

Snakes from Jazan Province, Saudi Arabia

Abdulhadi Aloufi¹, Zuhair S. Amr^{2*}, and Mohammad A. Abu Baker³

¹ Department of Biology, Taibah University, Al-Madinah Al-Munawwarah, Kingdom of Saudi Arabia;

² Department of Biology, Jordan University of Science and Technology, Irbid, Jordan, ³ Department of Biology, the University of Jordan, Amman, Jordan

Received: June 29, 2022; Revised: September 4, 2022; Accepted: September 12, 2022

Abstract

Eleven species of snakes belonging to six families (Colubridae, Psammophiidae, Lamprophiidae, Viperidae, Elapidae and Atractaspididae) are reported herein from Jazan Province. Data on their ecology are presented along with a zoogeographical analysis of species of African affinities.

Keywords: Jazan, Snakes, *Psammophis aegyptius*, *Boaedon fuliginosus*

Introduction

Despite the additions of new records to the herpetofauna of Saudi Arabia over the last decade (Aloufi and Amr, 2015, Aloufi *et al.*, 2019, 2020, 2021, 2022), some areas remain poorly known in terms of herpetological studies. The most southwestern corner of Saudi Arabia, close to the Yemeni frontiers was subject to few studies. Schätti and Gasperetti (1994) recorded twenty-two species of snakes from southwestern Arabia. Masood (2012) listed thirty-six species of snakes from Jazan area, several are of doubtful presence (i.e. *Pseudocerastes persicus fieldi* [Sic.], *Cerastes vipera*, *Naja nigricollis*, and *Platycephalus ventromaculatus*), while Masood and Asiry (2012) removed these species from the list of Jazan snakes. Busais *et al.* (2019) listed seven species of venomous snakes from the Jazan area.

Jazan Province has an area of 12,435 km² and is located on the most southwestern part of Saudi Arabia, adjacent to Yemen. It includes about one-hundred islands in the Red Sea, among which is the largest, Farasan Island. Its coastline extends along the Red Sea for 280 km. The annual rainfall is less than 100

mm, with mean maximum temperatures ranging from 40 °C in July to 31 °C in January. Different types of habitats are found within Jazan Province ranging from high mountains such as Al-Sarawat mountains with an altitude reaching up to 3000 m asl, to dense forests and pasture lands such as Al-hazoun forest, and Tihamah plains that are extensively planted with coffee beans, cereal grain crops and fruits. In addition to having many forms of wetlands (i.e., Wadi Lajab and Wadi Jazan Dam) as well as salt marches “*sabkhas*” along the coastal plains (King Abdulaziz Public Library 2011). In this communication, eleven species of snakes are reported from Jazan Province, Saudi Arabia.

Materials and Methods

Field trips were conducted between October 2021 and January 2022. Reptiles were visually observed and captured during day and night times by a group of wildlife biologists from five sites representing different habitats in Jazan Province. Transects of about one km length were surveyed during daytime with at least 3 hrs. of total effort for each site. Scale counts include ventral, caudal, and midbody scales. Measurement were taken for snout-vent and tail.

Study area

Five areas were studied within Jazan Province; Al-Kheshabeah, Wadi Al-Heiad, Wadi Al-Mejasess, Wadi Al-Meqtabah and Wadi Jazan. Habitats in these sites varied considerably (Figure 1 and 2). Below are descriptions of each study site.

*Corresponding author: amrz@just.edu.jo

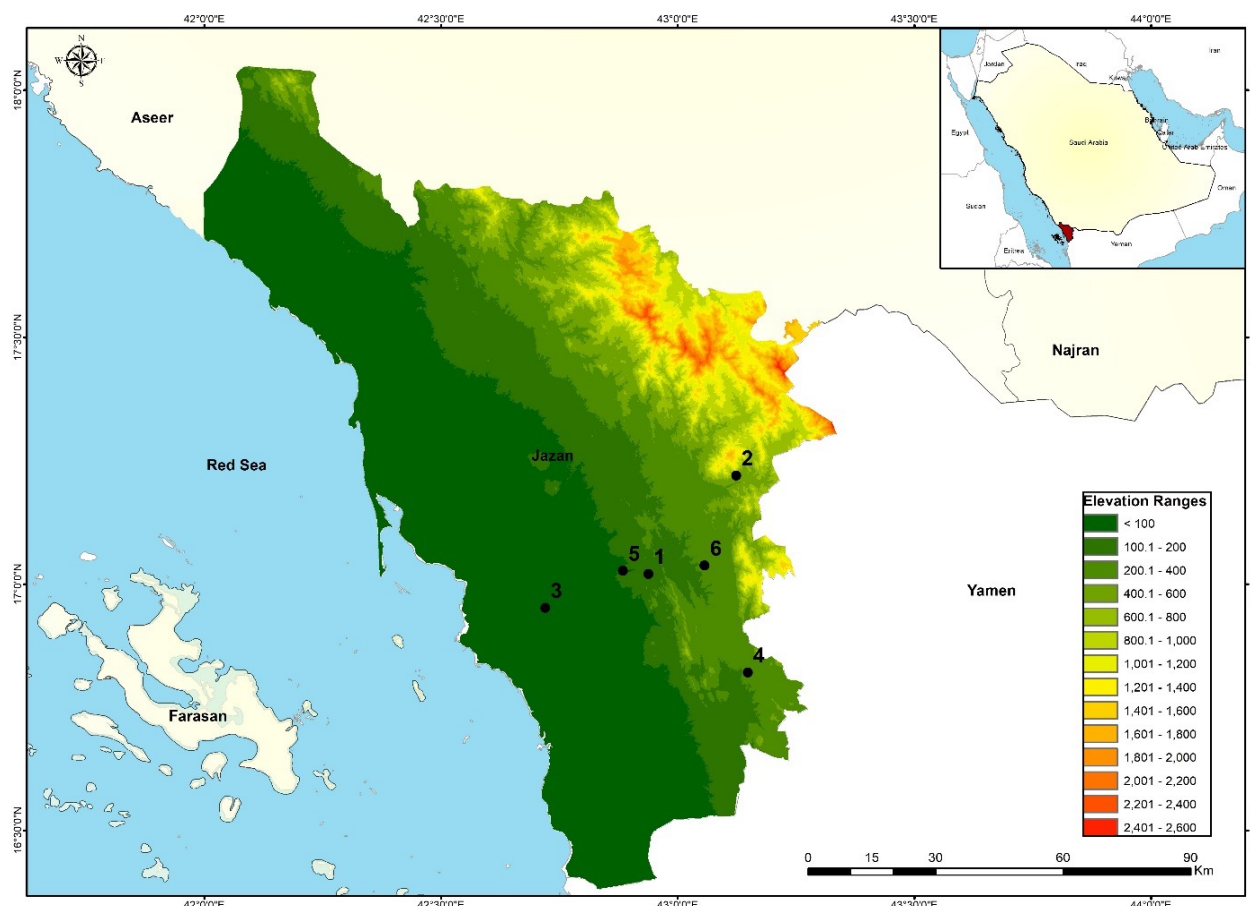


Figure 1. Map of Jazan showing studied localities. 1. Wadi Jazan. 2. Fifa mountains. 3. Al-kheshabeah. 4. Wadi Al-Meqtabah. 5. Wadi Al-Mejasess. 6. Wadi Al-Heiad.

Al-kheshabeah (16°57'6.66" N, 42°43'14.84" E): Located within Abu 'Arish Governorate. This site is part of a sandy plain that is 95 m asl, densely covered with *Panicum turgidum*.

Wadi Al-Heiad (17° 02' 11.55" N 43° 6'50.73" E): Located within Al-Aridhah Governorate. A large valley descending from Mount Al-Abadil, characterized by rocky cliffs with large rocks at the mountainside, some of which block the wadi to create large pools of water. It is about 270 m asl. *Ficus cordata salicifolia* trees are scattered on its sides on the upper slopes, however, there is a scattered presence of *Dobera glabra* trees. At the foothill of the valley, *Ziziphus spina-christi*, *Acacia gerrardii*, and *Anisotes trisulcus* grow densely in the form of a forest.

Wadi Al-Mejasess (17° 1'38.12" N

42°53'4.99" E): Located within Abu 'Arish Governorate. A large valley that is about 110 m above sea level. On its high rocky sides, the *Delonix elata* trees are scattered, while in the depth and middle of the valley there is a forest of *Acacia ehrenbergiana* and some Doum palms, *Hyphaene thebaica*.

Wadi Al-Meqtabah (16°49'13.76" N 43° 8'55.78" E): Located within Al-Hurath Governorate. A large valley that is about 220 m above sea level. It is densely covered with *Ocimum tenuiflorum* and *Abutilon sp.* On its rocky sides, there are clusters of *Adenium obesum* and *Acacia sp.*

Wadi Jazan (17° 1'14.51" N 42° 56' 18.36" E): Wide wadi systems in Jazan province with seasonal water forming a stream-like water body, ending with a big lake. The dominant plant communities consist of *Acacia ehrenbergiana*, *Acacia johnwoodii*, *Typha elephantina*, *Saccharum spontaneum*,



Figure 2. Sites from which collections were made. **A.** Al-kheshabeah. **B.** Wadi Al-Heiad. **C.** Wadi Al-Mejasess. **D.** Wadi Al-Meqtabah. **E.** Wadi Jazan (Photo by Mohamed Fetini).

Calotropis procera and some *Hyphaene thebaica*.

Results

Eleven species of snakes belonging to six families (Colubridae, Psammophiidae, Lamprophiidae, Viperidae, Elapidae and

Atractaspididae) were reported from Jazan Province during the study period. Families Colubridae, Psammophiidae and Viperidae were represented by three, two, and three species respectively, while the families Lamprophiidae, Elapidae and Atractaspididae were represented by a single species for each family, Table 1 shows scale counts and

measurements for the collected specimens.

Family Colubridae

Platyceps variabilis (Boulenger, 1905) Figure 3A

Material examined: JZC002 and JZC007, Wadi Al-Meqtabah, 28.11.2021.

Remarks: Two specimens were collected for this species. Both are uniformly black, whereas the head is darker than the rest of the body. Table 1 shows measurements and scale counts. Scalation of collected specimens falls within the range (153-174 ventral scales, 80-90 caudal scales) given by Gasperetti (1988) and Schätti and Gasperetti (1994).

Schätti and Gasperetti (1994) suggested a new combination for this species; *Platyceps variabilis manseri* Leviton, 1986. They noted specimens from Hakimah, Malakiyah, Wadi Shadhan, and Wadi Damad. Gasperetti (1988) postulated that *P. manseri* and *P. variabilis* might integrate in Yemen.

This species was originally described from Yemen and is considered a highly polymorphic species (Boulenger, 1905). He described seven different colour morphs with remarkable variations. Al Aloufi et al. (2020) reported on a specimen collected from the vicinity of Al-Madinah Al- Monawrah Province. Its distribution range is confined to western Oman, western Saudi Arabia and Yemen (Boulenger 1905; Schätti and Gasperetti, 1994; Šmíd, 2010).



Figure 3. A. *Platyceps variabilis*. B. *Spalerosophis diadema cliffordii*. C. *Telescopus dhara*, D. *Boaedon fuliginosus*. E. *Psammophis aegyptius*. F. *Psammophis schokari*.

Table 1. Scale counts and measurements for the collected specimens from Jazan Province.

Species	Specimen No.	SV (mm)	TL (mm)	VS	CS
<i>Boaedon fuliginosus</i>	JZC011	375	65	229	57
<i>Echis borkini</i>	JZC008	450	55	160	33
<i>Echis coloratus</i>	JZC006	350	45	131	47
<i>Psammophis aegyptius</i>	JZC003	1035	475	188	104
<i>Psammophis aegyptius</i>	JZC004	1950	370	177	99
<i>Platyceps variabilis</i>	JZC002	320	120	167	80
<i>Platyceps variabilis</i>	JZC007	335	115	174	70
<i>Spalerosophis diadema cliffordii</i>	JZC001	1400	180	216	70
<i>Psammophis schokari</i>	JZC005	1000	265	185	79
<i>Telescopus dhara</i>	JZC012	790	150	233	71

***Spalerosophis diadema cliffordii* (Schlegel, 1837) Figure 3B**

Material examined: JZC001, Al-kheshabeah, 28.11.2021.

Remarks: The Diadem Snake has a wide range of distribution across North Africa reaching the Middle East. It was reported from several localities across Saudi Arabia (Gasperetti, 1988), covering a wide range of habitats. Scale counts and measurements are given in Table 1.

***Telescopus dhara* (Forskål, 1775) Figure 3C**

Material examined: JZC012, Wadi Al-Heiad, 28.12.2021.

Remarks: The Arabian Cat Snake is distributed along the Arabian Peninsula, Jordan, Palestine and Sinai (Sindaco *et al.*, 2013). According to Gasperetti (1988), it exhibits several colour morphs within its populations. The specimen in this work is uniformly brown-red without markings. Scale counts fall within the range (235-274 ventral scales, 66-72 caudal scales) given by Gasperetti (1988). This species is associated with arid mountains, with many records along western Saudi Arabia including Jazan area, and few in central Saudi Arabia (Gasperetti,

1988).

Family Psammophiidae

***Psammophis aegyptius* Marx, 1958 Fig. 3E, Figure 4A and B**

Material examined: JZC003 and JZC004, Wadi Al-Mejasess, 30.11.2021.

Remarks: Aloufi *et al.* (2022) recorded *P. aegyptius* for the first time from Saudi Arabia. This species is distributed across Egypt, reaching southern Algeria and Libya, Chad and Niger (Sindaco *et al.*, 2013). Rato *et al.* (2007) stated that *P. aegyptius* is a sister species of *Psammophis schokari*, however, genetic divergence is high which permits considering *P. aegyptius* as a distinct species.

***Psammophis schokari* (Forskål, 1775) Figure 3F, Figure 4C and D**

Material examined: JZC005, Wadi Al-Mejasess, 30.11.2021.

Remarks: The Forskål Sand Snake has a wide range of distribution across North Africa, the Middle East reaching as far as Iran (Sindaco *et al.*, 2013). This is a highly polymorphic species; striped, non-striped and rear-striped (Kark *et al.*, 1997). Marx (1988) stated that three Arabian groups of *P. schokari* occur in the Arabian Peninsula; western, central and eastern based on scale counts and morphological features. The

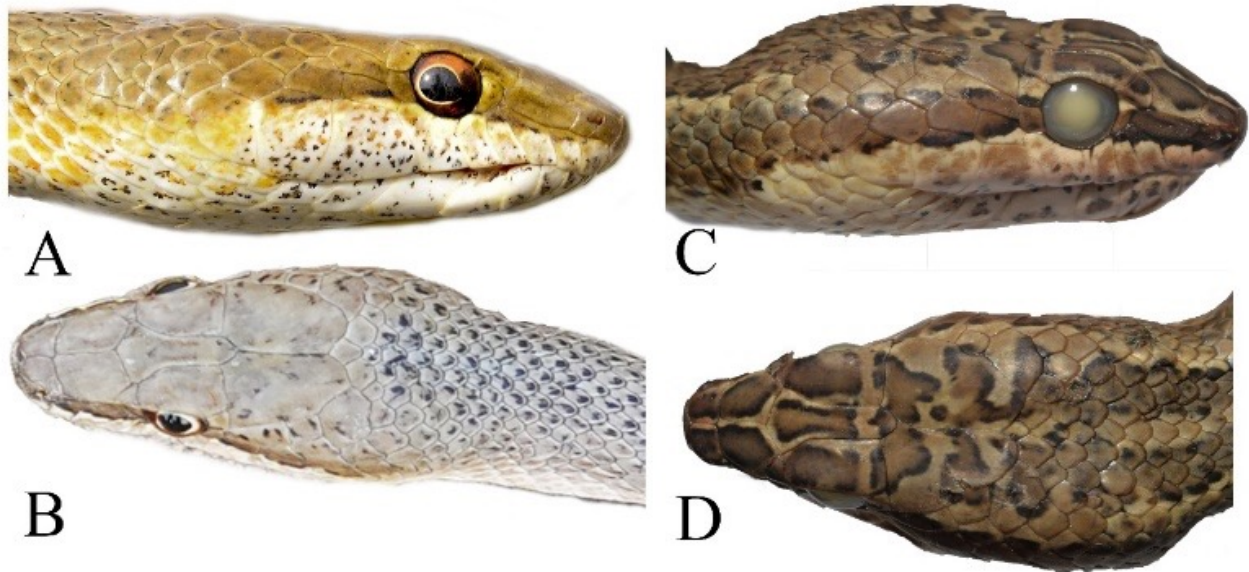


Figure 4. A. Lateral aspect for the head of *P. aegyptius*. B. Dorsal aspect for the head of *P. aegyptius*. C. Lateral aspect for the head of *P. schokari*. D. Dorsal aspect for the head of *P. schokari*.

presence of a dark stripe from the snout through the eye reaching the temporal region (Figure 3D) is a distinctive feature of *P. schokari* (Schleich *et al.*, 1996).

This is a common species in Saudi Arabia and is known all over the country. The locals make a distinction between *P. aegyptius* and *P. schokari*, calling the first “*Al-Gubry*” which means the dusty snake, and the second “*Al-Shajary*” meaning the tree-dweller. Table 1 shows scalation and measurements for a specimen collected from Wadi Al-Mejasess.

Family Lamprophiidae

***Boaedon fuliginosus* (Boie, 1827) Figure 3D, Figure 6**

Material examined: JZC011, Wadi Al-Heiad, 29.12.2021.

Remarks: Aloufi *et al.* (2022) recorded the Common African House Snake for the first time from Saudi Arabia. Also, it was reported from two localities in Yemen; Dathla, and Wadi Warazan in the Arabian Peninsula (Parker, 1930; Schätti and Gasperetti, 1994). This is an African species with a distribution range extending from West and Central

Africa reaching Sudan, Ethiopia, and Eritrea (Sindaco *et al.*, 2013). This species is apparently common; a snake vendor collected fourteen specimens from Wadi Al-Heiad. The species is sought after by snake collectors in Saudi Arabia. Another vendor collected specimens from Fifa Mountains (Figure 6), and a local scientist sent some photos for this species from Athreb Mountains in Asir Province.

Family Viperidae

***Cerastes gasperettii* Leviton & Anderson, 1967**

Remarks: One specimen was observed in Al-kheshabeah. The Arabian Horned Viper is widespread across the Arabian Peninsula inhabiting sand-covered areas (Gasperetti 1988; Schätti and Gasperetti, 1994; Aloufi and Amr, 2015).

***Echis borkini* Cherlin, 1990 Figure 6B**

Material examined: JZC008, Wadi Al-Mejasess, 30.11.2021.

Remarks: The taxonomic status of this



Figure 5. A snake vendor from Fifa holding three common African house snakes.

species remains obscure. Cherlin (1990) described this species from East Africa. Other authorities placed “*borkini*” under the *Echis pyramidum* complex (Pook *et al.*, 2009). They assigned several haplotypes from southern Yemen and southwestern Saudi Arabia to *E. pyramidum*. The specimen from Wadi Al-Mejasess has oblique crossbars rather than rounded blotches seen in *E. coloratus*, and with a higher number of ventral scales (Table 1).

***Echis coloratus* Günther, 1878 Figure 6A**

Material examined: JZC006, Wadi Al-Mejasess, 30.11.2021.

Remarks: The distribution of this Saw-scaled Viper extends along Eastern Egypt, Yemen, Saudi Arabia, Palestine, and Jordan (Sindaco *et al.*, 2013). The specimen has 131 and forty-seven ventral and caudal scales respectively. The color pattern of *E. coloratus* is very distinctive in that it forms rounded blotches.

Family Elapidae

***Naja arabica* Scortecci, 1932 Figure 6C**

Material examined: JZC009, Wadi Al-

Heiad, 30.11.2021.

Remarks: This is a rather common species in southwestern Saudi Arabia (Gasperetti, 1988). Aloufi *et al.* (2021) found the Arabian Cobra to be common around Al-Madinah Province, inhabiting wadi systems with scarce vegetation as well as mountains. Different color morphs were noted, ranging from a yellow body with a black head and neck to entirely golden yellow or red (Aloufi *et al.*, 2021).

Family Atractaspididae

***Atractaspis andersonii* Boulenger 1905**

Remarks: One dead specimen was observed in Wadi Al-Mejasess. This species is confined to Oman, Yemen, and southwest Saudi Arabia (Sindaco *et al.*, 2013). *Atractaspis engaddensis* Haas, 1950 occur in the northwestern and central parts of the country (Aloufi *et al.*, 2019).

Discussion

Eleven species of snakes belonging to six families are reported. All previous records of Masood (2012) from the Jazan area should



Figure 6. A. *Echis coloratus*. B. *Echis borkini*. C. *Naja arabica*.

be scrutinized, since many of his records are doubtful and inconsistent with the known distribution ranges of many species. For example, he listed *Platycephalus ventromaculatus* (Gray, 1834) which is distributed in Iraq, Iran, the eastern part of the Arabian Peninsula reaching as far as Pakistan. Also, he listed *Pseudocerastes persicus fieldi* [Sic.] now recognized as two separate species; *Pseudocerastes fieldi* Schmidt, 1930 has a distribution range extending from northern Saudi Arabia, Jordan, Syria, and Iraq, while *Pseudocerastes persicus* (Duméril, Bibron and Duméril, 1854) is distributed across Eastern Arabia and Iran reaching also Pakistan. By now, three species of the genus *Psammophis* are known to occur in Saudi Arabia; the very well-known and widely

distributed *P. schokari*, *Psammophis sibilans* (Linnaeus, 1758) recently reported from the vicinity of Al-Madinah Province (Aloufi et al., 2021), and the new record of *P. aegyptius* in the present work. *Psammophis sibilans* is known in eastern Egypt, Eritrea, Ethiopia, and Somalia (Baha El Din, 1994), while *P. aegyptius* is distributed across southern Egypt, reaching southern Algeria and Libya, Chad, Niger, and the Sudan (Sindaco et al., 2013). The taxonomic status of *Platycephalus variabilis* requires further investigation to reveal the identity of this species complex. Schätti et al. (2014) considered *P. insulanus*, *P. manseri* and *P. thomasi* to be conspecific with *P. variabilis*. A molecular study on this species morphs should be conducted. The Common African House Snake, *B.*

fuliginosus, was reported from Yemen (Gasperetti, 1988) and Djibouti, Somaliland, Somalia, and Ethiopia (Largen and Spawls, 2010; Trailin, 2022). This species is very common in Wadi Al-Heiad owing to the large number of snakes found by snake collectors in the area. They were usually found in forested habitats with a relatively dense vegetation cover.

Both *P. schokari* and *P. aegyptius* were sympatric and were recovered from the same habitat at Wadi Al Mejasess. In Eritrea and Ethiopia, *P. schokari* and *P. sibilans* were found in sympatry (Largen, 1997; Largen and Spawls, 2010). Similarly, *E. borkini* and *E. coloratus* were collected from the same locality at Wadi Al Mejasess. Gasperetti (1988) reported both *E. coloratus* and *Echis pyramidum* (= *Echis borkini*) from southwestern Arabia.

It is evident that several African species integrated in southwestern Arabia, including Yemen. *Bitis arietans* Merrem, 1820, *Dasypeltis scabra* (Linnaeus, 1758), *Pelomedusa barbata* Petzold *et al.* 2014, and *Trachylepis brevicollis* (Wiegmann, 1837) are examples of East African reptile species reported from southwestern Saudi Arabia (Aloufi *et al.*, 2019). This is attributed to the temporary formation of the southwestern land bridge between the Arabian Peninsula and the Horn of Africa around 10 to 5.3 Ma (Bosworth *et al.*, 2005; Tejero-Cicu  ndez *et al.*, 2021).

Hopefully, further future studies will focus on other reptiles of Jazan including lizards and other suspected snakes that have not been recorded in this study.

Acknowledgements: the authors wish to thank Prof. Ulrich Joger, director of the Staatliches Naturhistorisches Museum Braunschweig, Germany, for confirming the identity of *Psammophis aegyptius*. Thanks also go to Eng. Yaser Al-Harbi (Ministry of Environment, Water and Agriculture, Jazan Province) for his help in the field. Appreciation is extended to Mr. Mohamed Fetini for providing the photo of Wadi Jazan. The help of Ansam Ghlelat in the scale counts is also appreciated.

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