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Taxonomical Study on Scorpions from Markazai Province, Iran

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ABSTRACT: Scorpions are predatory arthropod animals of the order Scorpiones within the class Arachnida. They have eight legs and are easily recognised by the pair of grasping pedipalps and the narrow, segmented tail. Markazi Province, the medieval Iraq-i Ajam, more recently Arak-is one of the 31 provinces of Iran and lies in western of Iran. There are limited studies of information scattered on Scorpions in Iran. In present investigation which has been carried out on scorpions in the Markazi province, different species of scorpions were identified and biological studies were carried out on them. The present research was done in different areas of this province and totally 53 scorpions were collected. According to scientific methods, the scorpions were captured then identified by used of identification key. In the present research, it was found that the species belong to two families, namely, Buthidae and Scorpionidae, sixgenera and six species.

Key words: Taxonomy, Identification, Scorpions, Iran

INTRODUCTION

The subfamily Scorpiopinae can be estimated as complex. Scorpiopinae was first proposed by Kraepelin (1905) as Scorpiopsinae, a subfamily of Vaejovidae. Lourenc¸o (1998)confirmed a previous decision by Stockwell (1989) about raising Scorpiopinae to family level. Subsequently, Soleglad and Sissom [4] downgraded Scorpiopidae to a subfamilyof Euscorpiidae, and grouped the Asian genera into the tribe Scorpiopini, and also included in this subfamily the North American genus Troglocormus (tribe Troglocormini). According to morphological assessments, the subfamily Scorpiopinae currently forms a monophyletic group within Euscorpiidae, and does not share any synapomorphies with North American Vaejovidae (2001). The tribe Scorpiopini includes six Asian genera, mainly from the Southern and South eastern regions of the continent. This composition is mainly due to Vachon (1980) who revised Scorpiops and described three new subgenera in addition to then ominotypical subgenus Scorpiops; Alloscorpiops, Euscorpiops, and Neoscorpiops. These four subgenera were laterelevated to generic rank by Lourenc¸o (1998), who added the monotypic genera Parascorpiops Banks, 1928, and Dasyscorpiops Vachon, 1974, bringing the total number of generato six. Soleglad and Sissom (2001) then supported the validity of Euscorpiops based on the position of chela trichobothrium Eb3 and the presence of an annular ring on the telson. Recently, Lourenc¸o (2013) divided the genus Alloscorpiops into two subgenera with the creation of the subgenus Laoscorpiops. Since most historical aspects around these decisions have been consistently synthesized by Lourenc¸o (2013)they will not be further discussed here.

There are limited studies of information scattered on Scorpions in Iran. The first study was done by Oliveir, that discus about black Scorpion of Kashan and named it crassicauda (1807). Thorell, 1876 by surveying Scorpions of natural history museum in Stockholm and Gothenburg named a new species from Iran as Buthusdoriae. Pocock, 1889, introduced Buthus phillipsi as a new Iranian species from natural history Museum British. Birulaya, 1896, described four species from Iran named: *Orthochhrusme lanurus*, *Buthus eupeus*, *Buthus caucasicus* and *Prionurus crassicauda.* He published his paper for Iranian Scorpions on 1905. Vachon, 1950 has introduced some Genus from Iran as Mesobuthus that is exclusive to Asia. He has reported *Liobuthus kessleri* first time from Iran and divide Scorpions to Families Buthidae and Scorpionidae in Iran (1966). In 1973, Vachon added a new Genus and Species to Iranian Scorpions name: *Habibiella gaillardia*. There is big lacuna in studying of Scorpions from different parts of Iran. In the present study the scorpions is described from Markazi Province of Iran.

METHODOLOGY

The Markazi province is approximately 29442 kilometer wide (Fig.1). Scorpions were collected (Fig. 2) randomly, fromdifferent parts of Markazi province (Arak, Tafresh,Saveh, Ashtiyan, Mahalat, Delijan, Khomein and Shazand) during the years 2007and 2008, and they were fixed separately in 75% Ethanol alcohol and labeled in different bottles (Fig.1). Samples were transferred tolaboratory for feature studies. In the Laboratory, taxonomical study, sexing and biometrical parameters were studied with the help of stereomicroscope (Olympus SZX9) and the keys suggested by Farzanpey (1987).

Fig. 1. *Androctonus crassicauda*.

Fig. 2. *Buthotus saulcyi.*

RSULTS

In this study, six species of scorpions belonging to six genera and two families were identified. (Table 1). In this study, two families Buthidae, Scorpionidae and six genera namely Androctonus, Buthotus, Odontobuthus, Mesobuthus, Hemiscorpius and Scorpio were identified. Biometrical characters have been studied for each six species as tables 2, 3, 4, 5, 6 and 7. The figures 1, 2, 3, 4, 5 and 6 are related to species.

Table 1. The species of Scorpions.

Family	Genera	Species
Buthidae	*Androctonus*	*A.crassicauda*
Buthidae	*Buthotus*	*B. saulcyi*
Buthidae	*Odontobuthus*	*O.doriae*
Buthidae	*Mesobutus*	*M.eupeus*
Scorpionidae	*Hemiscorpius*	*H.lepturus*
Scorpionidae	*Scorpio*	*S.maurus*

Species: ***Androctonus crassicauda***
Phylum: Arthropoda
Class: Arachnida
Order: Scorpiones
Family: Buthidae
Genus: Androctonus
Species: *A. crassicauda* (Table 2)

Table 2. Biometrical characters of *Androctonus crassicada* (mm).

WM4Se	WM5Se	WC	LT+ST	LFF	LFT	LC	LMB	LBT	LM_1	LM_2	LP	Organ
5.71	9.63	7.05	7.54	6.23	3.10	4.94	8.80	79.17	35	23.40	10.19	Size

Species: *Buthotus saulcyi*
Phylum: Arthropoda
Class: Arachnida
Order: Scorpiones
Family: Buthidae
Genus: *Buthotus* (Table 3)

Table 3. Biometrical characters of *Buthotus saulcyi* (mm).

WM4Se	WM5Se	WC	LT+ST	LFF	LFT	LC	LMB	LBT	LM_1	LM_2	LP	Organ
8.18	7.82	10. 58	7.76	4.70	3.50	11.12	83.53	52.17	21.43	9.93	4.19	Size

Species: *B. saulcyi*
Species: *Odontobuthus doriae*
Phylum: Arthropoda
Class: Arachnida
Order: Scorpiones
Family: Buthidae
Genus: *Odontobuthus* (Table 4)

Table 4. Biometrical characters of *Odontobuthus doriae* (mm).

WM4Se	WM5Se	WC	LT+ST	LFF	LFT	LC	LMB	LBT	LM_1	LM_2	LP	Organ
6.62	5.21	6.95	5.96	2.34	3.42	8.26	58.24	33.65	17.06	7.53	2.93	Size

Species: *O. doriae*
Species: Mesobuthuseupeus
Phylum: Arthropoda
Class: Arachnida
Order: Scorpiones
Family: Buthidae
Genus: Mesobuthus
Species: *M. eupeus* (Table 5)

Table 5. Biometrical characters of *Mesobuthus eupeus* (mm).

WM4Se	WM5Se	WC	LT+ST	LFF	LFT	LC	LMB	LBT	LM_1	LM_2	LP	Organ
4.93	3.61	4.97	3.91	2.16	2.25	1.12	40.37	23.25	12.06	5.06	2.40	Size

Species: *Scorpio maurus*
Phylum: Arthropoda
Class: Arachnida
Order: Scorpiones
Family: Scorpionidae
Genus: *Scorpio* (Table 6)

Table 6. Biometrical characters of *Scorpio maurus* (mm).

WM4Se	WM5Se	WC	LT+ST	LFF	LFT	LC	LMB	LBT	LM_1	LM_2	LP	Organ
2.88	9.65	5.68	6.50	4.35	1.96	5	7.33	34.95	21.97	24.16	8.82	Size

Species: *S. maurus*
Species: *Hemiscorpuis lepturus*
Class: Arachnida
Order: Scorpiones
Family: Scorpionidae
Genus: Hemiscorpius
Species: *H. lepturus* (Table 7)

Table 7. Biometrical characters of *Hemiscorpuis lepturus* (mm).

LP	LM	LM	LBT	LFT	LC	LMB	WC	LPe	DBPe	Organ
1.79	16.45	38.49	75	12.9	2.53	1.95	5.91	7.15	6.83	Size

Fig. 3. *Odontobuthus doriae.*

Fig. 4. *Mesobuthus eupeus.*

Fig. 5. *Scorpio maurus.*

Fig. 6. *Hemiscorpius lepturus.*

DISCUSSION

The results of this study showed that the scorpions that were studied in the Central province belonging to two family Buthidae and Scorpionidae. According to world dispersal they have originated from Africa. Some of these genera have been seen in Africa.

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