

# Snakes of Jebel Al Dair Biosphere Reserve, North Kordofan State

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## Abstract

Twenty snake species falling into 15 genera and 10 families were found in Jabal Al Dair Biosphere Reserve. 11 species were found to be first record to Sudan from the study area. All encountered species are at Least Concerned according to IUCN Red List of Threatened Species. Colubridae with 5 genera, has higher richness compared with other families. The Psammophisidae outnumbered the snake collected followed by Viperidae.

**Keywords:** Biosphere; Reserve; Snakes; Kordofan; Sudan

## Introduction

Notes on Sudan snakes and their description were attributed to Flower [1], Corkill [2], Loveridge [3], Schmidt [4], Venkatraman & Badawi [5], Osman & Tag Elsir [6], [7] and [8]. This indicates that the snakes of the Sudan are widely distributed. According to Corkill [2] there are six families of snakes represented in the Sudan; including thirty-nine species. Of these species the Family Typhlopidae, the Blind Snakes takes one; the Family Leptotyphlopidae, the Earth Snakes, one; the Family Boidae, the Boas and Pythons takes three. The Family Colubridae, fifteen in its fangless division, the Aglypha and ten in its fanged division, the Opisthoglypha; the Family Elapidae, the Cobras, three; and the Family Viperidae, the Vipers, six. The blind snake *Indotyphlops braminus* is the smallest snake species in Sudan [8]. *Naja haje*, *Naja nigricollis* and *Naja melanoleuca* may spit their venom in the eyes of those they encounter Loveridge [3].

## Material and Methods

### The study area

Jebel Al Dair Biosphere Reserve (JADBR) in North Kordofan State is located between 12°28" and 30°30"N; 13°12" and 42°30"E. It rises 1,451m covering 6,374 km<sup>2</sup> (<https://plus.google.com/+UNESCO> 2021). JADBR is composed of dry savannah woodlands, forest ecosystems and a network of streams (IFAD,

2008). Whiteman (1971) and [www.easnap.com](http://www.easnap.com) (2021) adequately described its topography.

### Snakes collection and identification

The snakes were recognized directly and captured by a snake capture. Their identification followed Largen and Spawls [9] [www.reptile-database.org](http://www.reptile-database.org); [www.africanreptiles-venom.co.za](http://www.africanreptiles-venom.co.za); [www.fonozoo.com](http://www.fonozoo.com); [www.eol.org](http://www.eol.org). Photos were taken by a digital canon camera (EOS 700D, 18-55mm) fitted with a zoom lens 450-800mm. A camera-trapping of the type (wosports) was set above the ground at 20-50cm to capture photos of snakes passing by during day and night. A Samsung grand 2 mobile was also used.

### Results

Twenty snake species were collected from JADBR (Table 1) & (Figures 1-8). These species fall into 16 genera and 10 families. All encountered species are at Least Concerned according to IUCN Red List of Threatened Species [10]. Diversity wide, the Family: Colubridae with 5 genera, has higher richness than the rest of the families. Psammophisidae was represented by one genus and three species. only one specimen of *A. lineolatus*, *M. semiornatus* and *S. diadema* were found and this was during autumn. The following seven species (*E. muelleri*, *P. regious*, *P. mossambicus*, *P. sibilans*, *P. sudanensis*, *Naja nubiae* and *Naja haje*)

were encountered during all seasons. which are represented each by one genus. The Psammophisidae outnumbered the collection followed by Viperidae (Table 1). Snakes species observed in different habitats and elevations of JADBR were given in (Table 2). The table revealed that:

- a) Psammophis sibilant and Psammophis sudanensis were found in the six habitats.
- b) Afrotyphlops lineolatus and Lycophidium capense were found once in the mountain.
- c) A single specimen of Meizodon semiornatus was found in a tree.
- d) A single specimen of Spalerosophis diadema was found in an agriculture plot.
- e) Psammophis sudanensis outnumbered the specimens followed by Echis pyramidum.
- f) The agricultural plots showed the highest number of

snakes and the lowest number was encountered in woodland savanna habitat.

- g) Woodland savanna habitat and agricultural plots each host 11 species of snakes. On the other hand, the semi-arid lands contain 7 snake species.
  - h) Echis pyramidum recorded the highest score of a species in a habitat (trees).
  - i) Psammophis mossambicus, P. sudanensis and N. nubiae were found in all elevations.
  - j) Myriopholis cairi, E. muelleri, M. semiornatus, S. diadema, A. wastoni and B. arietans were confined to elevations <5m.
  - k) Afrotyphlops lineolatus was found only in elevations >500.
- Naja haje was the longest and massive snake (215cm in total length) while M. cairi was tiny and the shortest in total length (7.4cm).

**Table 1:** Seasonal distribution of adult (A) and Juvenile (J) snakes in JDBR.

Species	Seasons						No.
	Winter		Summer		Autumn		
	A	J	A	J	A	J	
Family: Typhlopidae							
Afrotyphlops lineolatus (Jan 1864)	0	0	0	0	0	1	1
Family: Leptotyphlopidae							
Myriopholis cairi (Duméril & Bibron 1844)	0	0	0	1	0	3	4
Family: Boidae							
Eryx muelleri (Boulenger 1892)	5	1	0	1	16	4	27
Family: Pythonidae							
Python regius (Shaw 1802)	3	0	1	0	0	2	6
Python sebae (Gmelin 1789)	1	0	0	0	1	0	2
Family: Lamprophiidae							
Lycophidium capense (Smith 1831)	1	0	0	0	1	0	2
Family: Colubridae							
Platyceps florulentus (Geoffroy & St-Hilaire 1827)	1	0	0	2	0	0	3
Meizodon semiornatus (Peters 1854)	0	0	0	0	1	0	1
Philothamnus semivariegatus (Smith 1840)	1	2	0	0	0	0	3
Spelerosophis diadema (Schlegel 1837)	0	0	0	0	1	0	1
Telescopus tripolitanus (Reuss 1834)	2	1	0	0	1	0	4
Family: Psammophisidae							
Psammophis mossambicus (Peters 1882)	2	0	1	0	8	0	11
Psammophis sibilans (L. 1758)	3	0	6	0	10	0	19
Psammophis sudanensis (Werner 1919)	11	0	4	0	1	23	49
Rhamphiophis rostratus (Peters 1854)	5	0	1	0	8	2	16
Family: Atractaspididae							
Atractaspis wastoni (Boulenger 1908)	0	0	0	0	2	1	3

Family: <i>Elapidae</i>							
<i>Naja haje</i> (L. 1758)	2	0	0	0	3	0	5
<i>Naja nubiae</i> (Wüster and Broadly 2003)	3	0	1	0	15	5	24
Family: <i>Viperidae</i>							
<i>Bitis arietans</i> (Merrem 1820)	1	1	2	0	0	0	4
<i>Echis pyramidum</i> (Geoffroy Saint-Hilaire 1827)	16	5	11	0	25	3	60

**Table 2:** Number of snakes found in Mountain=M; Woodland Savanna=WS; Semi-arid=SA; Trees=T; Urban area=UA; Agriculture plots=Ag and at different elevations in JDBR (+=present - =absent).

Species	Habitat						Elevation in m			
	M	WS	SA	T	UA	Ag	0-5	>5-100	>100-500	>500-1200
<i>A. lineolatus</i>	1	0	0	0	0	0	-	-	-	+
<i>M. cairi</i>	0	0	1	0	3	0	+	-	-	-
<i>E. muelleri</i>	0	0	13	0	9	5	+	-	-	-
<i>P. regius</i>	1	5	0	0	0	0	+	+	-	-
<i>P. sebae</i>	2	3	0	0	0	0	+	+	-	-
<i>L. capense</i>	2	0				1	-	+	-	-
<i>C. florulentus</i>	1	0	1	0	0	1	+	+	+	-
<i>M. semiornatus</i>	0	0	0	0	0	0	+	-	-	-
<i>Psemivariegatus</i>	8	3	0	0	0	0	+	+	-	-
<i>S. diadema</i>	3	2	3	2	1	8	+	-	-	-
<i>T. tripolitanus</i>	11	1	4	9	5	19	+	+	-	-
<i>P. mossambicus</i>	0	2	9	6	0	7	+	+	+	+
<i>P. sibilans</i>	0	2	0	0	0	1	+	+	-	-
<i>P. sudanensis</i>	0	0	0	1	0	0	+	+	+	+
<i>R. rostratus</i>	2	1	0	0	1	0	+	+	-	-
<i>A. wastoni</i>	0	0	1	2	0	0	+	-	-	-
<i>N. haje</i>	0	1	0	1	2	1	+	+	-	-
<i>N. nubiae</i>	9	2	0	1	7	5	+	+	+	+
<i>B. arietans</i>	0	3	0	0	0	1	+	-	-	-
<i>E. pyramidum</i>	0	3	3	20	5	15	+	+	-	-
No. of species	10	12	7	9	8	11	18	13	4	4
Total	40	28	35	42	33	63				

**Discussion**

The current study found 20 species, 16 genera and 10 families of snakes in JDBR (Table 1). Thirty-nine species of snakes from Sudan were encountered by Corkill [2]; 28 species were recorded by [7] and Indotyphlops braminus by [8]. Corkill [2] recorded 27 species from Kordofan. During the present study 9 of these species were confirmed to JADBR. Compilation of those records revealed a total of 60 snake species in Sudan falling into 10 families. The present study added 11 more species to Sudan as first record from JADBR. These are: *A. lineolatus*, *M. cairi*, *L. capense*, *P. florulentus*, *M. semiornatus*, *T. tripolitanus*, *P. mossambicus*, *P. sudanensis*, *A. wastoni*, *R. rostratus* and *N. nubiae*. Corkill [2] recorded *M. cairi* in Halfa, Khartoum and the Blue Nile; *P. sebae*, *P. regius* only in

Diling and Kadugli in the Nuba Mountains of Kordofan; *L. capense* in Nuba Mountains and *Erkowit*; *P. florulentus*, *S. diadema*, *P. semivariegatus*, *R. rostratus*, *P. sibilans*, *P. sudanensis*, *N. haje* and *B. arietans* from several places. *Atractaspis watsoni* is distributed from Mauritania to Sudan in Sudano-Sahelian savannah Trape [11]. *Python regius* and *P. sebae* are near threatened while the rest of the snakes are at least concern according to IUCN [10]. A total of 112 *Pelomedusa* sp. were recorded during this study. *Python regius* and *Python sebae* are near threatened 9-*Myriopholis* (*macrohynca*) while the rest of the snakes are at least concern according Red list ver 3.1 2016 ([www.iucnredlist.org](http://www.iucnredlist.org), 2016). The possibility of finding 4 species under the genus *Psammophis*, 3 under the genus *Echis*, 2 under each of the genera *Naja*, *Atractaspis*, and *Afrotrophlops*, and 1 species under each of

the genera *Platyceps*, *Bitis* and *Myriopholis* should not be under looked. Corkill [2] and Loveridge [3] noticed that *Eryx thebaci*, *Psammophis sibilans* and *Naja* spp., are usually found near

plantations. Recently, Native Reptiles of Sudan [12-15] added *Bitis gabonica*, *Causus maculatus*, *Rhamphiophis oxyrhynchus* and *Dasypeltis scabra* [16,17] to the snakes of Sudan.



Figure 1: *Myriopholis cairi*.



Figure 2: *Eryx muelleri*.



**Figure 3:** *Philothamnus semivariegatus*.



**Figure 4:** *Rhamphiophis rostratus*.



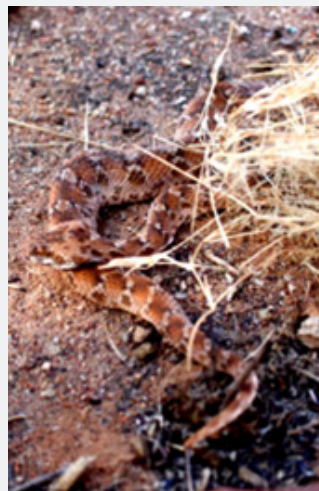
**Figure 5:** *Leptotyphlops lineolatus*



**Figure 6:** *Naja nubiae*



**Figure 7:** *Bitis arietans*.



**Figure 8:** *Echis pyramidum*.

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