

A Survey of the Herpetofauna of Bisha District, South of Saudi Arabia

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Abstract: A survey of the herpetofauna was made in different localities of Bisha district, south of Saudi Arabia. Out of 293 specimens 12 amphibians and 281 reptiles were collected. Lizards were the most collected reptilian species (86.69 %), while Amphisbaenians comprised the little group of the sample. The snakes belonged to three families; most of them were colubrid species. Only one bufonid species (Amphibia) and one species of turtle were collected.

Key words: Amphibians, reptiles, Bisha, Saudi Arabia

Introduction

The reptile fauna of Saudi Arabia is extraordinarily rich and varied. Bisha, in the south of Saudi Arabia, is an arid region. There are xerophytic grasses, shrubs and even palm trees, although the climate is hot and arid. The rainfall is exceedingly irregular and drought period may extend throughout the year. Two or three times in a year, however heavy precipitation and consequent flooding takes place.

Researches dealing with desert amphibians and reptiles are extremely scattered through the literature, particularly those works dealing with the distribution and description of the Arabian herpetofauna. But the fauna of the southern part of Saudi Arabia has not been well studied, so the addition of new locality data for the species adds to knowledge about them. The research work was conducted to provide basic information, identification and abundance of amphibians and reptiles in Bisha, south of Saudi Arabia.

Materials and Methods

The study took place from October 1997 to March 1999 in Bisha region, south of Saudi Arabia (44°N, 20°W, Fig. 1). Generally the main feature of this study area is of ridges and depression systems. The depressions formed between the ridges are flat, arid and semi-arid localities with shrubs and palm trees. The climate is mostly that of tropical and subtropical desert. The summers are long, hot and dry while the winters are short and cool. Relative humidity is low and the mean annual temperatures ranges from less than 10°C in the mountains in the southwest and northwest to about 35°C in the lowlands. The mean annual temperature of Bisha ranges between 22°C to 26°C (Hussein, 1998).

Rainfall in most parts of the area is low and variation between years is high and long periods may pass without rain. When rainfall occurs, it is often very local and sometimes in the form of violent storms resulting in rapid runoff. The mean annual rainfall ranges from 10 - 500 mm (M.A.W., 1984).

Monthly excursions as well as weekly visits to the collecting areas were made. The specimens were caught by the aid of sticky traps or picked up by some Bedouins inhabits. The samples were then labeled, injected with formalin and preserved in jars containing 10 % formalin. The specimens were identified according to the most recent reviews of each particular group.

Results

The collected herpetofauna consists of 43 species in 28 genera belonging to 11 families. The reptilian fauna at the species level is primarily composed of lizards, snakes and

turtles comprised 86.69, 6.49 and 2.73 % respectively (Fig. 2). Only one bufonid species (Amphibia) belonging to one genus was collected. The following systematic list represents the recorded amphibians and reptiles:

Amphibia

Family Bufonidae
Genus *Bufo* (true toads)
Bufo viridis Laurenti, 1768
Bufo viridis viridis Martens, 1926

Reptilia

Lizards:

Family Gekkonidae
Genus *Hemidactylus*
H. turcicus Boulenger, 1885
H. persicus Anderson, 1896
H. flaviviridis Ruppell, 1869
Genus *Gymnodactylus* (ground geckos)
G. scaber Heyden, 1827
Genus *Phyllodactylus*
P. elisae Warner, 1874
Genus *Stenodactylus* (stone geckos)
S. stenodactylus Lichtenstein, Flower, 1925
S. stenodactylus stenodactylus Loveridge, 1936
S. arabicus Hass, 1957
Genus *Ptyodactylus*
P. hasselquisti Dunndorff, 1798
Genus *Alsophylax* (stone geckos)
tuberculatus Blanford, 1974
Family Agamidae
Genus *Agama*
sinaita, Heyden, 1827
mutabilis Merrem, 1820
savignyi Dumeril and Bibron, 1837
Genus *Trapelus*
T. flavimaculatus Leviton *et al.*, 1992
T. pallidus Leviton *et al.*, 1992
Genus *Laudakia*
L. stellio Leviton *et al.*, 1992
Genus *Phrynocephalus*
P. arabicus Leviton and Anderson, 1977
Genus *Uromastix* (spiny-tailed lizards)
U. microlepis Blanford 1874
Family Amphisbaenidae
Genus *Diplometopon*
D. zarudnyi Nikolsky, 1916
Family Lacertidae
Genus *Acanthodactylus* (desert, fringe-toed lizards)
A. boskianus asper, Lataste, 1885
A. boskianus boskianus, Boulenger (par), 1887

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- scutellatus* Dumeril and Bibron, 1839
- Family** Scincidae
- Genus** *Mabuya*
- M. aurata* Linnaeus, 1766
- Genus** *Chalcides*
- C. ocellatus* Boulenger, 1887
- Genus** *Scincus*
- S. scincus* Linnaeus, Flower, 1933
- Genus** *Eumeces*
- E. schneideri* Boulenger, 1887
- Snakes:**
- Family** Elapidae
- Genus** *Hydrophis*
- H. cyanocinctus* Daudin, 1803
- Genus** *Pelamis*
- P. platurus* Linnaeus, 1766
- Family** Viperidae
- Genus** *Cerastes*
- C. cerastes* Anderson, 1899
- Family** Colubridae
- Genus** *Malpolon*
- M. moilensis* Reuss, Parker, 1931
- Genus** *Spalerosophis*
- S. diadema*, Flower, 1933
- Genus** *Colber*
- C. ventromaculatus* Anderson, 1893
- Genus** *Psammophis*
- Coluber schokari*, Linnaeus, 1766
- P. schokari* Forskal, 1775
- P. schokari* Boulenger, 1896
- P. schokari schokari*, Kramer and Schnurrenberger, 1963
- Genus** *Lytorhynchus*
- Heterodon diadema* (Dumeril, Bibron and Dumeril, 1854
- Chacthelein diadema* Jan. 1858
- Simotes diadema* Gunther, 1958
- Lytorhynchus diadema*, Angel, 1944
- III. Turtles:**
- Family** Testudinidae
- Genus** *Testudo*
- T. buxtoni* Boulenger, 1889

Discussion

The reptilian fauna of Bisha district is similar to those of the other surrounding parts. The majority of species is represented in southwest Asia, northwest Ethiopian region, Palestine, Jordan and the Arabian peninsula. However, this study showed that the expanding range of certain species that have been studied before such as *Laudakia stellio* (Eastern Egypt to Palestine), *Scincus scincus* (northeastern Africa) and *Acanthodactylus boskianus* (north Africa to Palestine). This may be attributed to the ability of some reptilian species to migrate to the neighboring areas in the same biogeographical region. The reptilian fauna of Bisha represent the Afrotropic biogeographical region that include Africa south of Sahara, and south Arabia which has the most varied fauna of all other regions.

Data is confirmed by reports of several other authors who obtained similar species for other surveys. Dekinesh (1991), Leviton *et al.* (1992), Michael *et al.* (1992) and Hussein (1993) reported that Arabian region from northeast Africa to southwest Asia were characterized by an abundance of toads (F: Bufonidae), geckos (F: Gekkonidae), skinks (F: Lacertidae), agamas (F: Agamidae), monitors (F: Varanidae) and colubrid snake. The topography or the height and shape of the land, can play an important part in the distribution of species (Abrams, 1986 and Chapman and Reiss, 1995). Even very

Table 1: Number and percentage of the collected herpetofauna of Bisha district, south of Saudi Arabia

Class and Family	Collected specimens		Genus		Species	
	N	%	N	%	N	%
Amphibia						
Bufonidae	12	4.096	1	3.571	1	2.326
Reptilia						
I. Lizards						
Gekkonidae	82	27.986	6	21.429	10	23.256
Agamidae	28	9.556	5	17.857	8	18.605
Varanidae	55	18.771	1	3.571	1	2.326
Amphisbaenidae	16	5.461	1	3.571	1	2.326
Lacertidae	32	10.922	1	3.571	4	9.302
Scincidae	41	13.993	4	14.286	3	6.977
Total	254	86.689	18	64.286	27	62.791
II. Snakes						
Elapidae	4	1.365	2	7.143	1	4.651
Viperidae	4	1.365	1	3.571	1	2.326
Colubridae	11	3.754	5	17.857	11	25.581
Total	19	6.485	8	28.571	14	32.558
III. Turtles						
Testudinidae	8	2.730	1	3.571	1	2.326
Total collected	293	100.000	28	100.000	43	100

herpetofauna
N: number of the collected animals; %: percentage of each group in relation to the total number.

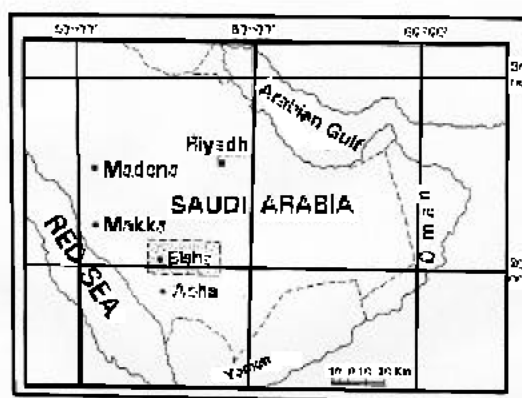


Fig. 1: Location map of Saudi Arabia indicating the location of the study site

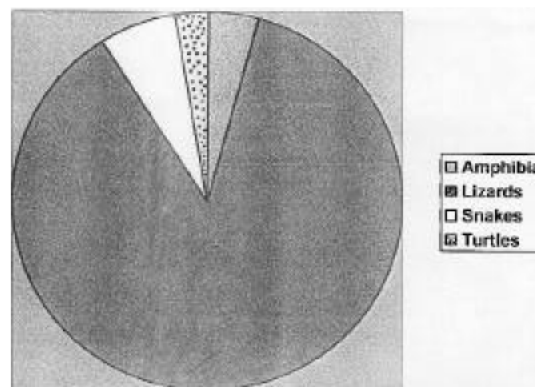


Fig. 2: Percentage of the collected herpetofauna from Bisha district, south of Saudi Arabia

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small changes in topography can be important.

Of course, can and do, spread out from their evolutionary origin to reach new and distant regions even their continents don't join up, but this spread is limited by the extent and kinds of obstacles in their way (e.g. rivers, oceans, deserts and mountains). For example, In lowland on heavy clay soils the shallow depressions in the lowland floor becomes water-logged after heavy rain and sometimes contain standing water, while the sides and tops of ridges remain relatively dry and the organisms are able to move freely from one place to other without any obstacles.

The fluctuations in climate and weather can also effected by the distribution of species (Wilson and Willis, 1975; Ford, 1982) and this is due to a complex interaction of factors including the movement of areas of low and high pressure in the atmosphere which influences could over, rainfall and temperature. A long-lived organism may experience a considerable variation in temperature, drought length and wind speed during its life cycle disrupted by "freak" weather conditions.

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