLIND SNAKE;
ZAMBEZI BEAKED BLIND SNAKE
G. John Measey

Regional: Least Concern

Taxonomy: Previously known by the name *Rhinotyphlops schlegelii mucruso*, but elevated to full species status and placed in the new genus *Megatyphlops* by Broadley & Wallach (2009).

Distribution: Found in northern Limpopo, South Africa, extending northwards through Zimbabwe, central and northern Mozambique, to coastal Kenya and into the southern Congo basin, including northeastern Angola (Broadley 1990b; Broadley & Wallach 2009). The record in QDG 23310C should be checked as it falls within the range of the closely-related *M. schlegelii*.

Habitat: Uses its horny beak to penetrate hard substrates, including termitaria. Occurs at altitudes of 250–900 m in Limpopo (Jacobsen 1989), and elsewhere at 0–1 740 m (Broadley & Wallach 2009).

Bioregion: Mopane; Lowveld.

Assessment rationale: Has a fairly restricted range within the *Atlas* region but is probably common and does not appear to be threatened. Outside this region it is also likely to be Least Concern.

Conservation measures: None recommended.

*Megatyphlops schlegelii* (Bianconi, 1847)
SCHLECELI’S GIANT BLIND SNAKE;
SCHLECELI’S BEAKED BLIND SNAKE
G. John Measey

Regional: Least Concern

Taxonomy: Until recently, four subspecies were recognised under the name *Rhinotyphlops schlegelii* (*schlegelii*, *mucruso*, *breviss*; see Hahn 1980), but the latter two have now been elevated to species status within the genus *Megatyphlops* (Broadley & Wallach 2009). *Rhinotyphlops s. petersii* is considered a junior synonym of *M. schlegelii* (Broadley & Wallach 2009). It would be worthwhile to test the hypotheses proposed in the morphology-based taxonomic revision by means of a molecular investigation of all species in the genus.

Distribution: Endemic to the southern half of Africa. Found in Limpopo, eastern Mpumalanga, Swaziland and north-
eastern KwaZulu-Natal, as well as southern Mozambique, eastern Botswana, northern Namibia and southern Angola (Broadley & Wallach 2009). Broadley & Wallach (2009) omitted an isolated cluster of records from Gauteng (see Broadley 1990b) and these records have also been excluded from the current assessment. They may, however, require further investigation.

**Habitat:** Uses its hardened beak to burrow into compact soil, including termittaria, in search of its social macro-invertebrate adult and larval prey (Kley 2001). Most often seen when crossing roads after rain; occurs at altitudes of 200–1,200 m in Limpopo and Mpumalanga (Jocobsen 1989) and 0–200 m in KwaZulu-Natal (Bourquin 2004).

**Biome:** Savanna; Grassland; Indian Ocean Coastal Belt.

**Assessment rationale:** Widespread and common.

**Conservation measures:** None recommended.
Genus *Rhamphomyphlops* Fitzinger, 1843—Australasian blind snakes

*Rhamphomyphlops* is a genus of Australasian blind snakes currently containing 27 species (Uetz 2012), most of which occur in Australia. These snakes are restricted to Southeastern Asia, the Philippines, Indonesia, Papua New Guinea, and islands of the Indian and western Pacific Oceans, except for *R. braminus* (see below) which has been introduced throughout tropical and subtropical regions of the world (Broadley & Wallach 2009). Males are characterised by an unusual hemipenis with a solid terminal awn (McDowell 1974), while females of all species—except the all-female parthenogenetic *R. braminus*—are oviparous and lay small clutches of eggs, usually about 13 but exceptionally up to 34 (Shine & Webb 1990).

*Rhamphomyphlops braminus*
(Daudin, 1803)
BRAHMINY BLIND SNAKE; FLOWERPOT SNAKE
William R. Branch

Not Applicable

**Taxonomy:** Paradoxically, this was one of the first snake species to be recorded from South Africa (as *Onychoccephalus Capensis* Smith, 1838). It was first recognised as being referable to *Typhlops* (= *Rhamphomyphlops*) *braminus* by McLachlan (1978b) based on the existence of a population on the Cape Peninsula.

**Distribution:** Found in South East Asia from Philippines to northern Australia and now also known to have been transported to numerous other countries (Broadley & Wallach 2009). Found on the East African coastal plain from Somalia to Beira in Mozambique, with isolated populations now established in Durban and Cape Town. Recently introduced into Egypt (Baba el Din 1996), Central African Republic (Chirio & Ineich 1997) and Libya (Joger et al. 2008). In most areas it is restricted to the coastal plain (Branch 1998), but in Tanzania it is known from localities almost 200 km inland (Loveridge 1955). Reported from Cape Town by McLachlan (1978b) and subsequently from Durban by Alexander (1987). Recently found inland in the Western Cape, at Worcester (3319C8) in 1997, and Porterville (3318R8B) in 2002 (Turner et al. 2007).

**Habitat:** Usually found in urban gardens where it burrows in moist soil under rocks and rotting logs (Branch 1998). McDowell (1974) first demonstrated that this is an all-female species and the only known parthenogenetic, triploid snake.

**Biome:** Fynbos, Indian Ocean Coastal Belt.

**Assessment rationale:** Not assessed as it is an introduced species.

**Conservation measures:** None recommended.
Genus *Rhinotyphlops* Fitzinger, 1843—beaked blind snakes

*Rhinotyphlops* is endemic to central, eastern and southern Africa, and contains four species (*R. islandei*, *R. schinzi*, *R. boylei*, *R. leucocephalus*). The first two species occur in the *Atlas* region, whereas *R. boylei* is restricted to Namibia and Botswana, and *R. leucocephalus* is restricted to Somalia (Broadley & Wallach 2009). *Rhinotyphlops boylei* may occur in the Mier-Kalahari of the Northern Cape. These harmless snakes live underground and feed on termites and ant brood (Webb *et al.* 2001). Females lay small clutches of 2–4 eggs (Branch 1998). Neither species in the *Atlas* region is considered to be threatened.

*Rhinotyphlops islandei* (Schlegel, 1839)
DELALANDE’S BEAKED BLIND SNAKE

G. John Measey

**Regional:** Least Concern

**Taxonomy:** The taxonomy would be improved by a molecular-based revision of the relict populations in Namibia.

**Distribution:** Widespread but endemic to southern Africa, occurring from northern Zimbabwe southwards to the Western Cape in South Africa. Also found in Swaziland, western Lesotho, southern Namibia, eastern Botswana and western Mozambique, with isolated populations in central Namibia (Broadley & Wallach 2009). In the *Atlas* region it appears to be absent from Kalahari sands and east of the Drakensberg. Some records in western Lesotho require confirmation.

**Habitat:** Fossorial, using its hard beak to burrow into firm substrates. It has been found under rocks and rotting logs and in moribund termitaria (De Waal 1978; Jacobsen 1989).

**Biome:** Grassland; Fynbos; Savanna; Succulent Karoo; Nama-Karoo; Albany Thicket.

**Assessment rationale:** Widespread and common.

**Conservation measures:** None recommended.
**Rhinotyphlops schinzi** *(Boettger, 1887)*

**SCHINZ'S BEAKED BLIND SNAKE**

G. John Measey

**Regional:** Least Concern

**Taxonomy:** No notable issues.

**Distribution:** Endemic to Namibia, western Botswana and northwestern South Africa (Broadley 1990a; Broadley & Wallach 2009). Within the *Atlas* region it occurs only in the Northern Cape. Although not commonly encountered, it is likely to be more widespread than *Atlas* records suggest because the Northern Cape has not been comprehensively surveyed.

**Habitat:** The beak of this snake suggests that it is capable of burrowing into hard ground in the arid zones that it inhabits.

**Bioregion:** Bushmanland, Namaqualand Hardeveld, Upper Karoo.

**Assessment rationale:** Widespread and found in an area with relatively low-impact agricultural practices.

**Conservation measures:** Conduct surveys to discover the true range of the species.

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*Rhinotyphlops schinzi*—Farm Bottenkraal, about 37 km SW of Strydenburg, NC

*M. Burger*

*Rhinotyphlops schinzi*—Springbok, NC

*J. Marais*