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RESEARCH ARTICLE

DISTRIBUTION OF LIZARDS IN ABYAN GOVERNORATE, YEMEN

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Abstract

This study provides the occurrence and distribution of lizards in Abyan governorate to establish a database for future studies. Two hundred and two specimens were collected through field trips that were carried out from July 2018 to July 2019. The types of squamous reptiles belonging to the suborder of Sauria were identified. The specimens were kept in the Biology Laboratory of the Faculty of Education/ Zinjebar - University of Abyan. A museum number with the symbol LBZC was given. The results reveal that 24 species of lizards that occur in Abyan governorate belong to eight families. A map of the spread of these species in the governorate was also developed.

Keywords: Distribution, Lizards, Abyan governorate, Yemen.

Introduction

The fauna and flora in Yemen are rich and diverse since of the wide range of habitats in the country and due to its position at the juncture of two major biogeographic regions, Afrotropical and Palaearctic (Euro-Asiatic) regions [1]. This location helps to exist a high number of reptile species in the country which contain approximately 102 species belonging to 31 genera related to 9 families [2]. Abyan Governorate is one of the unique governorates in Yemen located in the southeastern part of the Republic of Yemen, between 13º -15º N, and 45º- 47º E. It contains 11 districts surrounded by Al-Bayda and Shabwa governorates in the east, Lahj governorate in the west, the Gulf of Aden in the south, and Aden governorate in the southwest. It occupies the area of about 16,943 km^2 between the sea in the south and the northern highlands (Fig. 1). This governorate is characterized by different natural environments since the elevation of topographic areas is from the sea level to 2350 m which includes plain areas, plateaus and high mountainous in addition to the valleys with permanent and seasonal water flow [3]. This topographical difference supports the biodiversity of the governorate, which provided suitable habitats for many different species.

Despite studies on reptiles in Yemen began early through the with the Royal Danish expedition of 1762-1763, however the sufficient scientific studies are not many due to instability of the political rule which limited scientific expeditions targeting the country, therefore, the researches concentrated mainly on recording which species occurred in the main and surround cities of Yemen [4]. Arnold's study of lizards in the Arabian Peninsula was unique, as he presented a key and checklist for the lizards and amphisbaenians of Arabia in the region, and recorded 55 species of reptiles from Yemen [5], in addition the study of Schätti and Gasperetti (1994) which discussed the status of amphibians and reptiles of Southwest Arabia [6]. The first comprehensive study on the herpetofauna of Yemen was done by Obady, he recorded 74 reptile species, twelve of which were recorded from Abyan [7, 8]. From the past years, new species were added to the list of saurian species in Yemen by several researches [9, 10, 11, 12]. It's obvious that Yemen still needs more researches on the biodiversity in general and on the reptiles fauna in particular, especially on Unurban areas such as Abyan governorate. Therefore, this study is to update the checklist of lizerds fauna existing in Abyan governorate; and discuss the status of each species with a brief note on its distribution and ecology whenever appropriate.

Material and Methods

A total of 44 sites were chosen to cover all of the habitats in the Abyan governorate which related to the nine districts in addition to the observations of lizards in the fields were recorded (fig. 1). The field trips were conducted from July 2018 to July 2019, in addition to several recent new observations. Lizards were captured by hand. Some specimens observed in the wild were

documented, while others were contributed to the lab. Surveys were conducted at each site during day and night trips for both diurnal and nocturnal species. A total of 202 specimens were examined. The lizards were labeled and preserved in glass jars containing 70% ethanol or 10 % formalin depending of its size, then deposited in the Laboratory of Biology Department at Abyan University with the museum collection number (LBZC).

English name:

The common English names of lizards in this study related to Uetz *et al*., 2022 [13].

Results

Twenty four species of lizards belonging to 15 genera related to eight families (Agamidae, Chamaeleonidae, Gekkonidae, Lacertidae, Phyllodactylidae, Scincidae, Sphaerodactylidae and Varanidae) were recorded in the Abyan governorate (table 1).

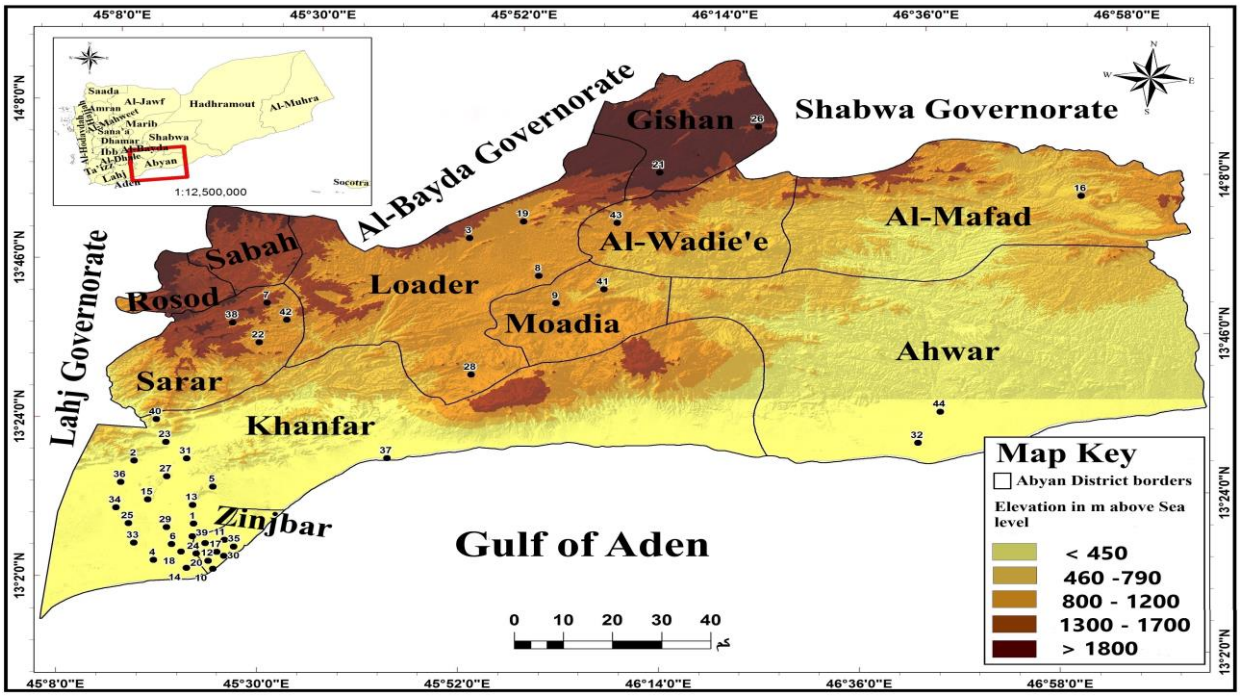

Fig. 1: Abyan governorate with districts showing the topography and the 44 sites studied.

Table 1: A list of lizard species located in the Abyan districts including the corresponding locality numbers as indicated in figure 1.

Family	Species	Distribution of species in the districts of Abyan gov.								
		Moadia	Loader	Sarar	Zinjbar	Khanfar	Gishan	Al-Wadie'e	Al-Mafad	Ahwar
Agamidae	*A. adramitanus*			+			+		+	
	P. sinaitus		+	+						
	U. benti	+		+					+	
	U. yemenensis		+			+		+		
Chamaeleonidae	*C. arabicus*		+		+	+	+			
Gekkonidae	*B. tuberculatus*		+							
	C. scabrum				+	+				
	H. flaviviridis				+	+	+			+
	H. lemurinus						+			
	H. robustus				+	+				
	H. yerburii		+		+	+	+			+
	H. cf. robustus					+				
	S. yemenensis					+				
Lacertidae	*A. arabicus*					+				+

	A. boskianus	+				+				
	A. felicis		+			+	+			
	A. opheodurus					+				+
Phyllodactylidae	*P. hasselquistii*		+			+				
Scincidae	*C. ocellatus*	+	+		+	+				+
	S. hemprichii					+				+
	T. brevicollis					+				+
	T. tessellata						+			
Sphaerodactylidae	*P. ornithocephalus*							+		
Varanidae	*V. griseus*					+			+	

The results indicate that there are two endemic species in Yemen, ten semi-endemic species, and eleven species widespread worldwide (table 2).

Taxonomic Account

Family Agamidae Spix, 1825

1. *Acanthocercus adramitanus* (Anderson, 1896), 1888 – Anderson's Rock Agama, Hadhramaut Agama

Synonym:

Agama adramitana Anderson, 1896

Agama cyanogaster adramitana Klausewitz, 1954

Agama adramitana Arnold, 1980

Acanthocercus adramitanus Schätti and Gaspertti, 1994

Laudakia adramitanus Manthey and Schuster, 1999

Materials: LBZC0001, 10 Feb. 2019, Amrid. LBZC0002, 8 March 2019, Raida. Observed at Al-Mahfad.

Remarks: This species is semi-endemic to Arabia, which recorded in Oman, Yemen and southwest of Saudi Arabia [14]. In Abyan, this diurnal species is recently recorded as the first time [8], which is found in the rocky areas.

2. *Pseudotrapelus sinaitus* (Heyden, 1827)- Sinai Agama

Synonym:

Agama sinaita Heyden, 1827

Agama arenaria Heyden, 1827

Pseudotrapelus sinaita Fitzinger, 1843

Agama lichtensteini Gray, 1845

Agama sinaitica Rüppell, 1845

Trapelus sinaiticus Tristram, 1888 p. 407

Agama straminea Lichtenstein, 1945

Pseudotrapelus sinaitus Schleich, Kästle and Kabisch, 1996

Materials: LBZC0003, 15 Oct. 2018, An-Nagda. LBZC0004, 10 Dec. 2018, Al-Hodhn. LBZC00005, 10 Dec. 2018, Al-Hodhn. LBZC0006, 27 Feb. 2019, Tiela. Observed at Al-Mahfad.

Remarks: This species is widespread in Arabian Peninsula and East Africa [13]. In Abyan, as *A adramitanus* this diurnal species is found in the rocky areas.

3. *Uromastyx benti* (Anderson, 1894) - Yemeni Spiny tailed Lizard, Bent's Mastigure

Synonym:

Aporoscelis benti Anderson, 1894

Uromastix (*Aporoscelis*) *benti* Anderson, 1896

Uromastix simonyi Steindachner, 1899

Aporoscelis benti Schmidt, 1939

Uromastix philbyi Haas and Battersby, 1959

Uromastyx ocellata Schätti and Desvoignes, 1999

Uromastyx benti Wilms, 2002

Materials: LBZC0007, 21 Nov. 2018, Moudia. LBZC0008, 7 March 2019, Mihzan. Observed at Al-Mahfad.

Remarks: This species is semi-endemic to Arabia, which recorded in Oman and South and East of Yemen [13]. In Abyan, this diurnal species is found in the rocky areas and valleys.

4. *Uromastyx yemenensis* Wilms & Schmitz, 2007 - South Arabian Spiny tailed Lizard

Synonym:

Uromastyx ocellata benti Schätti and Gasparetti, 1994

Uromastyx ocellata Schätti and Desvoignes, 1999

Uromastyx yemenensis Wilms and Schmitz, 2007

Materials: LBZC0009, 7 Aug. 2018, Magdab. LBZC0010, 7 Dec. 2018, As-Salamia. LBZC0011, 10 Dec. 2018, An-Nagda. LBZC0012, 10 Dec. 2018, Al-Hodhn. LBZC0013, 10 Dec. 2018, Al- Hodhn.

LBZC0014, 8 March 2019, Dergag. LBZC0015, 9 March 2019, Gohain. LBZC0016, 14 June 2019, Kabath.

Remarks: This species is semi-endemic to Arabia, which recorded in South and West of Yemen in addition to Southwest of Saudi Arabia [9, 13]. In Abyan, this diurnal species is found also in the rocky areas and valleys.

Family Chamaeleonidae Gray, 1827

5. *Chamaeleo arabicus* Matschie, 1893 - Arabian Chameleon

Synonym:

Chamaelon arabicum Matschie, 1893

Chamaeleo (*Chamaeleo*) *arabicus* Necas, 1999

Materials: LBZC0017, 18 July 2018, Al-Khamla. LBZC0018, 24 July 2018, Jabal Lahbush. LBZC0019, 26 July 2018, Khabt Lasloom. LBZC0020, 30 July 2019, Dergag. LBZC0021, 25 Aug. 2018, Al Hisn. LBZC0022, 29 Sep. 2018, Hisn Shaddad. LBZC0023, 3 Oct. 2018, Al-Jawl. LBZC0024, 20 Oct. 2018, Al-Hodhn. LBZC0025, 25 Oct. 2018, Ad Dio. LBZC0026, 26 Oct. 2018, Ad Dio. LBZC0027, 30 Oct. 2018, Dergag. LBZC0028, 11 Nov. 2018, Al-Khamla. LBZC0029, 15 Nov. 2018, Ba Jdar. LBZC0030, 16 Nov. 2018, Ad Dio. LBZC0031, 27 Nov. 2018, Al Kawd. LBZC0032, 28 Nov. 2018, Al-Khamla. LBZC0033, 6 Dec. 2018, Amrid. LBZC0034, 10 Dec. 2018, Al-Hodhn. LBZC0035, 10 Dec. 2018, Al-Hodhn. LBZC0036, 10 Dec. 2018, An-Nagda. LBZC0037, 15 Feb. 2019, An Nash. LBZC0038, 16 Feb. 2019, Ba Tais. LBZC0039, 10 April 2019, Amodiah.

Remarks: This species is semi-endemic in the south of Arabian Peninsula, which recorded in Yemen and Oman [14]. This species is found in cultivated areas.

Family Gekkonidae Gray, 1825

6. *Bunopus tuberculatus* Blanford, 1874 - Tuberculated Rock Gecko

Synonym:

Bunopus tuberculatus Blandford, 1874

Alsophylax tuberculatus Boulenger, 1885

Stenodactylus lumsdeni Boulenger, 1887

Bunopus blanfordii Strauch, 1887

Alsophylax tuberculata Procter, 1921

Alsophylax blanfordii Parker, 1931

Bunopus gabrielis (Werner, 1936)

Bunopus biporus Werner, 1938

Bunopus abudhabi Leviton & Anderson, 1967

Bunopus tuberculatus Frynta et al., 1997

Materials: LBZC0040, 10 Dec. 2018**,** Al- Hodhn.

Remarks: This gecko is widespread in Jordan, the United Arab Emirates, Iraq, Kuwait, Saudi Arabia, Afghanistan, Iran, Pakistan (Sindh), Baluchistan, southern Turkmenistan, Syria, Oman, and Qatar [13]. In Abyan, this nocturnal species is recently recorded as the first time [8], which is found in sandy environments.

7. *Cyrtopodion scabrum* (Hyden, 1827) - Rough tailed Gecko

Synonym:

Stenodactylus scaber Heyden, 1827

Gymnodactylus scaber Dumeril & Bibron, 1836

Gymnodactylus geckoides Schreiber, 1875

Cyrtodactylus scaber Underwood, 1954

Tenuidactylus scaber Szczerbak & Golubev, 1986

Cyrtopodion scabrum Couant & Collins, 1991

Cyrtopodion (*Cyrtopodion*) *scabrum* Sindaco & Jeremčenko, 2008

Materials: LBZC0041, 6 Sep. 2018, Dergag. LBZC0042, 13 Sep. 2018, Al Kawd. LBZC0043, 13 Oct. 2018, Al-Mahal. LBZC0044, 7 Nov. 2018, Ba Tais. LBZC0045, 20 Nov. 2018, Al Kawd. LBZC0046, 21 Nov. 2018, Al Kawd. LBZC0047, 21 Nov. 2018, Al Kawd. LBZC0048, 10 Dec. 2018, Sawahil. LBZC0049, 22 Feb. 2019, Sawahil. LBZC0050, 13 March 2019, Ba Jdar. LBZC0051, 29 March 2019, Al-Msaymir. LBZC0052, 10 April 2019, Sawahil.

Remarks: This species is recorded in the Middle East, Ethiopia, Eritrea, Afghanistan, India, the United States of America, and Pakistan [13]. In Abyan, this species is recently recorded as the first time [8]. This nocturnal species is found near the ground.

8. *Hemidactylus flaviviridis* Rüppell, 1835 - Yellow-belly gecko

Synonym:

Hemidactylus sericeus Fitzinger, 1826

Hemidactylus flaviviridis Rüppell, 1835

Hemidactylus coctaei Duméril & Bibron, 1836

Boltalia sublevis Gray, 1842

Hoplopodion cocteaui Fitzinger, 1843

Hoplopodion rüppellii Fitzinger, 1843

Hemidactylus bengaliensis Anderson, 1871

Hemidactylus zolii Scortecci, 1929

Materials: LBZC0053, 24 July 2018, Al-Mahal. LBZC0054, 31 July 2018, Al-Asla. LBZC0055, 2 Aug. 2018, Dergag. LBZC0056, 17 Aug. 2018, Da Jdar.

LBZC0057, 22 Aug 2018, Al-Kawd. LBZC0058, 13 Sep. 2018, Al-Kawd. LBZC0059, 30 Sep. 2018, Al-Mahal. LBZC0060, 25 Oct. 2018, Sawahil. LBZC0061, 16 Nov. 2018, Al-Mahal. LBZC0062, 17 Nov. 2018, Shuqra. LBZC0063, 18 Nov. 2018, Geaar. LBZC0064, 20 Nov. 2018, Shuqra. LBZC0065, 20 Nov. 2018, Al-Tamisi. LBZC0066, 20 Nov. 2018, Geaar. LBZC0067, 21 Nov. 2018, Sawahil. LBZC0068, 21 Nov. 2018, Amodia. LBZC0069, 23 Nov. 2018, Al-Muthalath. LBZC0070, 2 Dec. 2018, Al-Jawl. LBZC0071, 2 Dec. 2018, Al-Muthalath. LBZC0072, 7 Dec. 2018, Jabrah Hotaib. LBZC0073, 23 Dec. 2018, Ad Dio. LBZC0074, 1 January 2019, Al-Mahal. LBZC0075, 19 January 2019, Al-Kawd. LBZC0076, 11 Feb. 2019, Sakin Waees. LBZC0077, 20 Feb. 2019, Syhan. LBZC0078, 22 Feb. 2019, Ba Tais. LBZC0079, 1 March 2019, Ad Dio. LBZC0080, 28 March 2019, Ad Dio. LBZC0081, 2 July 2019, Hanadh. LBZC0082, 2 July 2019, Hanadh.

Remarks: This gecko is the most widespread in the United Arab Emirates, Ethiopia, Eritrea, Afghanistan, Iran, Sudan, Iraq, Kuwait, Saudi Arabia, India, USA, Yemen, Pakistan, Turkey, northern Somalia, Oman, Qatar, Egypt and Nepal [13]. This nocturnal gecko is found in residential and old buildings.

9. *Hemidactylus lemurinus* Arnold, 1980 - Dhofar Leaf-toed Gecko

Synonym:

Hemidactylus lemurinus Arnold, 1980

Materials: LBZC0083, 7 Feb. 2019, Jabrah Hotaib.

Remarks: *H. lemurinus* is semi-endemic in the south of Arabian Peninsula, which recorded in Oman and Yemen [4]. In Abyan, this nocturnal species is recently recorded as the first time [8]. This gecko is found in residential and old buildings.

10. *Hemidactylus robustus* Heyden, 1827 - Heyden's gecko

Synonym:

Hemidactylus robustus Heyden, 1827

Hemidactylus turcicus parkeri Loveridge, 1936

Hemidactylus parkeri Loveridge, 1936

Hemidactylus puccionii Loveridge, 1947

Hemidactylus turcicus parkeri Arnold, 1980

Hemidactylus porbandarensis Sharma, 1981

Hemidactylus robustus Lanza, 1990

Materials: LBZC0084, 18 Feb. 2019, Ba Jdar. LBZC0085, 19 Feb. 2019, Hisn Shaddad. LBZC0086, 24 Feb. 2019, Al Jawl. LBZC0087, 22 March 2019, Dergag. LBZC0088, 27 July 2019, Al-Khamla.

Remarks: This gecko is widely distributed in Ethiopia, Eritrea, United Arab Emirates, Sudan, Somalia, Iraq, Yemen, Iran, Pakistan, northeastern Kenya, Oman, Qatar and Egypt [13]. In Abyan, this species is recently recorded as the first time [8], which is found in coastal areas.

11. *Hemidactylus* cf. *robustus*

Materials: LBZC0089, 31 Oct. 2018, Dergag. LBZC0090, 31 Oct. 2018, Dergag.

Remarks: This species is recently recorded as the first time in Abyan [8], it resemble the species of *Hemidactylus robustus* which recorded in agricultural habitats. This nocturnal species differs from *H. robustus* by the number of lower labial scales.

12. *Hemidactylus yerburii* Anderson, 1895 - Yerburi's Leaf-toed Gecko

Synonym:

Hemidactylus yerburii Anderson, 1895

Hemidactylus turcicus yerburyi Loveridge, 1941

Hemidactylus yerburii yerburii Busais, 2017

Materials: LBZC0091, 27 July 2018, Khabt Lasloom. LBZC0092, 27 July 2018, Khabt Lasloom. LBZC0093, 27 July 2018, Khabt Lasloom. LBZC0094, 28 July 2018, An-Nash. LBZC0095, 13 Oct. 2018, Al-Kodmah. LBZC0096, 19 Oct. 2018, Al-Hodhn. LBZC0097, 31 Oct. 2018, Dergag. LBZC0098, 18 Nov. 2018, Al-Kawd. LBZC0099, 21 Nov. 2018, Amodia. LBZC0100, 5 Dec. 2018, Amrid. LBZC0101, 6 Dec. 2018, Jabrah Hotaib. LBZC0102, 10 Dec. 2018, An-Nagda. LBZC0103, 10 Dec. 2018, Hodhn. LBZC0104, 10 Dec. 2018, Hodhn. LBZC0105, 10 Dec. 2018, Hodhn. LBZC0106, 16 January 2019, Amrid. LBZC0107, 13 March 2019, Al-Kawd. LBZC0108, 4 July 2019, Hanadh. LBZC0109, 4 July 2019, Hanadh. LBZC010, 5 July 2019, Hanadh.

Remarks: This species is semi-endemic to the south of Arabian Peninsula, which recorded in southwestern Saudi Arabia, Yemen, and southern Oman [14]. This gecko is found in residential and old buildings.

13. *Stenodactylus yemenensis* Arnold, 1980 - Yemen Short-fingered Gecko

Synonym:

Stenodactylus yemenensis Arnold, 1980

Stenodactylus sthenodactylus Kluge, 1993

Materials: LBZC0111, 20 Feb. 2019, Syhan.

Remarks: This species is semi-endemic to the south and southwest of Arabian Peninsula, which recorded in Saudi Arabia, and Yemen [13]. This nocturnal species is found in sandy areas.

Family Lacertidae Bonaparte, 1831

14. *Acanthodactylus arabicus* Boulenger, 1918 - Arabian Fringe-fingered Lizard

Synonym:

Acanthodactylus cantoris var. *arabicus* Boulenger, 1918

Acanthodactylus arabicus Salvador, 1982

Materials: LBZC0112, 19 Oct. 2018, Ad Dio. LBZC0113, 5 July 2019, Wadi Ahwar.

Remarks: *A. arabicus* is endemic in Yemen [14]. This species is found in sandy areas.

15. *Acanthodactylus boskianus* (Daudin, 1802) - Bosk's Fringe-fingered Lizard

Synonym:

Lacerta boskiana Daudin, 1802

Lacerta aspera Audouin, 1829

Scapteira inaequalis Gray, 1838

Acanthodactylus boskianus Duméril & Bibron, 1839

Acanthodactylus boskianus var. *asper* Lataste, 1885

Acanthodactylus boskianus Anderson, 1896

Lacerta longicauda Hemprich & Ehrenberg, 1899

Materials: LBZC0114, 15 Dec. 2018, Moudia. LBZC0115, 5 Feb. 2019, An Nash.

Remarks: This species is widely distributed in Arabian Peninsula, the Middle East, Morocco, Algeria, Tunisia, Libya, Western Sahara, Mauritania, Mali, Niger, Northern Nigeria, Ethiopia, Eritrea and Chad [13]. This species is found in sandy areas.

16. *Acanthodactylus felicis* Arnold, 1980 - Cat Fringe-fingered Lizard

Synonym:

Acanthodactylus felicis Arnold, 1980

Materials: LBZC0116, 20 Oct. 2018, Al-Hodhn. LBZC0117, 7 Dec. 2018, Amrid. LBZC0118, 19 April 2019, Ad Dio. LBZC0119, 19 July 2019, Ad Dio.

Remarks: *A. felicis* is semi-endemic to the south of Arabian Peninsula, which recorded in Yemen and Oman [13]. This species is found in sandy areas.

17. *Acanthodactylus opheodurus* Arnold, 1980 - Snake-tailed Fringe-toed Lizard

Synonym:

Acanthodactylus opheodurus Arnold, 1980

Materials: LBZC0120, 5 Feb. 2019, An Nash. LBZC0121, 5 Feb. 2019, An Nash. LBZC0122, 22 March 2019, Dergag. LB2ZC0123, 22 March 2019, Dergag. LBZC0124, 5 July 2019, Wadi Ahwar.

Remarks: This lizard is widely distributed in the Arabian Peninsula, Jordan, occupied Palestine, and Iraq [13]. In Abyan, this species is recently recorded as the first time [8], which is found in the sandy areas.

Family Phyllodactylidae Gamble *et al*., 2008

18. *Ptyodactylus hasselquistii* (Donndorff, 1798) - Yellow Fan-fingered Gecko

Synonym:

Lacerta hasselquistii Donndorff, 1797

Ptyodactylus hasselquistii Duméril & Bibron, 1836

Materials: LBZC0125, 20 Nov. 2018, Geaar. LBZC0126, 7 Dec. 2018, As-Salamia. LBZC0127, 20 Feb. 2019, Sakin Waees.

Remarks: This species is the most widespread in the Middle East, Algeria, Morocco, Togo, Ethiopia, Eritrea, Algeria, Cameroon, Ghana, northern Somalia [13]. In Abyan, this nocturnal species is recently recorded as the first time [2]. This gecko is found in rocky areas and residential buildings.

Family Scincidae Oppel, 1811

19. *Chalcides ocellatus* (Forskal, 1775) - Ocellated (Bronze) Skink

Synonym:

Lacerta ocellata Forskal, 1775

Lacerta lateralis Thunberg, 1787

Stincus ocellatus Meyer, 1795

Gongylus ocellatus Wagler, 1830

Seps ocellatus Günther, 1871

Chalcides ocellatus Boulenger, 1887

Chalcides ocellatus ocellatus Smith, 1935

Chalcides ocellatus tassiliensis Angel, 1936

Chalcides ocellatus sacchii Lanza, 1954

Materials: LBZC0128, 19 July 2018, Dergag. LBZC0129, 25 July 2018, Ad Dio. LBZC0130, 27 July 2018, Ad Dio. LBZC0131, 8 Aug. 2018, Al-Mahal. LBZC0132, 8 Aug. 2018, Ad Dio. LBZC0133, 15 Sep. 2018, Al-Mahal. LBZC0134, 27 Sep. 2018, Al-Muthalath. LBZC0135, 9 Nov. 2018, Ad Dio. LBZC0136, 16 Nov. 2018, Ad Dio. LBZC0137, 16 Nov. 2018, Ad Dio. LBZC0138, 16 Nov. 2018, Ad Dio. LBZC0139, 17 Nov. 2018, Geaar. LBZC0140, 19 Nov. 2018, Al-Kawd. LBZC0141, 20 Nov. 2018, Dergag. LBZC0142, 20 Nov. 2018, Geaar. LBZC0143, 20 Nov. 2018, Dergag. LBZC0144, 23 Nov. 2018, Ba Tais. LBZC0145, 27 Nov. 2018, Sawahil. LBZC0146, 30 Nov. 2018, Shuqra. LBZC0147, 9 Dec. 2018, Al-Hodhn. LBZC0148, 15 Dec. 2018, Moudia LBZC0149, 5 Feb.

2019, Shuqra. LBZC0150, 9 Feb. 2019, Shuqra. LBZC0151, 18 Feb. 2019, Al-Hisn. LBZC0152, 20 Feb. 2019, Hanadh. LBZC0153, 29 March 2019, Al-Msymir. LBZC0154, 23 June 2019, Al-Shaikh Abdullah. LBZC0155, 12 July 2019, Hanadh.

Remarks: This species is widely distributed in the Middle East, Turkmenistan, West Pakistan, India, Sri Lanka, Morocco, Mauritania, Western Sahara, Algeria, Tunisia, Libya, Niger, Mali, Somalia, Ethiopia, Eritrea, Chad, Italy, Malta, and Greece [13]. This species is found in agricultural areas.

20. *Scincus hemprichii* Wiegmann, 1837 - Tehamah Sand Skink

Synonym:

Scincus hemprichii Wiegmann, 1837

Pedorychus (*Scincus*) *hemprichii* Peters, 1864

Materials: LBZC0156, 31 Oct. 2018, Dergag. LBZC0157, 6 July 2019, Wadi Ahwar. LBZC0158, 6 July 2019, Wadi Ahwar.

Remarks: Tehamah sand skink is semi-endemic to the south and southwest of Arabian Peninsula in Saudi Arabia, and Yemen [15]. This species is found in sandy areas with vegetation cover.

21. *Trachylepis brevicollis* (Wiegmann, 1837) - Short-necked Skink

Synonym:

Euprepes brevicollis Wiegmann, 1837

Euprepes pyrrhocephalus Wiegmann, 1837

Eupressis perrottetii Blanford, 1870

Mabuia pulchra Matschie, 1893

Mabuya chanleri Stejneger, 1893

Mabuia brevicollis Anderson, 1896

Mabuia brevicollis chanleri Neumann, 1905

Mabuia rotschildi Mocquard, 1905

Mabuya somalica Calabresi, 1915

Euprepis brevicollis Mausfeld et al., 2002

Trachylepis brevicollis Bauer, 2003

Materials: LBZC0159, 27 July 2018, Khabt Lesloom, LBZC0160, 28 July 2018, Halmah, LBZC0161, 22 Dec. 2018, Ad Dio, LBZC0162, 5 Feb. 2019, Amreed, LBZC0163, 11 July 2019, Hanadh.

Remarks: This species is widely distributed in Yemen, Saudi Arabia, Oman, Sudan, Ethiopia, Eritrea, Somalia, Kenya, Uganda and Tanzania [13]. This diurnal species is found in agricultural environments.

22. *Trachylepis tessellata* Anderson, 1895 - Tessellated Mabuya

Synonym:

Mabuya tessellata Anderson, 1895

Trachylepis tessellata Schmitz, 2009

Materials: LBZC0164, 7 Feb. 2019, Jabrah Hotaib.

Remarks: *T. tessellata* is endemic to the Arabian Peninsula which recorded in Yemen, Saudi Arabia, the United Arab Emirates and Oman [13]. This diurnal species is recently recorded as the first time in Abyan [8], which is found in agricultural environments.

Family Sphaerodactylidae Gamble *et al*., 2008

23. *Pristurus ornithocephalus* Arnold, 1986 - Birdhead Rock Gecko

Synonym:

Pristurus ornithocephalus Arnold, 1986

Materials: LBZC0165, 27 July 2018, As-Sawad.

Remarks: This species is endemic only in Yemen [14]. This diurnal gecko is found in the rocky areas.

Family Varanidae Gray, 1827

24. *Varanus griseus* (Dauain, 1803) - Desert Monitor

Synonym:

Varanus griseus griseus (Daudin, 1803)

Varanus griseus caspius (Eichwald, 1831)

Varanus griseus koniecznyi Mertens, 1954

Materials: observed at Ad-Dio and Al-Mahfad.

Remarks: Desert Monitor is widely distributed in Morocco, Algeria, Tunisia, Libya, Egypt, Occupied Palestine, Syria, Jordan, Lebanon, Iraq, Saudi Arabia, United Arab Emirates, Qatar, Oman, Kuwait, Turkmenistan, Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan Western Sahara, Mauritania, Mali, Niger, Chad, Sudan , Afghanistan, Iran , Pakistan, and NW India [13]. This diurnal lizard is observed in the rocky areas.

Table 2: Endemic, semi-endemic and worldwide species recorded in the study area.

Species	Endemic	Semi-endemic	Worldwide
Acanthocercus adramitanus		+	
Acanthodactylus arabicus	+		
Acanthodactylus boskianus			+
Acanthodactylus felicis		+	
Acanthodactylus opheodurus			+
Bunopus tuberculatus			+
Chalcides ocellatus			+
Chamaeleo arabicus		+	
Cyrtopodion scabrum			+
Hemidactylus flaviviridis			+
Hemidactylus lemurinus		+	
Hemidactylus robustus			+
Hemidactylus cf. *robustus*	?	?	?
Hemidactylus yerburii		+	
Pristurus ornithocephalus	+		
Pseudotrapelus sinaitus			+
Ptyodactylus hasselquistii			+
Scincus hemprichii		+	
Stenodactylus yemenensis		+	
Trachylepis brevicollis			+
Trachylepis tessellata		+	
Uromastyx benti		+	
Uromastyx yemenensis		+	
Varanus griseus			+

?: data is not available, depended on the species name.

Discussion

Abyan governorate is comprised of different habitats including plains, plateaus, mountains and a desert. The Saurian fauna in such variable habitats is found in moderate to high numbers. Some species are abundant while many others are rare.

The most representative family is Gekkonidae, which is represented by eight species since the members of this family have the ability to live in different habitats. The second representative families are Agamidae, Lacertidae and Scincidae with four species. Four families are represented by one species which are: Sphaerodactylidae, Chamaeleonidae, Phyllodactylidae and Varanidae.

The status of *Hemidactylus* cf. *robustus* is not clear because of the difference with *H. robustus* appearing on the number of lower labial scales. This difference may be related to the variety of species; therefore, molecular analysis is essential to clarify this taxonomic status.

The previous studies indicated the existence of *Agamodon arabicus* from the family Trogonophidae and two species of the family Lacertidae which are *Mesalina guttulata* and *M. martini*. Unfortunately, these three species were not recorded in this study due to the short period assigned for fieldwork because of the political instability and local conflicts in the study area. Furthermore, the private funding provided was limited and could not cover the long time needed in the field.

In conclusion, the number of occurrences of 24 lizard species in the area of study is not precise. However, it is felt that a reasonable generalized overview has emerged.

Acknowledgments

We extend our thanks and appreciation to the students of the Departments of Biology and Chemistry in the Faculties of Education Zinjbar and Loader at Abyan University, for their assistance and facilitation of the field trip.

References

[1] N. Wheatley, Where to Watch Birds in Asia. Princeton University Press. Global Environment Outlook-1. United Nations Environment Programme: Global State of the Environment, Report 1997.

[2] W. A. Abo-Alib, Taxonomy of Reptiles of the Suborder Sauria from Some Districts of Abyan Governorate in Yemen. M. Sc. Thesis. Department of Biology, Faculty of Education, Aden University. (In Arabic). 142 pp., 2022.

[3] NIC, https://yemen-nic.info/gover/apyan/brife/ Accessed, 20 June 2022.

[4] Salem Busais, Taxonomy and Molecular Phylogeny of *Hemidactylus* in Yemen, Class: Reptilia, Order: Squamata, Family: Gekkonidae. Südwestdeutscher Verlagfür Hochschulschriften, 185 pp., 2017.

[5] Arnold, E. N. (1986). A key and annotated check list to the lizards and Amphisbaenians of Arabia. Fauna of Saudi Arabia, 8: 385 - 435.

[6] B. Schätti and J. Gasperetti, A Contribution to the Herpetology of Southwest Arabia. Fauna of Suadi Arabia, 14: 348-423 1994.

[7] N. A. Obady, Animals of Yemen. (2): Amphibians and Reptiles. Obady center for Studies and Publication (In Arabic). 151 pp. 1996.

[8] S. M. Busais, H. M. Alrahowi and W. A. Abo-alib, New Distributional Records of Some Lizards from Abyan Governorate, Yemen (Class: Reptilia - Suborder: Sauria). Samarra Journal of Pure and Applied Science (In Arabic). 4 (2): 23-32 2022.

[9] T. M. Wilms and A. Schmitz, A new polytypic species of the genus Uromastyx Merrem, 1820 (Reptilia: Squamata: Agamidae: Leiolepidinae) from southwestern Arabia. Zootaxa 1394: 1 – 23 (2007).

[10] S. M. Busais and U. Joger, Three new species and one new subspecies of *Hemidactylus* Oken, 1817 from Yemen (Squamata, Gekkonidae). Vertebrate Zoology, 61(2): 267 – 280 2011.

[11] J. Šmíd, J. Moravec, L. Kratochvil, V. Gvozdik, A. K. Nasher, S. M. Busais, T. Wilms, M. Y. Shobrak and S. Carranza, Two newly recognized species of *Hemidactylus* (Squamata, Gekkonidae) from the Arabian Peninsula and Sinai, Egypt. Zookeys 355: 79 – 107 2013

[12] J. Šmíd, J. Moravec, L. Kratochvil, A. K. Nasher, T. Mazuch, V. Gvozdik and S. Carranza, Multilocus phylogeny and taxonomic revision of *Hemidactylus robustus* species group (Reptilia, Gekkonidae) with descriptions of three new species from Yemen and Ethiopia. Systematics and Biodiversity, 13(4): 346 – 368 2015.

[13] P. Uetz, P. Freed, R. Aguilar and J. Hošek, The Reptile Database, http://www.reptile-database.org, accessed (Eds.) (13 July 2022).

[14] R. Sindaco and V.K. Jeremčenko, The Reptiles of the Western Palearctic. 1. Annotated checklist and distributional atlas of the turtles, crocodiles, amphisbaenians and lizards of Europe, North Africa, Middle East and Central Asia. Monografie della Societas Herpetologica Italica – I, 579 pp. 2008.

[15] J. Šmíd, M. Uvizl, M. Shobrak, A. S. Al-Faqih, R, H. M. Algethami, A, R. Algethami, A, S. Alanazi, S. D. Alsubaie, S. Busais and S. Carranza, Swimming through the sands of the Sahara and Arabian deserts: Phylogeny of sandfish skinks (Scincidae, Scincus) reveals a recent and rapid diversification. Molecular Phylogenetics and Evolution. 155, 107012, 1 – 12 2021.

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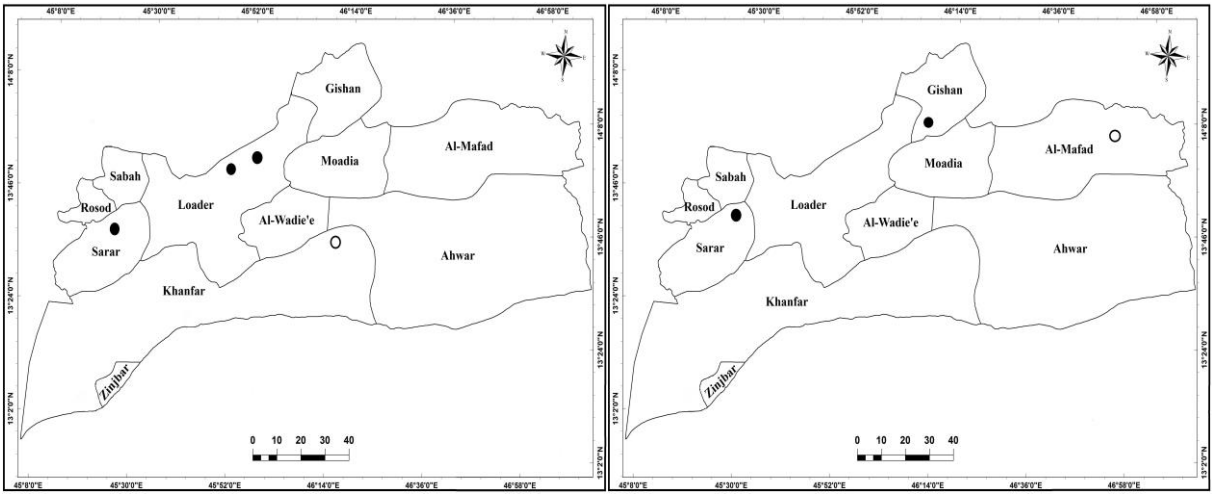
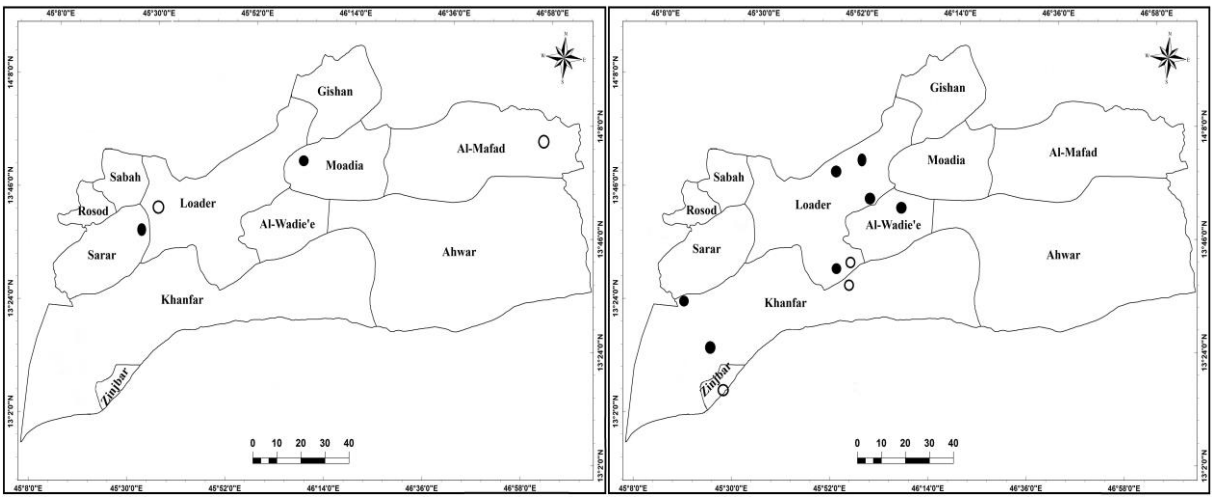
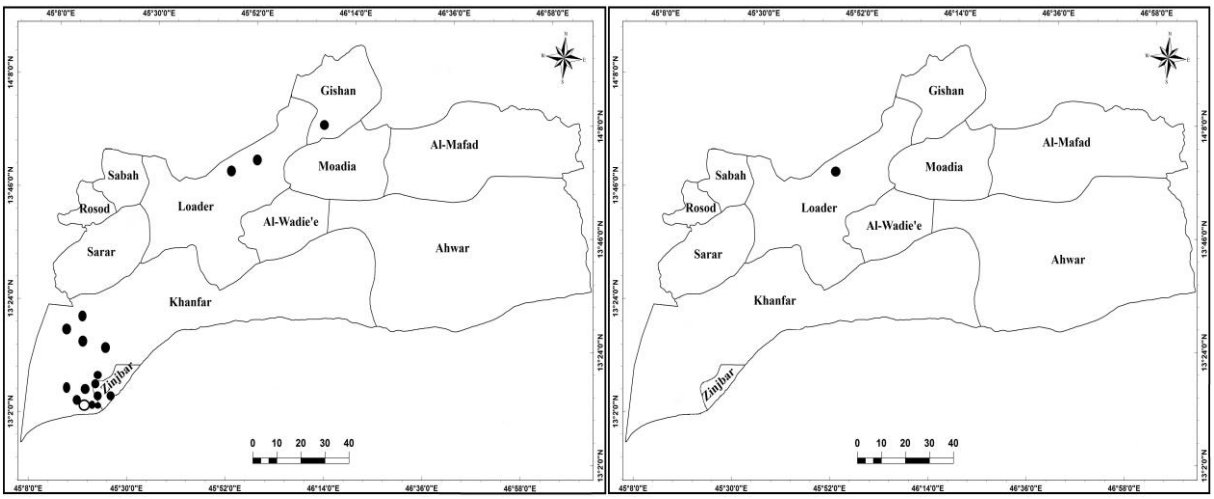
Appendix I: Distributional records of lizard species in Abyan governorate.



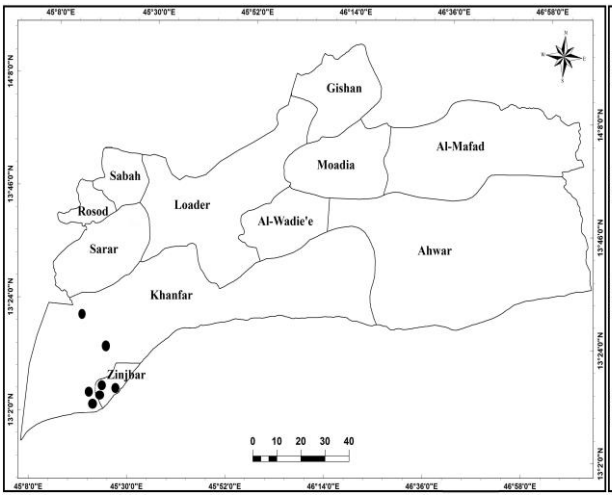
A. *Acanthocercus adramitanus* **B.** *Pseudotrapelus sinaitus*



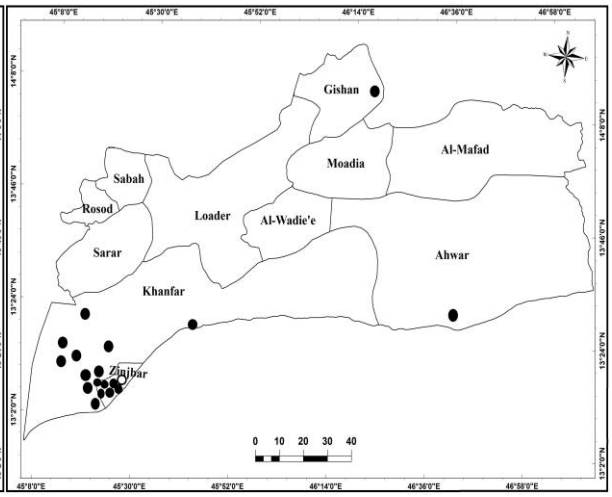
C. *Uromastyx benti* **D.** *Uromastyx yemenensis*



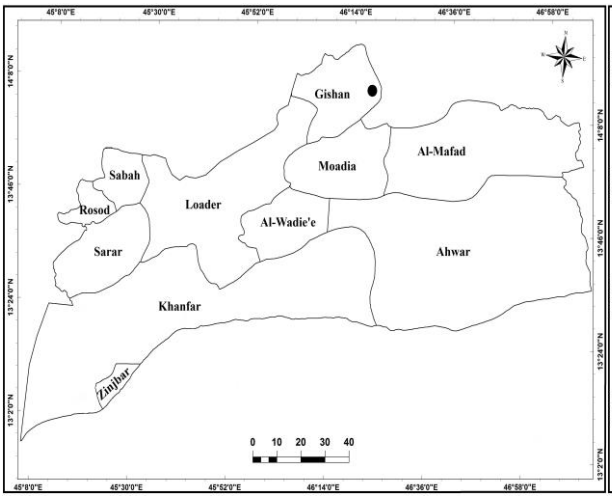
E. *Chamaeleo arabicus* **F.** *Bunopus tuberculatus*



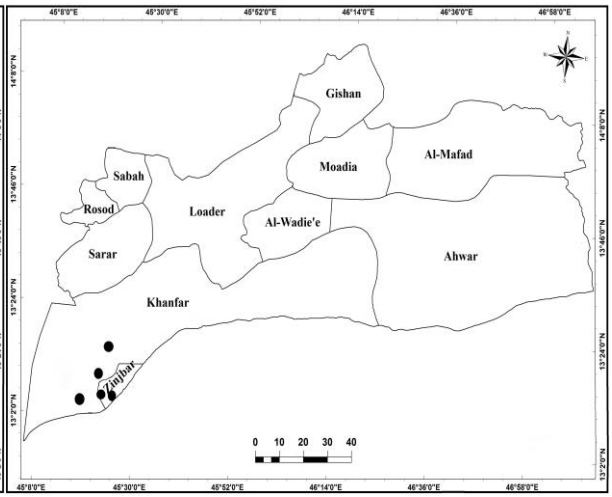
G. *Cyrtopodion scabrum*



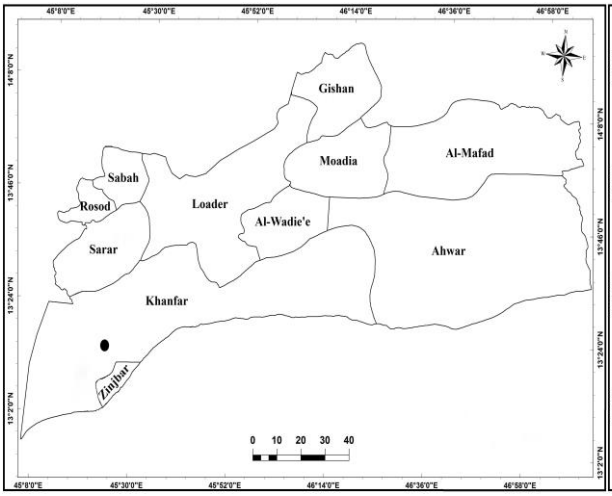
H. *Hemidactylus flaviviridis*



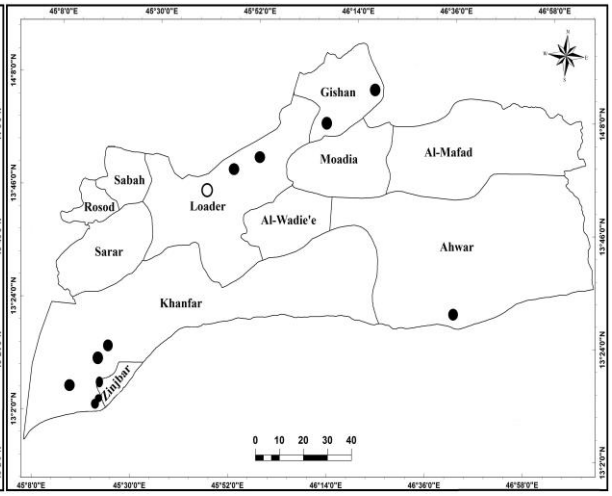
I. *Hemidactylus lemurinus*



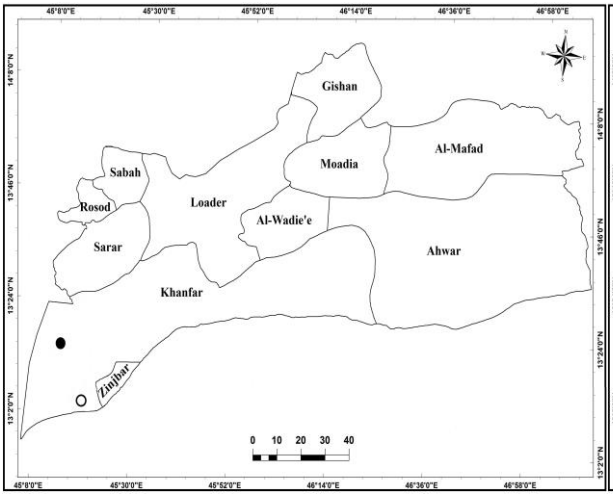
J. *Hemidactylus robustus*



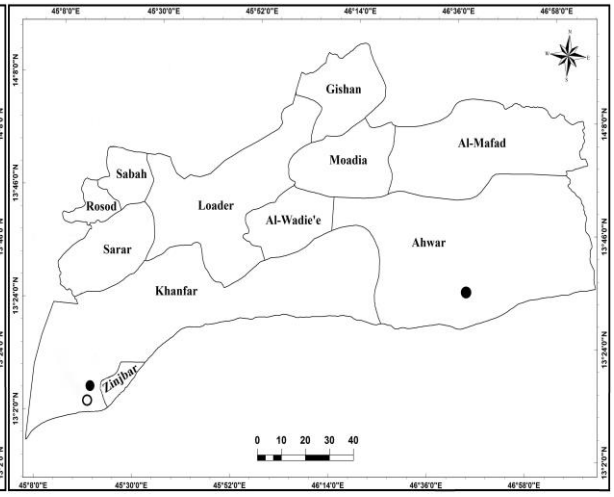
K. *Hemidactylus* cf. *robustus*



L. *Hemidactylus yerburii*



M. *Stenodactylus yemenensis*



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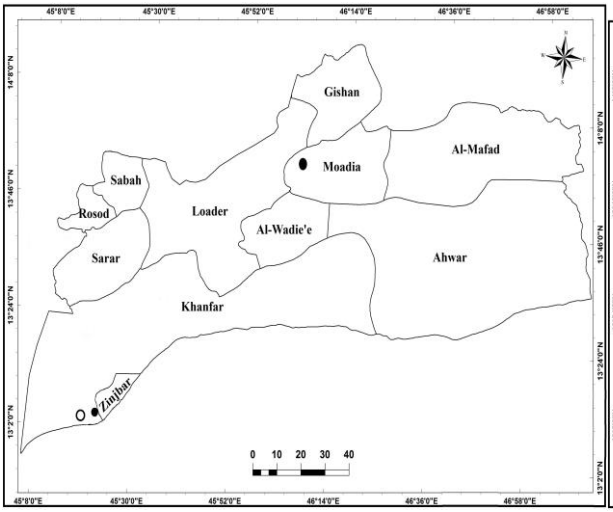
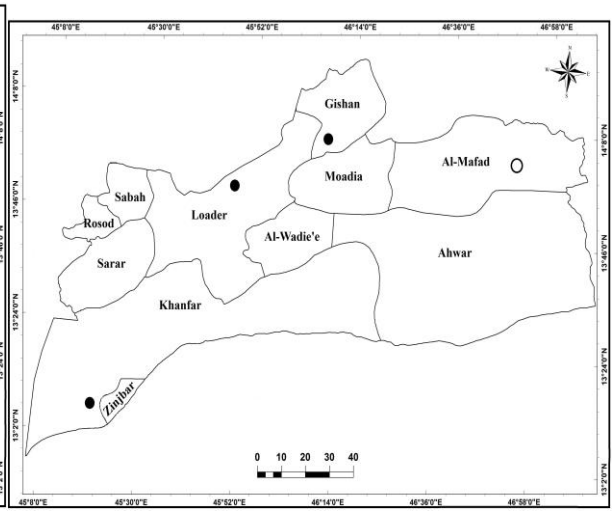
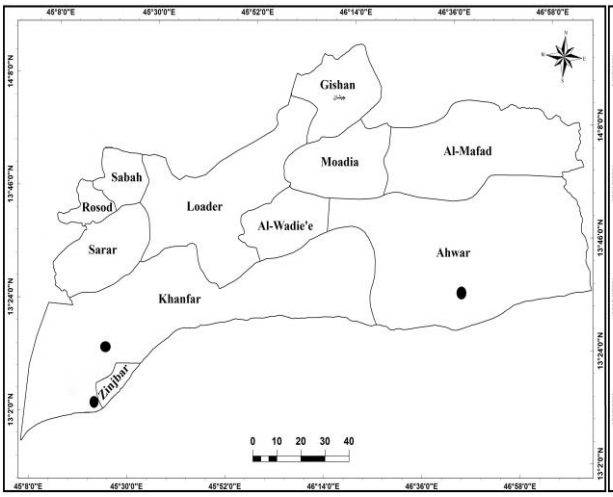


O. *Acanthodactylus boskianus*



P. *Acanthodactylus felicis*



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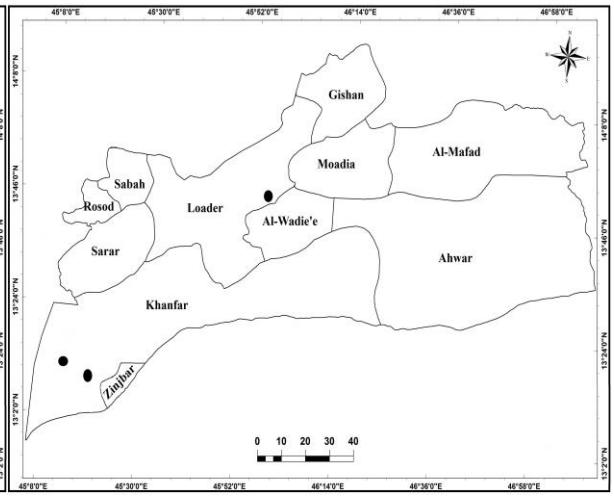
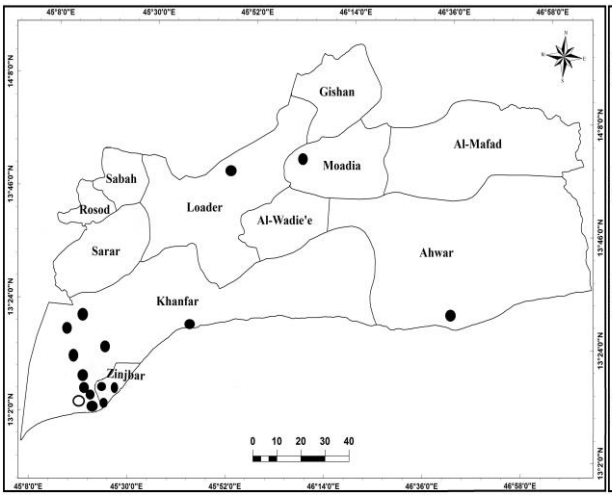
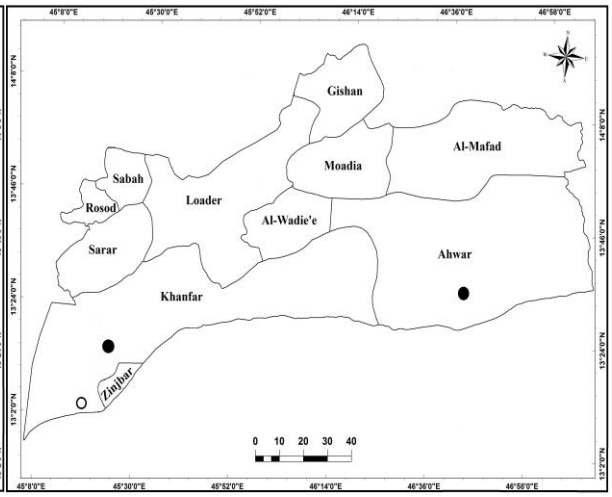


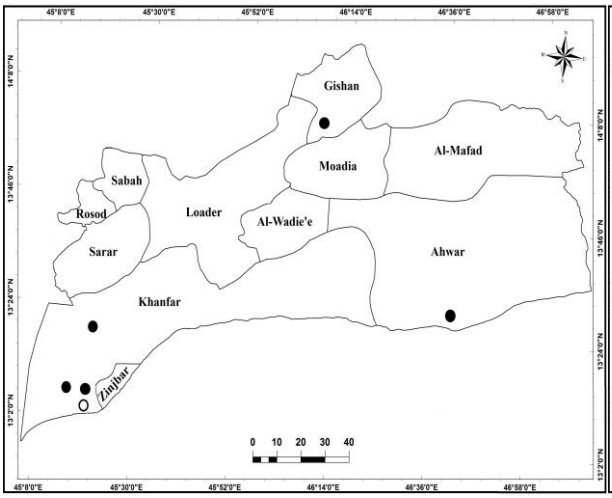
R. *Ptyodactylus hasselquistii*



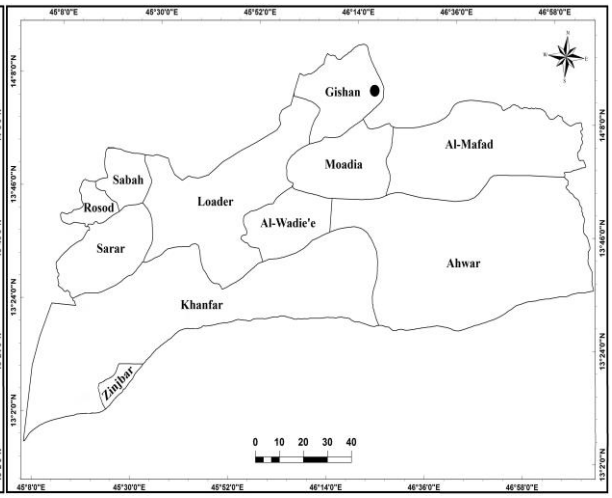
S. *Chalcides ocellatus*



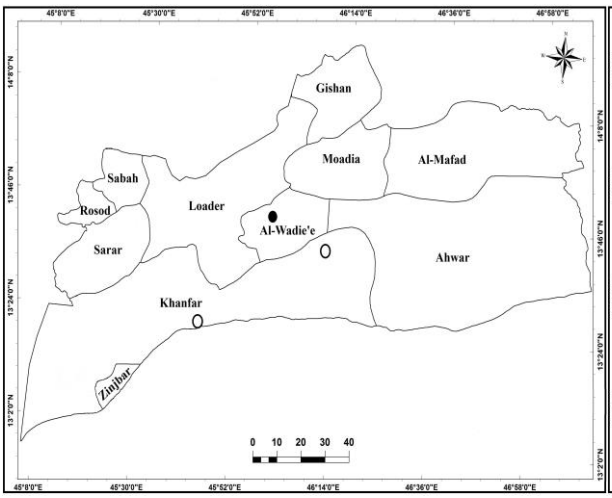
T. *Scincus hemprichii*



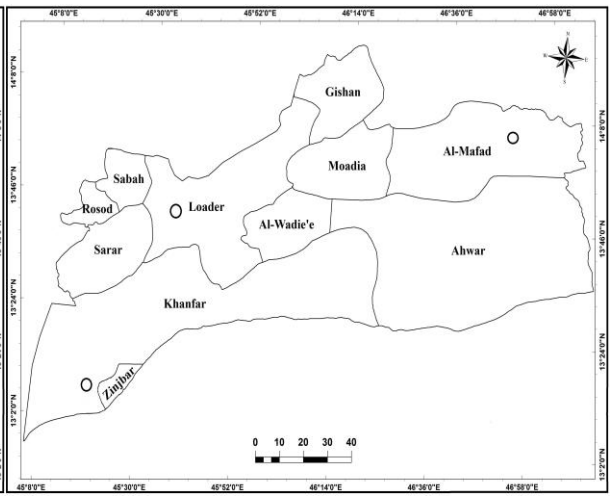
U. *Trachylepis brevicollis*



V. *Trachylepis tessellate*



W. *Pristurus ornithocephalus*



X. *Varanus griseus*

مقالة بحثية

انتشار السحالي في محافظة ابين ـ اليمن

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استلم في: 17 يناير 2023 / قبل في: 10 فبراير 2023 / نشر في 31 مارس 2023

المُلخّص

توضح هذه الدراسة تواجد وتوزيع السحالي في محافظة أبين لإنشاء قاعدة بيانات للدراسات المستقبلية. تم جمع مائتين واثنتين من العينات من خلال الرحلات الميدانية التي نفذت في الفترة من يوليو 2018 إلى يوليو 2019م، حيث تم تحديد أنواع الزواحف الحرشفية التابعة لتحت رتبة الحرشفيات. تم حفظ العينات في معمل الأحياء بكلية التربية / زنجبار - جامعة أبين برقم متحفي. أظهرت النتائج تسجيل 24 نوعا من السحالي تتواجد في محافظة أبين تنتمي إلى ثماني عائلات. كما تم وضع خريطة لانتشار هذه الأنواع في المحافظة.

الكلمات المفتاحية: انتشار، سحالي، محافظة أبين، اليمن.

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