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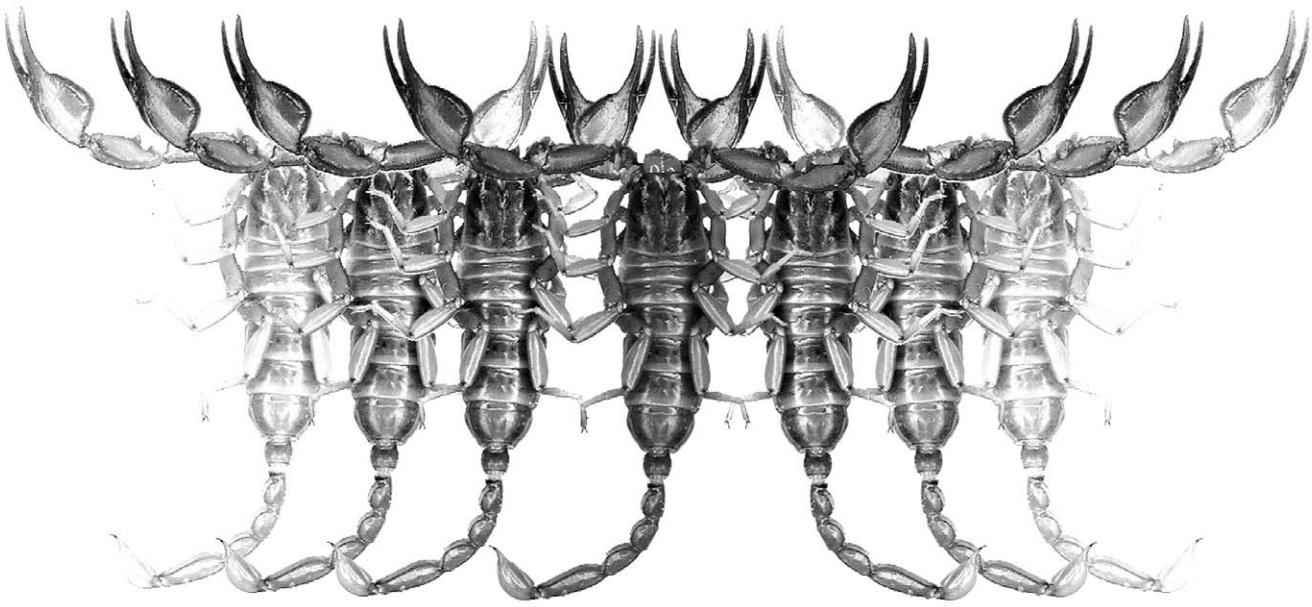

Scorpions of Iran (Arachnida, Scorpiones). Part X. Alborz, Markazi and Tehran Provinces with a Description of *Orthochirus carinatus* sp. n. (Buthidae)

Shahrokh Navidpour, František Kovařík, Michael E. Soleglad & Victor Fet

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Scorpions of Iran (Arachnida, Scorpiones). Part X. Alborz, Markazi and Tehran Provinces with a description of *Orthochirus carinatus* sp. n. (Buthidae)

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Summary

Nine species of scorpions belonging to two families are reported from the Alborz, Markazi and Tehran Provinces of Iran. Of these, *Compsobuthus kaftani* Kovařík, 2003 is recorded from Tehran Province for the first time; *Compsobuthus matthiesseni* (Birula, 1905) is recorded from Alborz Province for the first time; *Hottentotta saulcyi* (Simon, 1880) is recorded for Alborz and Markazi Provinces for the first time; *Iranobuthus krali* Kovařík, 1997 is recorded for Tehran Province for the first time; *Mesobuthus eupeus eupeus* (C. L. Koch, 1839) is recorded from Alborz, Markazi and Tehran Provinces for the first time; *Odontobuthus doriae* (Thorell, 1876) is recorded from Alborz Province for the first time; and *Scorpio kruglovi* Birula, 1910 is recorded for Alborz and Markazi Provinces for the first time. *Orthochirus carinatus* **sp**. **n**. from Iran (Alborz and Tehran Provinces) is described and fully complemented with color photos of preserved specimens, as well as of its habitat.

Introduction

This paper continues a comprehensive province-by-province field study of the scorpion fauna of Iran by the RRLS team under Shahrokh Navidpour. The study includes documentation of biotope diversity, revisitation of previously known sites, some of them type localities, and sampling of all the encountered scorpion species. All specimens are collected with the help of UV light (night catch).

Alborz is one of 31 provinces of Iran named after Alborz Mountains which lie mainly in the north part of the province. Alborz Province lies in the north part of the country and is bordered by Mazandaran Province in the north, Tehran Province in the east, Markazi Province in the south and Qazvin Province in the west. Alborz covers 5833 km^2 and its capital is Karaj City. The historical resources, documents and archeological studies conducted in the province indicate that it had a rich culture tracked back to prehistoric times. The major counties of the province are Taleghan, Hashtgerd, Nazarabad and Karaj. The average air temperature of Karaj is in spring 19/8°C, in summer 23/1°C, in autumn 13/3°C and in winter 4/8°C.

Markazi Province lies in the north-west part of Iran and is bordered by Tehran and Alborz Provinces in the north, Qom Province in the east, Isfahan and Lorestan Provinces in the south and Hamadan Province in the west. Markazi covers 29127 km^2 and its capital is Arak. The word markazi means central in Persian. The major counties of the province are Saveh, Arak, Mahallat, Zarandiyeh, Khomein, Delijan, Tafresh, Ashtian, Shazand (previously known as Sarband) and Farahan. The average air temperature of Arak is in spring 15°C, in summer 22°C, in autumn 10.2°C and in winter -1.3°C.

Tehran is the capital of Iran and province which lies in the northern part and is bordered by Mazandaran Province in the north, Semnan Province in the east, Qazvin Province in the west and Qom in the south. Tehran covers 18,956 km^2. The province consists of 16 counties (or districts) and 45 municipalities, and has 78 villages. Tehran features a cold semi-arid climate (Köppen climate classification: BSk) with continental climate characteristics and Mediterranean climate precipitation pattern. Tehran's climate is largely defined by its geographic location, with the towering Alborz Mountains to its north and the country central desert to the south. It can be generally described as mild in spring

and autumn, hot and dry in summer, and cold and wet in winter. Summer is long, hot, and dry with little rain, but relative humidity is generally low, making the heat tolerable. Average high temperatures are between 32 and 37°C, and it can drop to 14°C in the mountainous north of the city at night. Most of the light annual precipitation occurs from late autumn to mid-spring, but no one month is particularly wet. The hottest month is July, with a mean minimum temperature of 26°C and a mean maximum temperature of 34°C, and the coldest is January, with a mean minimum temperature of −5°C and a mean maximum temperature of 1°C. The weather of Tehran can sometimes be unpredictably harsh. The record high temperature is 43°C and the record low is −20°C. On January 5 and 6, 2008 a wave of heavy snow and low temperatures covered the city in a thick layer of snow and ice, forcing the Council of Ministers to officially declare a state of emergency and close down the capital on January 6 and 7. Tehran has seen an increase in relative humidity and annual precipitation since the beginning of the 21st century. This is the most likely because of the afforestation projects, which also include expanding parks and lakes. The northern parts of Tehran are still lusher than the southern parts.

Methods, Material & Abbreviations

Nomenclature and measurements follow Stahnke (1971), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974).

Specimens used for this study were collected by the RRLS team under Shahrokh Navidpour. Specimens studied herein are preserved in 80% ethanol and deposited in RRLS and FKCP collections. The specimens deposited in RRLS were determined and compared by Shahrokh Navidpour and the specimens deposited in FKCP were determined, compared, and photographed by František Kovařík. *Depositories*: BMNH (The Natural History Museum, London, United Kingdom); FKCP (František Kovařík, private collection, Prague, Czech Republic); MNHN (Muséum National d´Histoire Naturelle, Paris, France); MCSN (Museo Civico de Storia Naturale "Giacomo Doria", Genova, Italy); RRLS (Razi Reference Laboratory of Scorpion Research, Razi Vaccine and Serum Research Institute, Karaj, Iran); ZISP (Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia); ZMUH (Centrum für Naturkunde (CeNak); Center of Natural History Universität Hamburg, Zoological Museum, Germany).

List of scorpions of Alborz, Markazi and Tehran Provinces

Family **Buthidae** C. L. Koch, 1837
Androctonus crassicauda (Olivier, 1807) (Alborz, Markazi, Tehran)
Compsobuthus kaftani Kovařík, 2003 (Tehran)
Compsobuthus matthiesseni (Birula, 1905) (Alborz)
Hottentotta saulcyi (Simon, 1880) (Alborz, Markazi)
Iranobuthus krali Kovařík, 1997 (Alborz, Markazi, Tehran)
Mesobuthus eupeus eupeus (C. L. Koch, 1839) (Alborz, Markazi, Tehran)
***Orthochirus carinatus* sp. n.** (Alborz, Tehran)
Odontobuthus doriae (Thorell, 1876) (Alborz, Markazi, Tehran)
Family **Scorpionidae** Latreille, 1802
Scorpio kruglovi Birula, 1910 (Alborz, Markazi, Tehran)

Systematics

Family **Buthidae** C. L. Koch, 1837
Androctonus crassicauda (Olivier, 1807)
(Fig. 50)

Scorpio crassicauda Olivier, 1807: 97, pl. XLII, fig. 2.
Androctonus crassicauda: Kraepelin, 1891: 175 (in part); Fet & Lowe, 2000: 72; Navidpour et al., 2013: 3–4, figs. 2–3 (complete references list until 2013); Moradi et al, 2015: 12; Sadílek et al., 2015: 69–76; Amr et al., 2016: 32.

TYPE LOCALITY AND TYPE REPOSITORY. Kashan, Persia, now Iran, Esfahan Province; MNHN.

ALBORZ, MARKAZI AND TEHRAN PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Hive village, 36°03' 34.6"N 50°39'11.9"E, 1665 m a.s.l. (Locality No. Al-102), VI.2013, 1♀1juv. (FKCP) 9♂1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Hive village to Immazadeh Mousa, 36°03'54.5"N 50°39'12.5"E, 687m a.s.l. (Locality No. Al-103), VI.2013, 1♂1♀ (FKCP) 2♂5♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Chendar, 35°57'25.7"N 50°47'05.6"E, 445 m a.s.l. (Locality No. Al-104), VI.2013, 1♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Ateshgah-Baraghan road, 35°55'52.9"N 50°57'30.6"E, 336 m a.s.l. (Locality No. Al-113), VI. 2013, 1♂ (FKCP) 1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour. **Markazi** Province, Lajrood village, 34°01' 19.2"N 49°18'24.6"E, 1926 m a.s.l. (Locality No. M-102), V.2014, 1♀juv. (FKCP), leg. Masihipour, Hayader and Behmam; Delijan-Mahalat, 33°52'08.6"N 50°28' 04.3"E, 1610 m a.s.l. (Locality No. M-103), V.2014, 1♂1♂juv. (FKCP) 2♂ (RRLS), leg. Masihipour, Hayader and Behmam. **Tehran** Province, Firooz kooh – Semnan road, Pirdeh, 35°42'43"N 52°49'19"E, 2559 m a.s.l. (Locality No. Teh-105), V.2012, 1♂1♀ (FKCP), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Widespread in Iran, found in most provinces. Recorded also from Armenia, Azerbaijan, Bah-

rain, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen (see Navidpour et al., 2013: 3–4).

Compsobuthus kaftani Kovařík, 2003
(Fig. 51)

Compsobuthus kaftani Kovařík, 2003: 95; Kovařík in Kovařík & Ojanguren Affilastro, 2013: 152, figs. 882–885, 940 (complete references list until 2013).

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Esfahan Province, Jafar abad SEE of Kashan, 33°55'N 51°53'E; FKCP.

TEHRAN PROVINCE MATERIAL EXAMINED. **Iran**, **Tehran** Province, Mahdasht, Asad Abad Booghin Village, 35° 35'02"N 50°37'54"E, 1262 m a.s.l. (Locality No. Teh-100), V.2012, 2♀ (FKCP) 2♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION. Iran (Esfahan, Kerman and Yazd Provinces) (see Kovařík & Ojanguren Affilastro, 2013: 152). There is a new record for Tehran Province.

Compsobuthus matthiesseni (Birula, 1905)
(Fig. 52)

Buthus acutecarinatus matthiesseni Birula, 1905: 142.
Compsobuthus matthiesseni: Fet & Lowe, 2000: 127; Navidpour et al., 2012: 7, fig. 7; Sampour, 2012: 416–418; Kovařík in Kovařík & Ojanguren Affilastro, 2013: 153–154, figs. 815–818, 937–939 (complete references list until 2013); Šťáhlavský et al., 2014: 355; Lourenço & Leguin, 2015: 3, figs. 1a–b; Kovařík, 2018: 6, figs. 7–9.
= *Compsobuthus williamsi* Lourenço, 1999: 87–91, figs. 2, 4–9, 17 (syn. by Kovařík, 2018: 6).

TYPE LOCALITY AND TYPE REPOSITORY. Iran, "Kum, Province Irak-Adschemi" now Qum (Qom); ZISP.

ALBORZ PROVINCE MATERIAL EXAMINED. **Iran**, **Alborz** Province, Hive village, 36°03'34.6"N 50°39'11.9"E, 1665 m a.s.l. (Locality No. Al-102), VI.2013, 1♂1♀ (FKCP) 8♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Hive village to Immazadeh Mousa, 36°03' 54.5"N 50°39'12.5"E, 687 m a.s.l. (Locality No. Al-103), VI.2013, 2juvs. (FKCP), leg. Rabiei, Barzegar and Fallahpour; Chendar, 35°57'25.7"N 50°47'05.6"E, 445 m a.s.l. (Locality No. Al-104), VI.2013, 1♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad-Eshtehard road, 35°49'01.7"N 50°27'17.6"E, 50 m a.s.l. (Locality No. Al-106), VI.2013, 3♂1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad-Zakiabad road, 35°50'18.2"N 50°31'04.2"E, 56 m a.s.l. (Locality No. Al-107), VI.2013, 1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Iran (Bachtaran, Bushehr, Chahar Mahal & Bakhtiyari, Fars, Hamadan, Ilam, Khoozestan, Kerman, Kohgilouyeh & Boyer Ahmad, Kordestan, Lorestan, Markazi and Qom Provinces), Iraq, Syria, Turkey (see Kovařík & Ojanguren Affilastro, 2013: 154). There are new records for Alborz Province.

Hottentotta saulcyi (Simon, 1880)
(Fig. 53)

Buthus saulcyi Simon, 1880a: 378; Simon, 1880b: 29; Kraepelin, 1899: 18.
Hottentotta saulcyi: Fet & Lowe, 2000: 143; Navidpour et al., 2013: 3–4, figs. 2–3; Kovařík & Ojanguren, 2013, figs. 978–982, 1131, 133–1135 (complete reference list until 2013); Moradi et al, 2015: 12; Kovařík et al., 2018: 10–13, figs. 46–51.

TYPE LOCALITY AND TYPE REPOSITORY. Iraq, Mosul; MNHN, ZMUH.

ALBORZ AND MARKAZI PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Najmabad, 35°48'57.6" N 50°35'50.1"E, 210 m a.s.l. (Locality No. Al-108), VI.2013, 1♂3♀ (FKCP) 3♂3♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Alborz Province, Taleghan road to Samghabab village, 36°06'24.8"N 50°34'29.9"E, 1781 m a.s.l. (Locality No. Al-118), VI.2013, 8♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour. **Markazi** Province, Lajrood village, 34°01'19.2"N 49°18'24.6"E, 1926 m a.s.l. (Locality No. M-102), V.2014,1♀ (FKCP), leg. Masihipour, Hayader and Behmam.

DISTRIBUTION: Afghanistan; Iran, verified from Bushehr, Chahar Machal & Bakhtiyari, Fars, Hamadan, Ilam, Kermanshah (formerly Bachtaran), Khoozestan, Kohgilouyeh & Boyer Ahmad, Lorestan, Qazvin, Zanjan, West Azerbaijan Provinces; Iraq; and Turkey (see Kovařík et al., 2018: 13). There are new records for Alborz and Markazi Provinces.

Iranobuthus krali Kovařík, 1997
(Fig. 54)

Iranobuthus krali Kovařík, 1997: 45, figs. 4–10, 15; Fet & Lowe, 2000: 145; Vignoli et al., 2003: 2; Fet et al., 2005: 12; Karataş et al., 2012: 114; Navidpour et al., 2012: 9, figs. 4, 6, 9, 19 and 24; Navidpour et al., 2013: 7–8, fig. 6.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Fars Province, 10 km E of Sivand, 30º05'N 52º55'E, ca 1700 m a.s.l.; FKCP.

TYPE MATERIAL EXAMINED. **Iran**, Fars Province, 10 km E of Sivand, 30º05'N 52º55'E, ca 1700 m a.s.l., 29.-30.IV.1996, 1♂ (holotype) (FKCP), leg. D. Král.

ALBORZ, MARKAZI AND TEHRAN PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Karaj-Baraghan road, 35°54'36.7"N 50°58'22"E, 770 m a.s.l. (Locality No. Al-101), VI.2013, 1♀ (FKCP) 1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour. **Markazi** Province, Delijan-Mahalat, 33°52'08.6"N 50°28'04.3"E, 1610 m a.s.l. (Locality No. M-103), V.2014,1♀juv. (FKCP), leg. Masihipour, Hayader and Behmam. **Tehran** Province, Pakdasht, 35°35'07"N 51°41'20"E, 1460 m a.s.l. (Locality No. Teh-120), V.2012, 1♀ (FKCP) 2♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Iran: Fars (Kovařík, 1997: 45), Hormozgan (Navidpour et al., 2013: 7), Qom (Karataş et al., 2012: 114), Alborz, Markazi, and Tehran (first report) Provinces.

Mesobuthus eupeus eupeus (C. L. Koch, 1839)
(Fig. 55)

Androctonus eupeus C. L. Koch, 1839: 127, fig. 419.
Mesobuthus eupeus eupeus: Fet & Lowe, 2000: 171; Kovařík et al., 2011: 1–5, figs. 1–11, 16, 19–20, 23 (complete references list until 2011); Mirshamsi et al., 2011: 8, fig. 4; Moradi et al, 2015: 12.

TYPE LOCALITY AND TYPE REPOSITORY. Type(s) lost; "Caucasus"; type locality designated by Birula (1917: 35) as Tiflis (now Tbilisi), Georgia.

ALBORZ, MARKAZI AND TEHRAN PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Karaj-Baraghan road, 35°54'36.7"N 50°58'22"E, 770 m a.s.l. (Locality No. Al-101), VI.2013, 4♂1♀ (FKCP) 3♂7♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Chendar, 35° 57'25.7"N 50°47'05.6"E, 445 m a.s.l. (Locality No. Al-104), VI.2013, 1♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Atashgah to Baraghan road, 35°56'29.1"N 50°56'17"E, 880 m a.s.l. (Locality No. Al-112), VI.2013, 3♂4♀ (RRLS), leg. Navidpour, Rabiei, Barzegar and Fallahpour; Ateshgah-Baraghan road, 35°55'52.9"N 50°57'30.6"E, 336 m a.s.l. (Locality No. Al-113), VI. 2013, 5♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Atashgah road, 35°55'58.8"N 51°0'29.4"E, 258 m a.s.l. (Locality No. Al-114), VI.2013, 6♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Doran village, 35°59'03.1"N 51°01'55.1"E, 400 m a.s.l. (Locality No. Al-115), VI.2013, 2♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan, Gerdab-Azadbor, 36°09' 16.8"N 51°10'23.2"E, 2927 m a.s.l. (Locality No. Al-116), VI.2013, 3♂7♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan-Ebrahim abad, 36°07'21.8"N 50° 40'04"E, 2249 m a.s.l. (Locality No. Al-117), VI.2013, 1♂1♀ (FKCP) 4♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan to Shahrak, 36°09'04.1"N 50° 40'46"E, 1976 m a.s.l. (Locality No. Al-119), VI.2013, 13♂11♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan to Prachan, 36°12'09"N 50°53'06"E, 2096 m a.s.l. (Locality No. Al-120), VI.2013, 6♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan to Gerdab, 36°09'37.1"N 51°08'35.7"E, 2560 m a.s.l. (Locality No. Al-121), VI.2013, 1♂1♀ (FKCP) 1♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour. **Markazi** Province, Tooreh, 34°02'14.3"N 49°18'01.2"E, 1938 m a.s.l. (Locality No. M-101), V.2014, 3♂1♀ (RRLS), leg. Masihipour, Hayader and Behmam; Lajrood village, 34° 01'19.2"N 49°18'24.6"E, 1926 m a.s.l. (Locality No. M-102), V.2014, 1♂1♀ (FKCP) 3♂7♀ (RRLS), leg. Masihipour, Hayader and Behmam; Divar Kharabeh, 33°48'32.2"N 50°19'48.3"E, 1785 m a.s.l. (Locality No. M-106), V.2014, 11♂21♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn, 33°44'05.9"N 50° 14'25.8"E, 1792 m a.s.l. (Locality No. M-107), V.2014, 2♂5♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn-Arak road, 33°58'47.8"N 49°52'05.3"E, 1822 m a.s.l. (Locality No. M-108), V.2014, 1♂4♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn, 33° 50'13.1"N 49°59'30.4"E, 1971 m a.s.l. (Locality No. M-109), V.2014, 1♂1♀ (FKCP) 2♂5♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khoogan village, 33° 47'00.4"N 50°09'43.6"E, 1883 m a.s.l. (Locality No. M-110), V.2014, 3♂6♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khoogan to Khomayn, 33°48'57.2"N 50° 03'42.7"E, 1956 m a.s.l. (Locality No. M-112), V.2014, 11♂7♀ (RRLS), leg. Masihipour, Hayader and Behmam; Komayjan to Khomayn, 34°43'28"N 49°31'16"E, 1920 m a.s.l. (Locality No. M-113), V.2014, 1♂2♀ (RRLS), leg. Masihipour, Hayader and Behmam; Farahan - Arak, 34°25'59"N 49°40'03"E, 1749 m a.s.l. (Locality No. M-114), V.2014, 3♂1♀ (RRLS), leg. Masihipour, Hayader and Behmam; Salafcehgan - Arak, 34°17'04"N 50°11'28"E, 1889 m a.s.l. (Locality No. M-115), V.2014, 2♀ (RRLS), leg. Masihipour, Hayader and Behmam; Salafchegan, 34°15'14"N 50°08'46"E, 1798 m a.s.l. (Locality No. M-116), V.2014, 3♂5♀ (RRLS), leg. Masihipour, Hayader and Behmam; Shahsavaran, 34°12'14"N 50°03'39"E, 1721 m a.s.l. (Locality No. M-117), V.2014, 11♂ (RRLS), leg. Masihipour, Hayader and Behmam; Gooshe Sinjan village, 33° 56'59"N 49°37'08"E, 2206 m a.s.l. (Locality No. M-118), V.2014, 2♂1♀ (RRLS), leg. Masihipour, Hayader and Behmam; Cheshmeh Abad village, 33°58'58"N 49°36'57"E, 2196 m a.s.l. (Locality No. M-119), V.2014, 2♂5♀ (RRLS), leg. Masihipour, Hayader and Behmam. **Tehran** Province, Firooz kooh – Semnan road, 35°41'19"N 52°49'07"E, 2505 m a.s.l. (Locality No. Teh-104), V.2012, 3♂9♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Zarindasht road,

35°40'03"N 52°34'41"E, 2515 m a.s.l. (Locality No. Teh-104), V.2012, 3♂9♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Semnan road, Pirdeh, 35°42'43"N 52°49'19"E, 2559 m a.s.l. (Locality No. Teh-105), V.2012, 19♂26♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Semnan road, Sarafraz 35°44'25"N 52°51'55"E, 2245 m a.s.l. (Locality No. Teh-106), V.2012, 3♂7♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Gadook road, 35°47'04"N 52°50'46"E, 2101 m a.s.l. (Locality No. Teh-107), V.2012, 5♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Gadook road, 35°49'31"N 52°55'21"E, 2168 m a.s.l. (Locality No. Teh-108), V. 2139, 1♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Arjand road, 35°45'07"N 52°39' 21"E, 1929 m a.s.l. (Locality No. Teh-110), V.2012, 2♂ (FKCP) 8♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Tange Rashi road, 35°46'32"N 52°44'05"E, 2077 m a.s.l. (Locality No. Teh-111), V.2012, 2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Firooz kooh – Sharabad road, 35°47'42"N 52°43'19"E, 2134 m a.s.l. (Locality No. Teh-112), V.2012, 2♂1♀ (FKCP) 3♂10♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour;Roodehen-Damavand road, 35°43'03"N 52°01'13"E, 2257 m a.s.l. (Locality No. Teh-113), V.2012, 12♂16♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; North of Parand city, 35°29'10"N 50°58'05"E, 1197 m a.s.l. (Locality No. Teh-115), V.2012, 5♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Varamin-Pakdasht,Tochal village, 35°33' 55"N 51°42'44"E, 1337 m a.s.l. (Locality No. Teh-118), V.2012, 1♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour, Molla Mohammadi; South of Varamin, Hassan Abad road, 35°17'17"N 51°25'18"E, 886 m a.s.l. (Locality No. Teh-119), V.2012, 2♂2♀ (FKCP) 7♂8♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Fasham, 35°59'34"N 51°40'27"E, 2804 m a.s.l. (Locality No. Teh-120), V.2012, 5♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Pakdasht, 35°35'07"N 51°41'20"E, 1460 m a.s.l. (Locality No. Teh-120), V.2012,12♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Pakdasht,Khatoon Abad Village, 35°33'55"N 51°42'44"E, 1337 m a.s.l. (Locality No. Teh-121), V.2012,13♂22♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Ploor, 35°51'27"N 52°02'51"E, 2400 m a.s.l. (Locality No. Teh-121), IV.2012, 2♂12♀ (RRLS), leg. Rabiei and Fallahpour; Varamin, Charm Shahr, 35°17'17"N 51°25'18"E, 886 m a.s.l. (Locality No. Teh-122), V.2012, 7♂10♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Tehran-Jajrood road, 35°43'55"N 51°41'17"E, 1591 m a.s.l. (Locality No. Teh-123), V.2012, 1♂1♀ (FKCP) 16♂7♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Jaloos-Dizin road, 35°03'28"N 51°23'30"E, 2583 m a.s.l. (Locality No. Teh-124), V.2012, 1♂5♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Armenia, Azerbaijan (including Nagornyi Karabakh Region), Georgia, Turkey, Turkmenistan, Iran (Ardabil, Golestan, Khorāsan, Mazandran (Kovařík et al., 2011: 5), West Azerbaijan (Mirshamsi et al., 2011: 8), and Zanjan (Moradi et al, 2015: 12) provinces). There are new records for Alborz, Markazi and Tehran Provinces.

Odontobuthus doriae (Thorell, 1876)
(Figs. 45, 46, 49, 57)

Buthus doriae Thorell, 1876: 107.

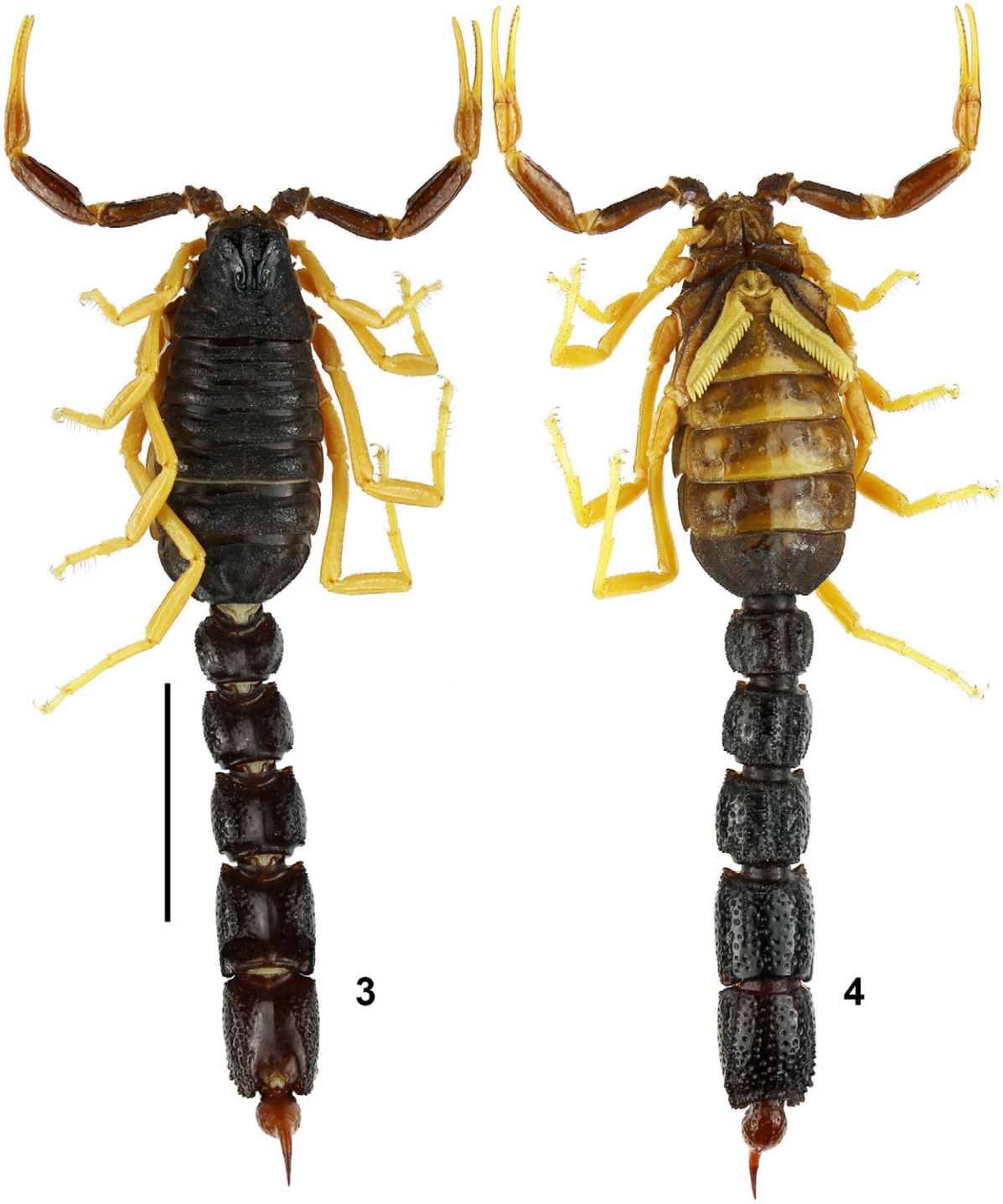
Odontobuthus doriae: Fet & Lowe, 2000: 187; Navidpour et al., 2013: 12–13, figs. 7, 10, 38 (complete references list until 2013); Mirshamsi et al., 2013: 160, 170; Azghadi et al., 2014: 169–178, figs. 2d–f; Moradi et al, 2015: 13; Dehghani & Kassiri, 2017: 433–438.

TYPE LOCALITY AND TYPE REPOSITORY. Iran, Tehran; MCSN.

ALBORZ, MARKAZI AND TEHRAN PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Karaj-Baraghan road, 35°54'36.7"N 50°58'22"E, 770 m a.s.l. (Locality No. Al-101), VI.2013, 2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Chendar, 35°57'25.7"N 50°47'05.6"E, 445 m a.s.l. (Locality No. Al-104), VI.2013, 3♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Eshtehard-Najmabad road, 35°46'50.8"N 50°23'42.1"E, 172 m a.s.l. (Locality No. Al-105), VI.2013, 15♂14♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad-Eshtehard road, 35°49'01.7"N 50°27'17.6"E, 50 m a.s.l. (Locality No. Al-106), VI.2013, 1♂1♀ (FKCP) 10♂7♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad-Zakiabad road, 35°50'18.2"N 50°31'04.2"E, 56 m a.s.l. (Locality No. Al-107), VI. 2013, 42♂21♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad, 35°48'57.6"N 50°35'50.1"E, 210 m a.s.l. (Locality No. Al-108), VI.2013, 4♂ 11♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Eshtehard-Nikoojar road, 35°41'35.5"N 50°24'2.6"E, 201 m a.s.l. (Locality No. Al-109), VI.2013, 3♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Eshtehard road, 35°42'47"N 50°26'41.1"E, 47 m a.s.l. (Locality No. Al-110), VI.2013, 2ims.♂♀ (FKCP) 1♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Mahdasht-Eshtehard road, Akhtar abad, 35°43'36.3"N 50°40'04"E, 155 m a.s.l. (Locality No. Al-111), VI.2013, 32♂ 18♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan-Ebrahim abad, 36°07'21.8"N 50°40'04"E, 2249 m a.s.l. (Locality No. Al-117), VI.2013, 1♂1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Taleghan to Shahrak, 36° 09'04.1"N 50°40'46"E, 1976 m a.s.l. (Locality No. Al-119), VI.2013, 3♂8♀ (RRLS), leg. Rabiei, Barzegar and

Figures 1–2: *Orthochirus carinatus* **sp**. **n**., male holotype, dorsal (1) and ventral (1) views. Scale bar: 10 mm.

Fallahpour. **Markazi** Province, Delijan-Mahalat, 33°52' 08.6"N 50°28'04.3"E, 1610 m a.s.l. (Locality No. M-103), V.2014, 1♂1♀ (FKCP) 20♂9♀ (RRLS), leg. Masihipour, Hayader and Behmam; Mahalat, 33°50' 27.6"N 50°22'03.4"E, 1740 m a.s.l. (Locality No. M-104), V.2014, 20♂9♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn, 33°44'05.9"N 50°14' 25.8"E, 1792 m a.s.l. (Locality No. M-107), V.2014, 3♂2♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn-Arak road, 33°58'47.8"N 49°52'05.3"E, 1822 m a.s.l. (Locality No. M-108), V.2014, 2♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khomayn, 33° 50'13.1"N 49°59'30.4"E, 1971 m a.s.l. (Locality No. M-109), V.2014, 1♂1♀ (FKCP) 1♂1♀ (RRLS), leg.



Figures 3–4: *Orthochirus carinatus* **sp**. **n**., female paratype from locality No. Al-101, dorsal (3) and ventral (4) views. Scale bar: 10 mm.

Masihipour, Hayader and Behmam; Khoogan village, 33°47'00.4"N 50°09'43.6"E, 1883 m a.s.l. (Locality No. M-110), V.2014, 2♂9♀ (RRLS), leg. Masihipour, Hayader and Behmam; Farahan - Arak, 34°25'59"N 49°40'03"E, 1749 m a.s.l. (Locality No. M-114), V.2014, 8♂3♀ (RRLS), leg. Masihipour, Hayader and Behmam; Salafcehgan - Arak, 34°17'04"N 50°11'28"E, 1889 m a.s.l. (Locality No. M-115), V.2014, 5♀ (RRLS), leg.

Masihipour, Hayader and Behmam; Salafchegan, 34° 15'14"N 50°08'46"E, 1798 m a.s.l. (Locality No. M-116), V.2014, 1♂3♀ (RRLS), leg. Masihipour, Hayader and Behmam; Shahsavaran, 34°12'14"N 50°03'39"E, 1721 m a.s.l. (Locality No. M-117), V.2014, 2♂1♀ (RRLS), leg. Masihipour, Hayader and Behmam; Cheshmeh Abad village, 33°58'58"N 49°36'57"E, 2196 m a.s.l. (Locality No. M-119), V.2014, 1♂3♀ (RRLS), leg. Masihipour, Hayader and Behmam. **Tehran** Province, Mahdasht, Asad Abad Booghin Village, 35°35'02"N 50°37'54"E, 1262 m a.s.l. (Locality No. Teh-100), V.2012, 11♂10♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Mahdasht, Akhtar abad Village, 35°37'52"N 50°39'15"E, 1282 m a.s.l. (Locality No. Teh-101), V. 2012, 2♂6♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Mahdasht, Akhtar abad road, 35°38'34"N 50° 43'07"E, 1245 m a.s.l. (Locality No. Teh-102), V.2012, 2♂4♀ (RRLS), leg. Rabiei, Molla Mohammadi and Fallahpour; North of Parand city, 35°29'10"N 50° 58'05"E, 1197 m a.s.l. (Locality No. Teh-115), V.2012, 5♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Western part of Immam Khomayni Airport, 35°25'25"N 51°04'46"E, 1035 m a.s.l. (Locality No. Teh-116), V.2012, 1♀1juv. (FKCP) 18♂37♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Pakdasht, 35°35'07"N 51°41'20"E, 1460 m a.s.l. (Locality No. Teh-120), V. 2012, 2♂ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Pakdasht,Khatoon Abad Village, 35°33'55"N 51°42' 44"E, 1337 m a.s.l. (Locality No. Teh-121), V.2012, 3♂2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Varamin, Charm Shahr, 35°17'17"N 51°25'18"E, 886 m a.s.l. (Locality No. Teh-122), V.2012, 1♂1♀ (FKCP) 7♂10♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Iran: Chahar Machal & Bakhtiyari, Esfahan, Fars, Hamadan, Hormozgan, Kerman, Kermanshah, Markazi, Mazandaran, Sistan & Baluchistan, Tehran, West Azarbaijan, and Yazd Provinces (see Navidpour et al., 2013: 13). There are new records for Alborz Province.

Orthochirus carinatus sp. n.

(Figs. 1–45, 48, 56, Table 1)

http://zoobank.org/urn:lsid:zoobank.org:act:88720126-9271-4C7B-9EC1-22655130E03F

TYPE LOCALITY AND TYPE REPOSITORY. **Iran**, **Tehran** Province,Tehran to Firoozkooh, Absard-Keylan, 35°31' 33"N 52°10'42"E , 1761 m a.s.l. (Fig. 48); FKCP.

TYPE MATERIAL. **Iran**, **Tehran** Province,Tehran to Firoozkooh,Absard-Keylan, 35°31'33"N 52°10'42"E, 1761 m a.s.l. (Locality No. Teh-114), V.2012, 1♂ (holotype) (FKCP), leg. Rabiei, Barzegar and Fallahpour. **Alborz** Province, Karaj-Baraghan road, 35°54'36.7"N 50°58'22"E, 770 m a.s.l. (Locality No. Al-101), VI. 2013, 2♀ (paratypes) (FKCP) 4♀ (paratypes) (RRLS), leg. Rabiei, Barzegar and Fallahpour; Atashgah to Baraghan road, 35°56'29.1"N 50°56'17"E, 880 m a.s.l. (Locality No. Al-112), VI.2013, 4♀ (paratypes) (RRLS), leg. Navidpour, Rabiei, Barzegar and Fallahpour; Ateshgah-Baraghan road, 35°55'52.9"N 50°57'30.6"E, 336 m a.s.l. (Locality No. Al-113), VI.2013, 1♀ (paratype) (FKCP) 2♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Atashgah road, 35°55'58.8"N 51°0'29.4"E, 258 m a.s.l. (Locality No. Al-114), VI.2013, 5♀ (paratypes) (RRLS), leg. Rabiei, Barzegar and Fallahpour; Doran village, 35°59'03.1"N 51°01'55.1"E, 400 m a.s.l. (Locality No. Al-115), VI.2013, 2♀ (paratypes) (FKCP) 1♀ (paratype) (RRLS), leg. Rabiei, Barzegar and Fallahpour.

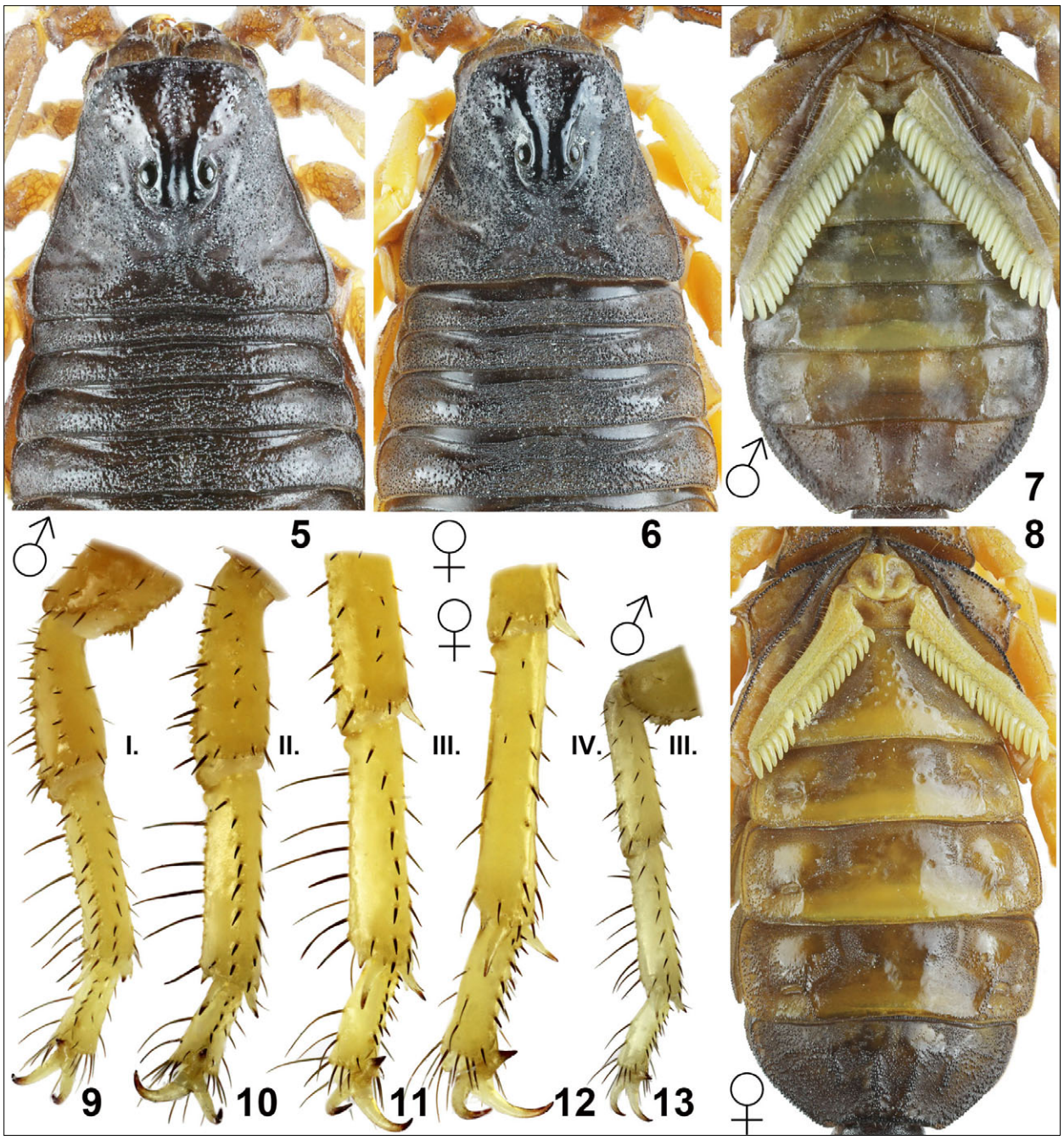
ETYMOLOGY. Named after ventrolateral carinae on fifth metasomal segment.

DIAGNOSIS. Total length of adult 26–42 mm. Patella of pedipalp without ventral trichobothria. Dorsal trichobothria of femur arranged in beta-configuration. Long tibial spurs present on third and fourth legs. Pectines with fulcra and densely hirsute. Movable and fixed fingers of pedipalps with 7–8 rows of granules with internal and partly with external granules and 2–5 distal granules. Carapace, in lateral view, distinctly inclined downward from median eyes to anterior margin. Metasoma I–II with 10 carinae. Metasoma IV–V ventrally punctate with ventrolateral carinae present. Spaces among punctae smooth, without granules. Telson elongate, aculeus as long or longer than vesicle. Pedipalp, metasoma and telson sparsely hirsute. Dorsal surface of all metasomal segments smooth, without granules. Tarsomere I of legs I to III with bristlecombs, legs IV without bristlecombs.

Description: The adult male holotype is 26.05 mm long, females paratypes are 34–42 mm long. Measurements of the carapace, telson, segments of the metasoma and segments of the pedipalps are given in Table 1. For habitus see Figs. 1–4.

Coloration (Figs. 1–4): Carapace, tergites and metasoma are usually black, pedipalps and patella of pedipalps and femur of legs are yellow or reddish black, patella and tarsomeres of legs are yellow, pedipal chela yellow to reddish brown, and telson is reddish brown. The sternite VII is usually black, other sternites are yellowish green to brown.

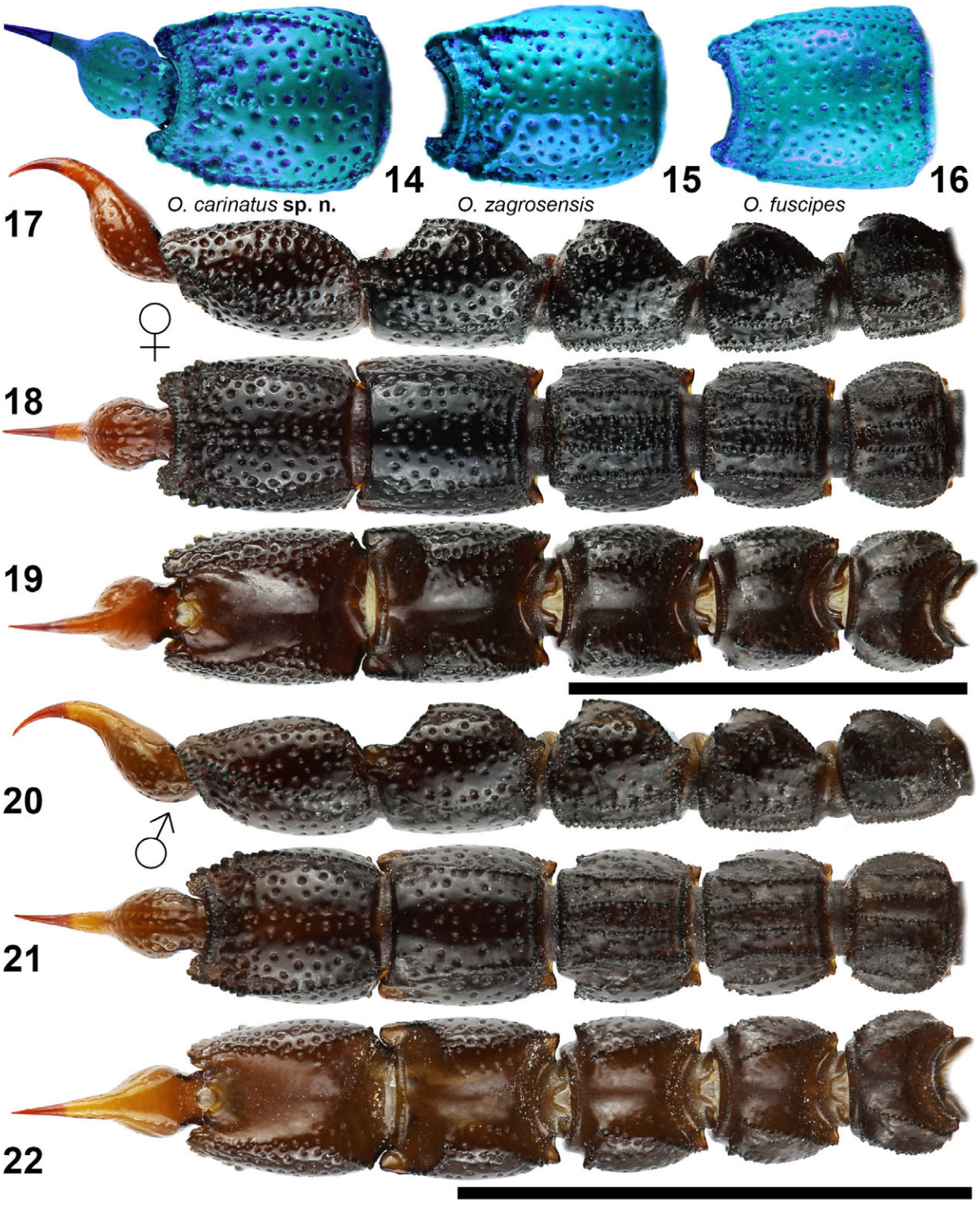
Mesosoma and carapace (Figs. 5–8): The mesosoma bears a median carina and is densely granulated. The carapace is densely granulated, including the middle of interocular triangle. There are developed only anterior median carinae which are smooth. The seventh sternite



Figures 5–13: *Orthochirus carinatus* **sp. n.**. **Figures 5**, **7**, **13**. Male holotype, carapace and tergites I–IV (5), coxosternal area and sternites (7), and right leg III, retrolateral aspect (13). **Figures 6**, **8–12**. Female paratype from locality No. Al-101, carapace and tergites I–IV (6), coxosternal area and sternites (8), and right legs I–IV, retrolateral aspect (9–12).

bears four granulated carinae, the other sternites are smooth in the male and laterally finely granulated in the females. Pectinal teeth number 22–23 in male and 18–21 in females.

Metasoma and telson (Figs. 14, 17–22): The segments I–II bears 10 granulated carinae. The segment III lack lateral carinae, the segment IV bears only dorsal and ventolateral carina which can be incomplete, and the segment V bears incomplete dorsal carinae and two complete ventrolateral carinae present and composed of large teeth in the posterior half. Segments I–II are coarsely granulated on ventral and dorsal sufaces. Segment III is coarsely granulated on ventral and weakly punctated on lateral surfaces. Segments IV–V are punctated. Spaces among punctae are smooth. The dorsal surface of all segments are smooth. The entire meta-



Figures 14–22: Figures 14–16. Metasoma V ventral view of *Orthochirus carinatus* **sp**. **n**., female paratype from locality No. Al-115 (14), *O. zagrosensis*, male holotype (15) and *O. fuscipes*, male from Pakistan, Karachi (16), UV fluorescence. **Figures 17–19**. *Orthochirus carinatus* **sp**. **n**., female paratype from locality No. Al-101, metasoma and telson lateral (17), ventral (18), and dorsal (19) views. **Figures 20–22**. *Orthochirus carinatus* **sp**. **n**., male holotype, metasoma and telson lateral (20), ventral (21), and dorsal (22) views. Scale bars: 10 mm (17–19, 20–22).

Figures 23–44: *Orthochirus carinatus* **sp**. **n**., pedipalp segments. **Figures 23–33**. Male holotype, pedipalp chela, dorsal (23), external (24), and ventral (25) views, pedipalp patella, dorsal (26), external (27) and ventral (28) views, pedipalp femur and trochanter ventral (29), internal (30) and dorsal (31) views, pedipalp movable (32) and fixed (33) finger dentate margins. **Figures 34–44**. Female paratype from locality No. Al-101, pedipalp chela, dorsal (34), external (35), and ventral (36) views, pedipalp patella, dorsal (37), external (38) and ventral (39) views, pedipalp femur and trochanter ventral (40), internal (41) and dorsal (42) views, pedipalp movable (43) and fixed (44) finger dentate margins. The trichobothrial pattern is indicated in Figures 24–27 and 30–31 (white circles).

Dimensions (MM)		*O. carinatus* **sp. n.** ♂ **holotype**	*O. carinatus* **sp. n.** ♀ **paratype, Al-101**
Carapace	L / W	3.271 / 3.877	4.935 / 5.901
Mesosoma	L	5.821	11.748
Tergite VII	L / W	1.738 / 4.142	2.984 / 6.420
Metasoma + telson	L	16.957	25,169
Segment I	L / W / D	1.973 / 2.585 / 2.147	2.934 / 3.706 / 3.156
Segment II	L / W / D	2.270 / 2.662 / 2.129	3.421 / 3.755 / 3.259
Segment III	L / W / D	2.470 / 2.806 / 2.260	3.847 / 3.989 / 3.291
Segment IV	L / W / D	3.256 / 2.919 / 2.220	4.824 / 4.168 / 3.220
Segment V	L / W / D	3.446 / 2.827 / 2.035	5.053 / 4.164 / 3.017
Telson	L / W / D	3.542 / 1.307 / 1.040	5.090 / 1.944 / 1.555
Pedipalp	L	9.323	14,769
Femur	L / W	2.674 / 0.719	3.861 / 1.120
Patella	L / W	3.271 / 0.906	4.640 / 1.416
Chela	L	3.378	6.268
Manus	W / D	0.812 / 0.840	1.197 / 1.198
Movable finger	L	3.042	4.037
Total	**L**	**26.05**	**41.85**

Table 1: Comparative measurements of *Orthochirus carinatus* **sp. n.** types. Abbreviations: length (L), width (W, in carapace it corresponds to posterior width), depth (D).

soma and telson are only very sparsely hirsute. The telson is punctate and lacks granules.

Pedipalps (Figs. 23–44): The distance between trichobothria d_1 and d_3 on the femur of pedipalp approximately equals that between d_3 and d_4; trichobothrium e_1 is situated between d_3 and d_4 or in level with d_4. Trichobothrium d_2 of pedipalp femur is absent (Fig. 31) or present (Fig. 42) on dorsal surface. The femur of pedipalp bears four granulate carinae. The patella has seven smooth carinae, and the chela has smooth carinae which may be discernible throughout the length of the fixed finger. The entire pedipalps are only sparsely hirsute. The movable fingers bear 7–8 rows of granules with external and internal granules and 2–5 distal granules. Most of the female paratypes has present only two or three external granules for anterior rows of granules (Fig 43) but male holotype has present these external granules completely (Fig. 32).

Legs (Figs. 9–13): The femur bears four partly granulated carinae, the patella bears five carinae, and the tibia is smooth. The patella bears only a few solitary hairs and spines. The tibia bears several spines, namely on the outer side. Tarsomere I of first to third legs bears bristlecombs composed of 5–8 bristles, fourth legs lack bristlecombs.

Affinities. The described features distinguish *Orthochirus carinatus* **sp. n.** from all other species of the genus. *O. carinatus* **sp. n.** is close to *O. zagrosensis* Kovařík, 2004 and *O. fuscipes* (Pocock, 1900). These three species it is possible reliably distinguish according to ventrolateral cainae on metasoma V which are missing or incomplete, present only in posterior half in *O. fuscipes* (Fig.16) and *O. zagrosensis* (Fig.15) but strongly developed in *O. carinatus* **sp. n.** (Fig.14).

Scorpio kruglovi Birula, 1910

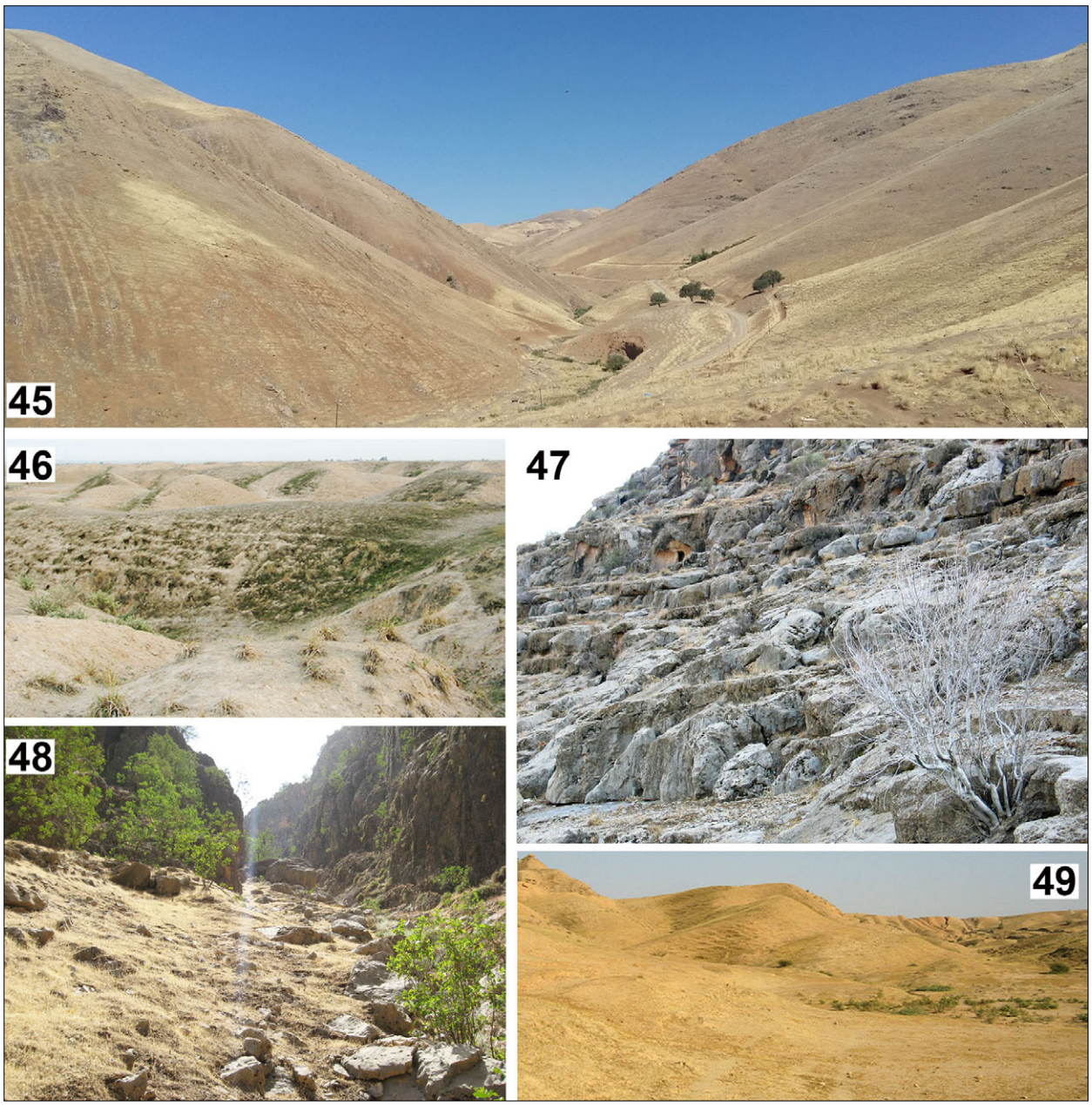
(Fig. 58)

Scorpio maurus kruglovi Birula, 1910: 180; Fet, 2000: 477 (complete references list until 2000); Kovařík, 2009: 61, figs. 441–444; Karataş et al., 2012: 117.

Scorpio kruglovi: Talal et al., 2015: 236; Amr et al., 2016: 36.

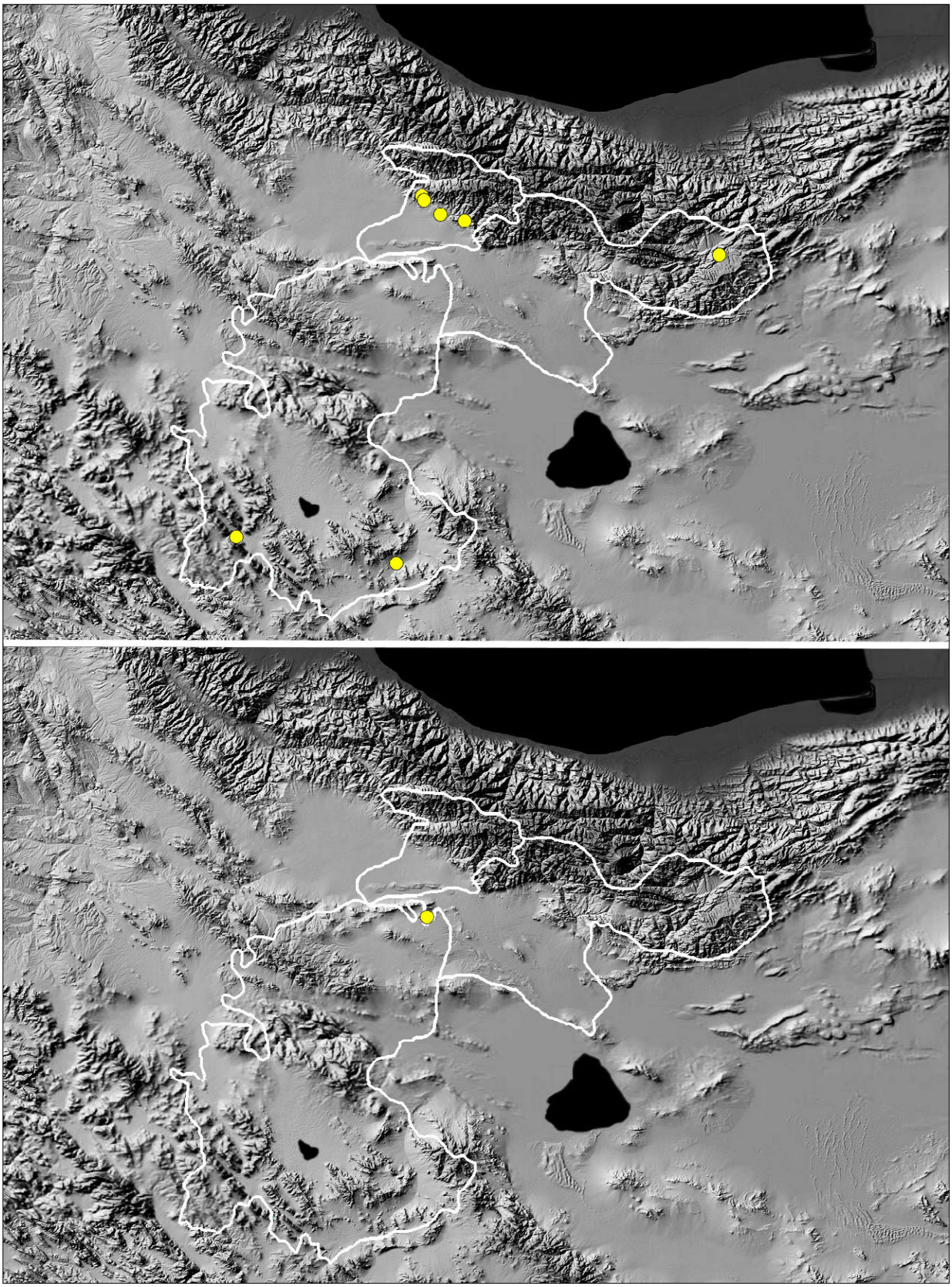
TYPE LOCALITY AND TYPE REPOSITORY. Deir-Zor, upper Euphrates, now Iraq; ZISP.

ALBORZ, MARKAZI AND TEHRAN PROVINCES MATERIAL EXAMINED. **Iran**, **Alborz** Province, Hive village, 36° 03'34.6"N 50°39'11.9"E, 1665 m a.s.l. (Locality No. Al-102), VI.2013, 3♂5♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Hive village to Immazadeh Mousa, 36° 03'54.5"N 50°39'12.5"E, 687m a.s.l. (Locality No. Al-103), VI.2013, 8♂11♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Chendar, 35°57'25.7"N 50°47'05.6"E, 445 m a.s.l. (Locality No. Al-104), VI.2013, 1♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Eshtehard-Najmabad road, 35°46'50.8"N 50°23'42.1"E, 172 m a.s.l. (Locality No. Al-105), VI.2013, 3♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Najmabad, 35°48'57.6"N 50°35'50.1"E, 210m a.s.l. (Loc. No.Al-108), VI.2013,3♂1♀ (FKCP) 1♂4♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour; Mahdasht-Eshtehard road, Akhtar abad, 35°43'36.3"N

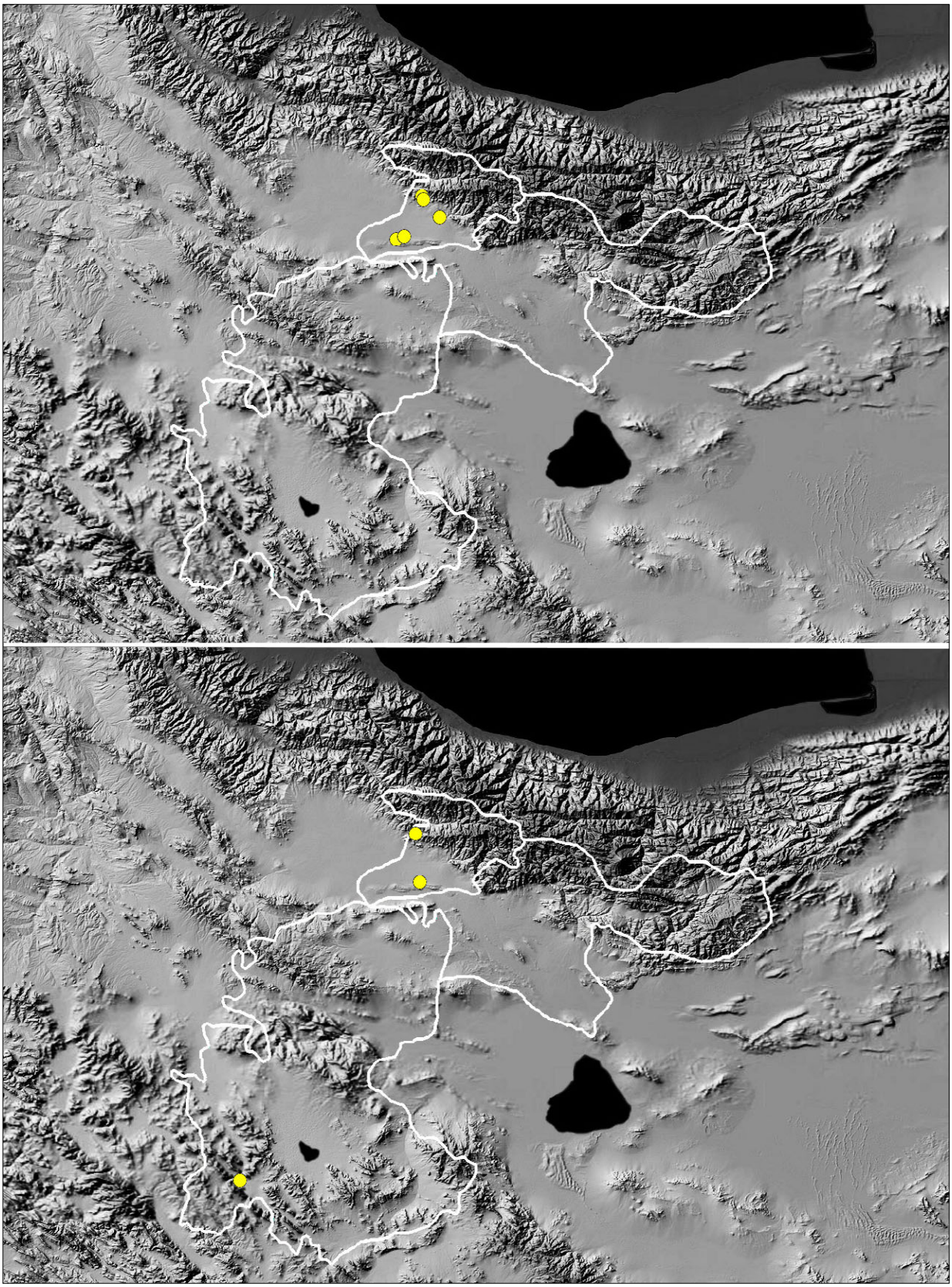


Figures 45–49: Localities. **Figure 45:** Iran, Alborz Province, Karaj-Baraghan road, 35°54'36.7"N 50°58'22"E, 770 m a.s.l. (Locality No. Al-101). Recorded occurrence of *Iranobuthus krali* Kovařík, 1997, *Mesobuthus eupeus eupeus* (C. L. Koch, 1839), *Odontobuthus doriae* (Thorell, 1876) and *Orthochirus carinatus* **sp**. **n**. **Figure 46:** Iran, Alborz Province, Mahdasht-Eshtehard road, Akhtar abad, 35°43'36.3"N 50°40'04"E, 155 m a.s.l. (Locality No. Al-111). Recorded occurrence of *Odontobuthus doriae* (Thorell, 1876) and *Scorpio kruglovi* Birula, 1910. **Figure 47:** Iran, Alborz Province, Taleghan road to Samghabab village, 36°06'24.8"N 50°34'29.9"E, 1781 m a.s.l. (Locality No. Al-118). Recorded occurrence of *Hottentotta saulcyi* (Simon, 1880). **Figure 48:** Iran, Tehran Province,Tehran to Firoozkooh,Absard-Keylan, 35°31'33"N 52°10'42"E ,1761 m a.s.l. (Locality No. Teh-114), type locality of *Orthochirus carinatus* **sp**. **n**. **Figure 49:** Iran, Western part of Immam Khomayni Airport, 35°25'25"N 51°04'46"E, 1035 m a.s.l. (Locality No. Teh-116). Recorded occurrence of *Odontobuthus doriae* (Thorell, 1876).

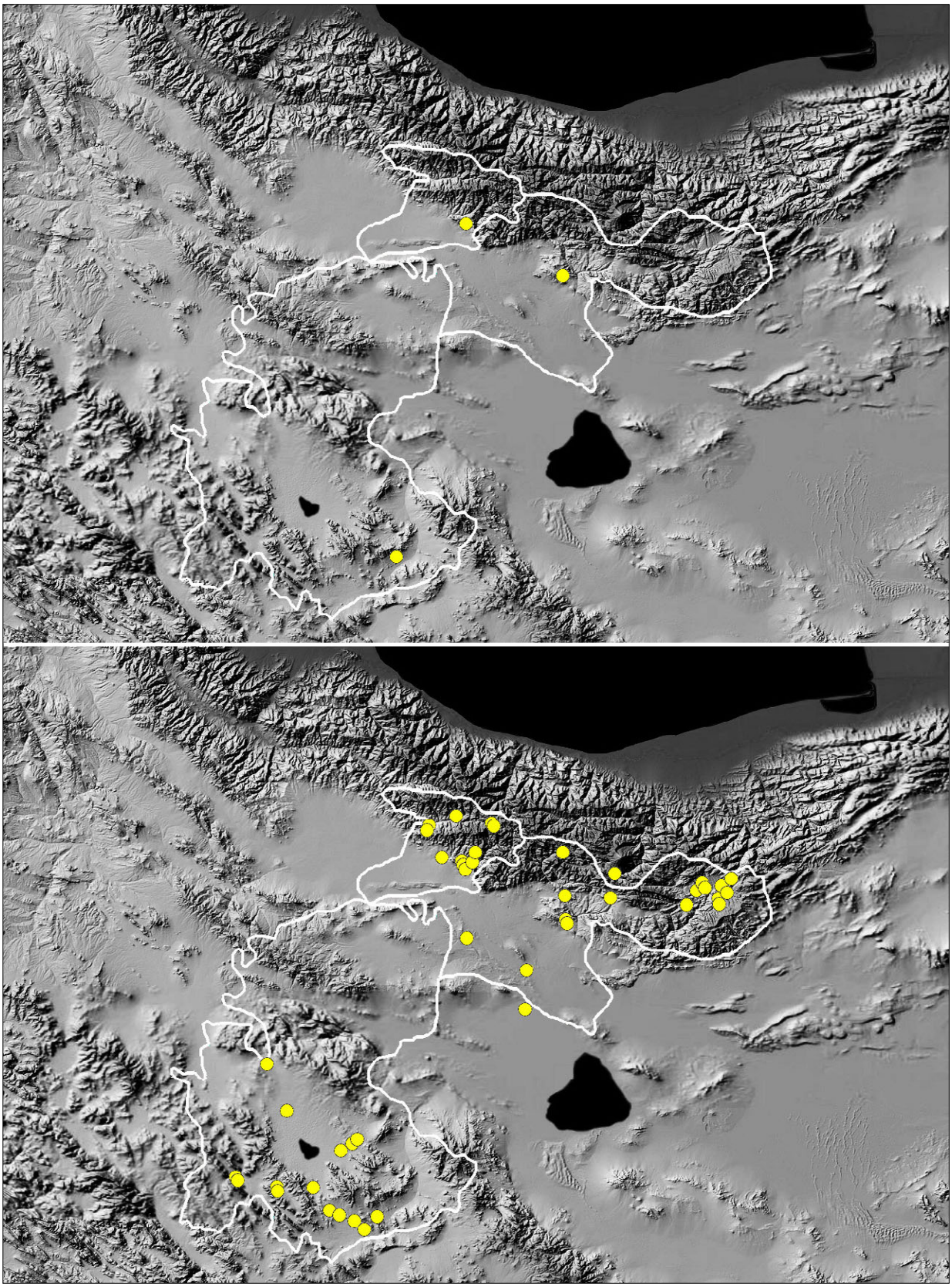
50°40'04"E, 155 m a.s.l. (Locality No. Al-111), VI.2013, 3♂5♀ (RRLS), leg. Rabiei, Barzegar and Fallahpour. **Markazi** Province, Lajrood village, 34°01'19.2"N 49° 18'24.6"E, 1926 m a.s.l. (Locality No. M-102), V.2014, 1♂ (FKCP) 1♀ (RRLS), leg. Masihipour, Hayader and Behmam; Khoogan village, 33°47'00.4"N 50°09'43.6"E, 1883 m a.s.l. (Locality No. M-110), V.2014, 3♀ (RRLS), leg. Masihipour, Hayader and Behmam; Farahan - Arak, 34°25'59"N 49°40'03"E, 1749 m a.s.l. (Locality No. M-114), V.2014, 2♂1♀ (RRLS), leg.



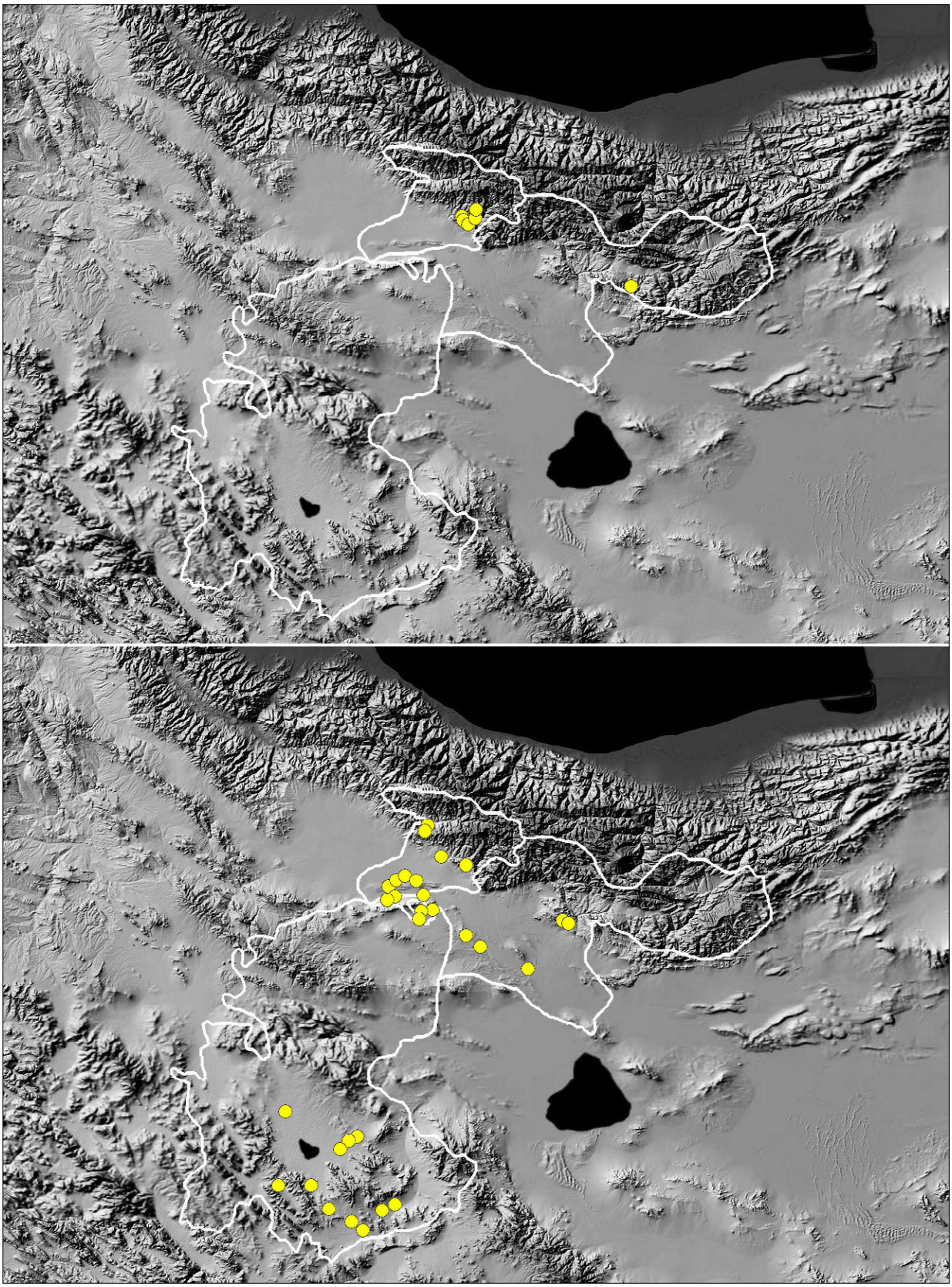
Figures 50–51: Distribution of *Androctonus crassicauda* (top) and *Compsobuthus kaftani* (bottom), yellow icons. Outlines in each map delineate three provinces in northern Iran: Alborz (upper left), Markazi (lower left) and Tehran (upper right).



Figures 52–53: Distribution of *Compsobuthus matthiesseni* (top) and *Hottentotta saulcyi* (bottom), yellow icons. Outlines in each map delineate three provinces in northern Iran: Alborz (upper left), Markazi (lower left) and Tehran (upper right).



Figures 54–55: Distribution of *Iranobuthus krali* (top) and *Mesobuthus eupeus eupeus* (bottom), yellow icons. Outlines in each map delineate three provinces in northern Iran: Alborz (upper left), Markazi (lower left) and Tehran (upper right).



Figures 56–57: Distribution of *Orthochirus carinatus* **sp**. **n**. (top) and *Odontobuthus doriae* (bottom), yellow icons. Outlines in each map delineate three provinces in northern Iran: Alborz (upper left), Markazi (lower left) and Tehran (upper right).

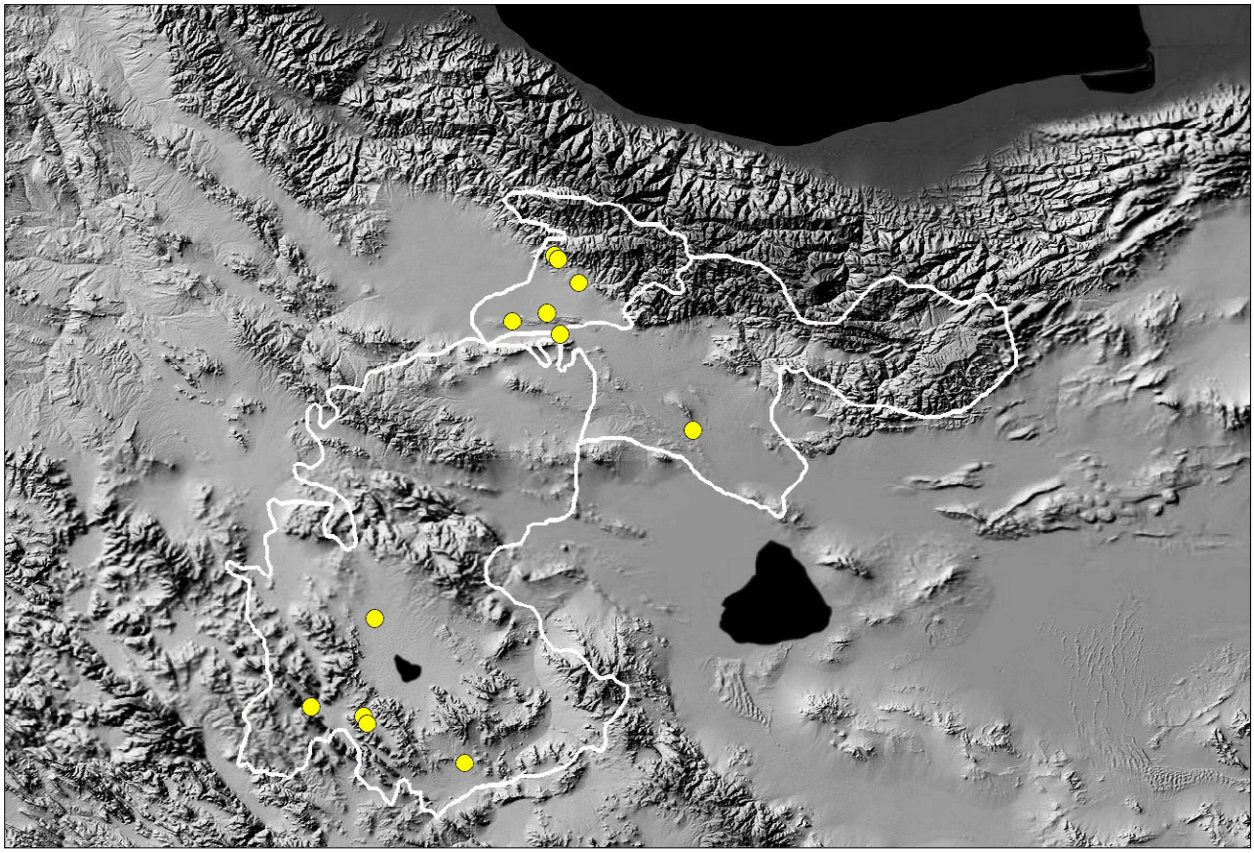


Figure 58: Distribution of *Scorpio kruglovi,* yellow icons. Outline in map delineates three provinces in northern Iran: Alborz (upper left), Markazi (lower left) and Tehran (upper right).

Masihipour, Hayader and Behmam; Gooshe Sinjan village, 33°56'59"N 49°37'08"E, 2206 m a.s.l. (Locality No. M-118), V.2014, 1♂7♀ (RRLS), leg. Masihipour, Hayader and Behmam; Cheshmeh Abad village, 33° 58'58"N 49°36'57"E, 2196 m a.s.l. (Locality No. M-119), V.2014, 3♂9♀(RRLS), leg. Masihipour, Hayader and Behmam. **Tehran** Province, Savojbolagh, Chendār, 6.V.2007, 1♂1♀ (FKCP); Varamin, Charm Shahr, 35° 17'17"N 51°25'18"E, 886 m a.s.l. (Locality No. Teh-122), V.2012, 2♂ (FKCP), leg. Rabiei, Barzegar and Fallahpour.

DISTRIBUTION: Iraq, Jordan, Kuwait, Qatar, Saudi Arabia, Syria (Kinzelbach, 1985; Pringle, 1960: 86; Vachon, 1979: 57), Iran (Hamadan, Khermanshah, North Khorasan, Mazendran, Qazvin, Semnan, Tehran (Karataş et al., 2012), Alborz and Markazi (first records) Provinces.

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