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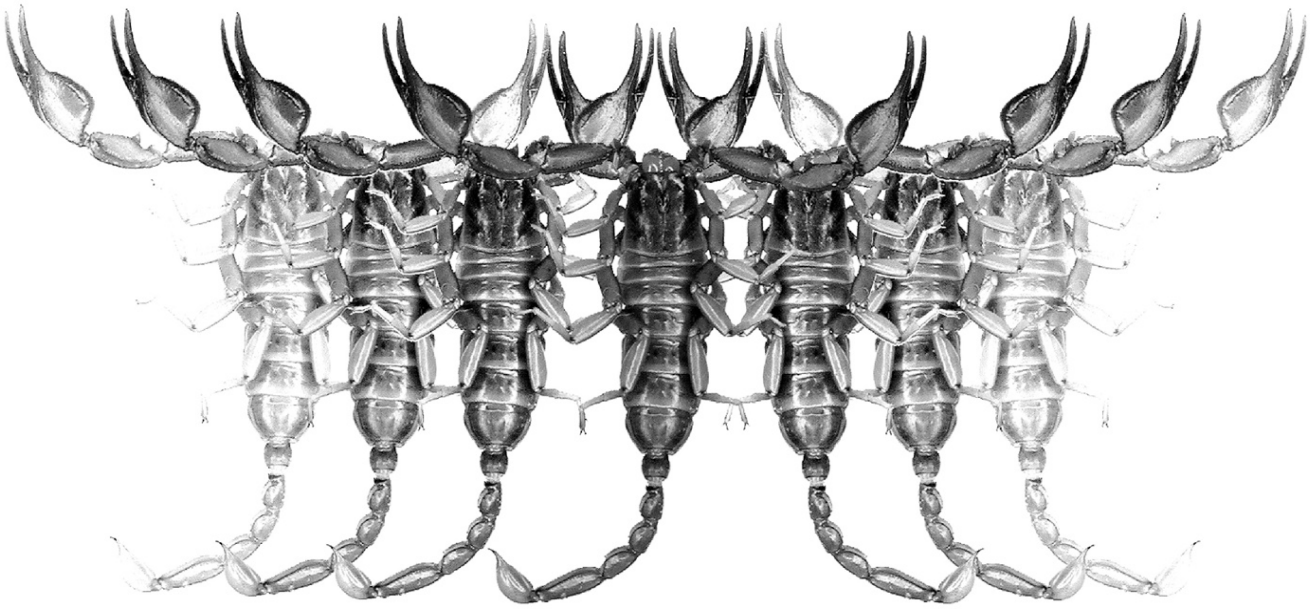

The first record of *Orthochirus glabrifrons* (Kraepelin, 1903) (Scorpiones: Buthidae) from the United Arab Emirates

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September 2023 — No. 379

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Publication date: 27 September 2023

http://zoobank.org/urn:lsid:zoobank.org:pub:6C317BE7-A326-4232-B25D-920AAD67FE44

Euscorpius — Occasional Publications in Scorpiology. 2023, No. 379

The first record of *Orthochirus glabrifrons* (Kraepelin, 1903) (Scorpiones: Buthidae) from the United Arab Emirates

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http://zoobank.org/urn:lsid:zoobank.org:pub:6C317BE7-A326-4232-B25D-920AAD67FE44

Summary

Orthochirus glabrifrons (Kraepelin, 1903) (Scorpiones: Buthidae) was described from Oman (Muscat). Here, we summarize known localities from Oman as well as records from the United Arab Emirates, which is the new country record for this species. Illustrations of morphology of both sexes are given together with a map of distribution. A lectotype of *Orthochirus glabrifrons* (Kraepelin, 1903) is designated. *Paraorthochirus kaspareki* Lourenço & Huber, 2000 and *Paraorthochirus kinzelbachi* Lourenço & Huber, 2000 are synonymized with *Orthochirus glabrifrons* (Kraepelin, 1903), **syn**. **n**.

Introduction

The genus *Orthochirus* is represented by 57 species in the North Africa, Middle East, and Asia (Fet & Lowe, 2000; Kovařík et al., 2020; Rein, 2023). *O. glabrifrons* (Kraepelin, 1903) has been previously known only from Oman. Here, we add new country records from the United Arab Emirates. Other species known from the Arabian Peninsula are *O. arabicus* Ythier & Lourenço, 2023 and *O. katerinae* Kovařík & Just, 2022, both from Saudi Arabia (Kovařík & Just, 2022; Ythier & Lourenço, 2023).

O. glabrifrons was described under the genus *Butheolus* by Kraepelin (1903). Birula (1917: 215) transferred it to *Orthochirus*. Lourenço & Vachon (1995) established the genus *Paraorthochirus* and transferred this species to a new genus (under a misprinted generic name *Pseudorthochirus*) and provided a diagnosis for this species. Navidpour et al. (2008) synonymized *Paraorthochirus* with the genus *Orthochirus* Karsch, 1892; all species of *Paraorthochirus* were transferred to the genus *Orthochirus.*

Material and Methods

Nomenclature and measurements follow Vachon (1963), Stahnke (1971), Sissom (1990), Kovařík (2009), and Kovařík & Ojanguren Affilastro (2013), except for trichobothriotaxy (Vachon, 1974, 1975). Specimens studied herein are preserved in 80% ethanol. Photographs of *O. glabrifrons* were taken by Canon EOS 7D. Stacking of pictures was made using Helicon Focus software. The map showing the localities of the specimens was generated with the SimpleMappr https://www.simplemappr.net/api (Shorthouse, 2010).

Specimen repositories. AMS (Al Mayya Sanctuary Fujairah, United Arab Emirates); AZMM (Alaşehir Zoological Museum, Manisa Celal Bayar University, Alaşehir, Manisa, Turkey); BLFH (Balazs Farkas, private collection, Hungary), FKCP (František Kovařík, private collection, Prague, Czech Republic, to be merged in future with collections of National Museum of Natural History, Prague, Czech Republic); HNHM (Hungarian Natural History Museum, Budapest, Hungary); MNHN (Muséum National d'Histoire Naturelle, Paris, France); ZMUH (Centrum für Naturkunde (CeNak), Universität Hamburg, Zoological Museum, Hamburg, Germany).

Systematics

Family **Buthidae C. L. Koch, 1837**
Genus ***Orthochirus*** Karsch, 1892
(Figures 1–22)

Orthochirus Karsch, 1892: 306; Kovařík et al., 2020a: 1–73, figs. 1–352, tables 1–4 (complete reference and synonyms list until 2020); Kovařík et al., 2020b: 1–15; Kovařík & Just, 2022: 1–9, figs. 1–27, table 1.

Diagnosis. Total length of adults 22–55 mm. Tergites I–VI with weak median or lateral carinae, or carinae indistinct. Patellar trichobothrium d_3 located between dorsomedian and dorsointernal carinae. Dorsal trichobothria of femur arranged in beta-configuration. Trichobothrium d_2 of pedipalp femur

Figure 1. *Orthochirus glabrifrons*, a female from Oman, 30 km N of Nizwa, Jabal Akhdar, *in vivo* habitus.

absent or present on dorsal surface. Chelicerae with typical buthid dentition (Vachon, 1963), ventral aspect of fixed finger with two denticles. Tibial spurs present on legs III and IV; in all legs, mid-ventral aspect of tarsomere II sparsely setose with 1 or 2 rows of short spiniform setae. Pectines with fulcra, densely hirsute. Proximal dentate margins of pedipalp fingers not strongly undulate; movable fingers of pedipalps with 7–10 rows of denticles and 2–5 subterminal denticles. Carapace strongly trapezoidal, lacking distinct carinae; in lateral view distinctly inclined downward from median eyes to anterior margin; 5 pairs of lateral eyes. First and second metasomal segments with carinae. Metasoma posteriorly widened; metasomal segments IV and V ventrally punctate. Telson elongate with subaculear tubercle absent, aculeus robust, as long as or longer than vesicle; hemispermatophore capsule with 3 laminate lobes + 1 hook-like basal lobe; spiracles slit-like.

Orthochirus glabrifrons (Kraepelin, 1903)
(Figures 1–22)

Butheolus glabrifrons Kraepelin, 1903: 564–566.

Orthochirus glabrifrons: Birula, 1917: 215; Vachon, 1949: 136 (1952: 222); Levy & Amitai, 1980: 94; Navidpour et al., 2008: 18.

Pseudorthochirus glabrifrons [sic]: Lourenço & Vachon, 1995: 304.

Paraorthochirus glabrifrons: Lourenço & Vachon, 1995: 305; Lourenço & Huber, 2000: 143; Fet & Lowe, 2000: 212.

= *Paraorthochirus kaspareki* Lourenço & Huber, 2000: 141–143, figs. 10–13 (Type locality and type depository: Oman, Muscat area, Ras Al Hamra, MNHN), **syn**. **n**.

= *Paraorthochirus kinzelbachi* Lourenço & Huber, 2000: 139–140, figs. 1–9 (Type locality and type depository: Oman, Wadi Tayin, North of Ibra; MNHN), **syn**. **n**.

Type locality and type depository. Oman, Muscat; ZMUH.

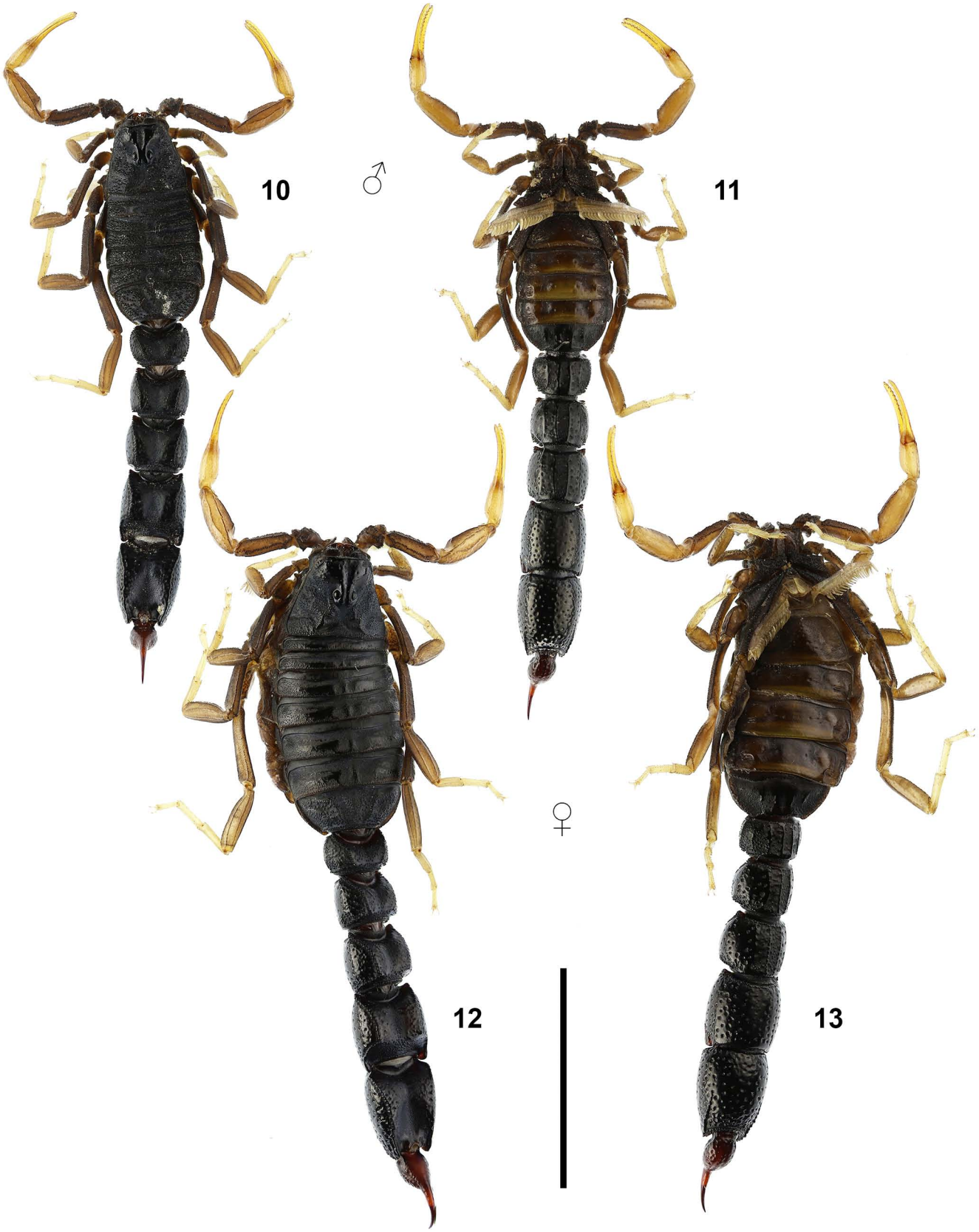
Type material examined. **Oman**, Muscat, 1♀ (lectotype, hereby designated, Figs. 2–3), ZMUH.

Other material examined. **Oman**, Dibab, under stones on wooded plain, 23°06'N 59°02'E, 3 m a. s. l., 13 February 1991, 1♀, leg. A. S. Gardner, det. G. Lowe (FKCP); Quryat, 23°13.8'N 58°54.63'E, 20 m a. s. l., 9 October 1993, 19:26, UV detection on sand surface, coastal sand dunes, 3♂1♀, leg. G. Lowe & M. D. Gallagher (FKCP); Wadi Bani Kharus, 23°11.32'N 57°34.77'E, 800 m a. s. l., 11 October 1993, 18:42, UV detection, gravelly wadi, rocky slopes, 1♂1♀, leg.

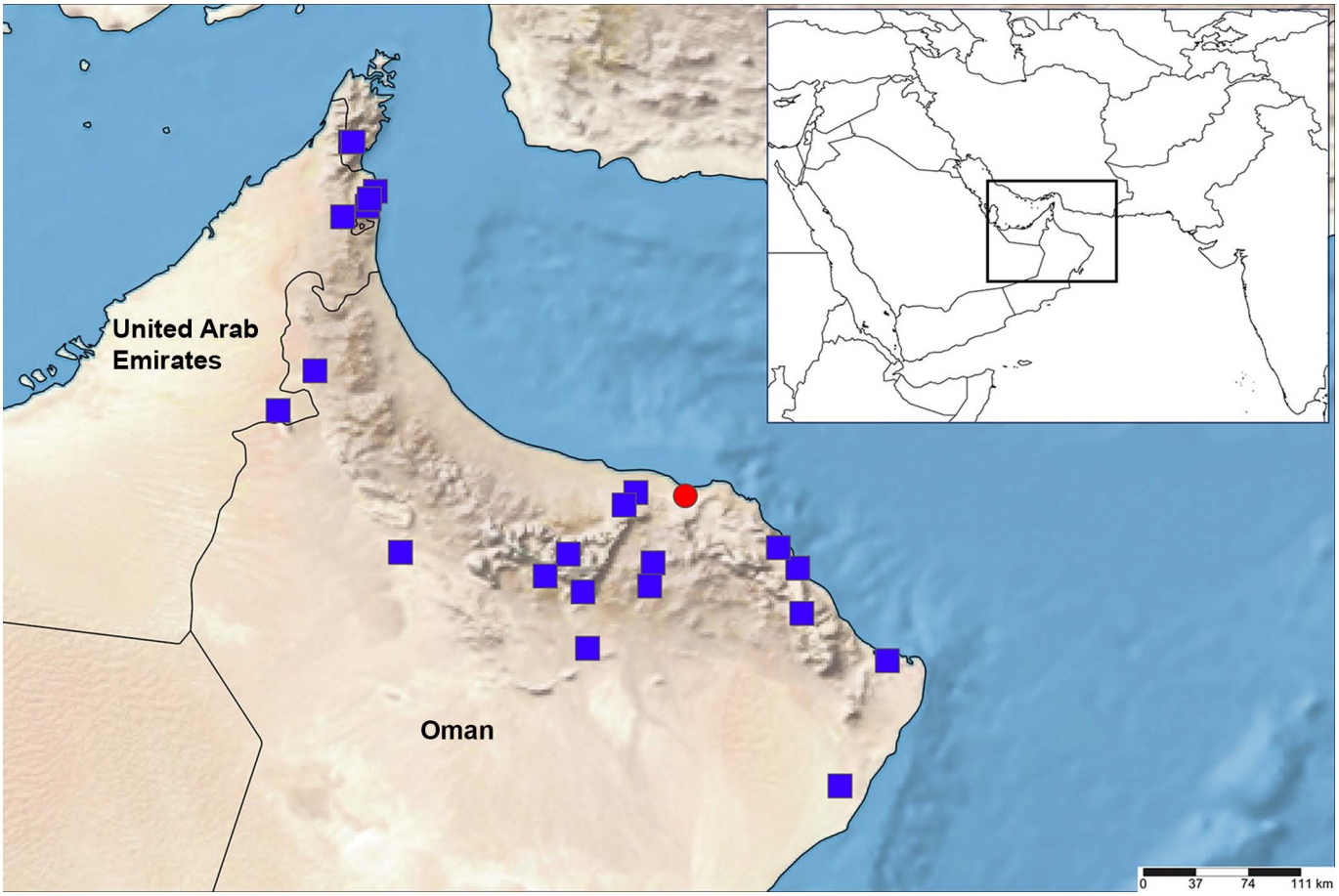
Figures 2–3. *Orthochirus glabrifrons*, lectotype female, dorsal (2) and ventral (3) views. Scale bar: 10 mm.

G. Lowe, A. S. Gardner & S. M. Farook (FKCP); Al Batinah Province, Jabal Nakhl, 12 km NE of Al Lajal, 23°34'44"N 58°00'27"E, 100 m a. s. l., 3 April 2013, 1♂1♀1juv., leg. René Fouque (FKCP); Az Zahirah Province, Ibri env., 23°12'N 56°31'E, 350 m a. s. l., 5 April 2013, 1♂, leg. René Fouque (FKCP); Al Batinah Province, Al-Lajal, 23°30'N 57°56'E, 177 m a. s. l., 3–18 April 2013, 1♀1♀juv.1juv., leg. P. Kučera (FKCP); Az Zahirah Province, N of Buraymi, Mahdah-Wadi Rawdah, 24°21'01"N 55°58'29"E, 430 m a. s. l., 13 October 2013, 1♀, leg. P. Kučera (FKCP); 30 km N of Nizwa, Jabal Akhdar, 22°56.97'N 57°40.36'E, 622 m a. s. l., 28 March 2014, 3♂1♀1♀juv. (Figs. 1, 4–9), leg. D. Hoferek (FKCP); Ar Rawdah, 23°03'N 57°26'E, ca 600 m a. s. l., 22 March 2017, 2♂ (DNA Nos. 1218, 1219), leg. D. Král (FKCP); Wadi Sumrah, 23°08'N 58°07'E, ca 630 m a. s. l., 7.–8 March 2017, 2♂1♀, leg. D. Král (FKCP); Musandam peninsula, Wadi Bih, Saptan vill., 25°48'N 56°13'E, ca 930 m a. s. l., March 2017, 1♀juv., leg. D. Král (FKCP); E of Sur, S of Shiya, 22°30'50"N 59°36'03"E, 51 m a. s. l., 15 March 2015, 1♀, leg. L. Černý (FKCP); Jabal Bani Jabir, 22.813172°N 59.058884°E, 1734 m a. s. l., 2017, 1♂, leg. M. Stockmann (FKCP); N, Ash Sharqiyah prov., Wahiba sands, 33 km S Jalan Bani Buali, 56 m a. s. l., 21°43'12"N 59°18'3"E, 25–26 January 2018, 2♀1juv., leg. P. Kabátek (FKCP); Ad Dakhiliyah gov., 29 km NE Adam, Wadi Halfeen, 22°35'31"N 57°42'5"E, 310 m a. s. l., 27–28 March 2019, 2juvs., leg. D. Frank (FKCP); North Province, Ash Sharqiyah, 10 km SW of Al Jarda, 22°59'13"N 58°5'43"E, 589 m a. s. l., 3 February 2020, 1♂2♀3juvs., leg. P. Kabátek (FKCP). **United Arab Emirates**, Dhadna District, Fujairah, 25°29'15"N 56°21'28"E, 3 m a. s. l., 18 May 2023, 3♂3♀, leg. A. Ullrich (AZMM/Sco-2023: 01–06, Figs. 10–13); Dibba, ca 25.8°N 56.2°E, April 2008, 1♂1♀, leg. J. Straszewsky (FKCP); Green Mubazzarah, Al Ain, Abu Dhabi, 24.09817° N 55.74158° E, 321 m a. s. l., 1 September 2015, 1♀ (FKCP), 13 September 2015, 1 unsexed (HNHM, scUAE022, Scorp-1450), leg. Cs. Geczy; Near Masafi, Ras al-

Figures 4–**9**: *Orthochirus glabrifrons*, female from Oman, 30 km N of Nizwa, Jabal Akhdar. **Figure 4**. Pedipalp chela dorsal. **Figures 5**–**6**. Right legs III–IV, retrolateral aspect. **Figures 7**–**9**. Metasoma and telson, dorsal (7), ventral (8) and lateral (9).



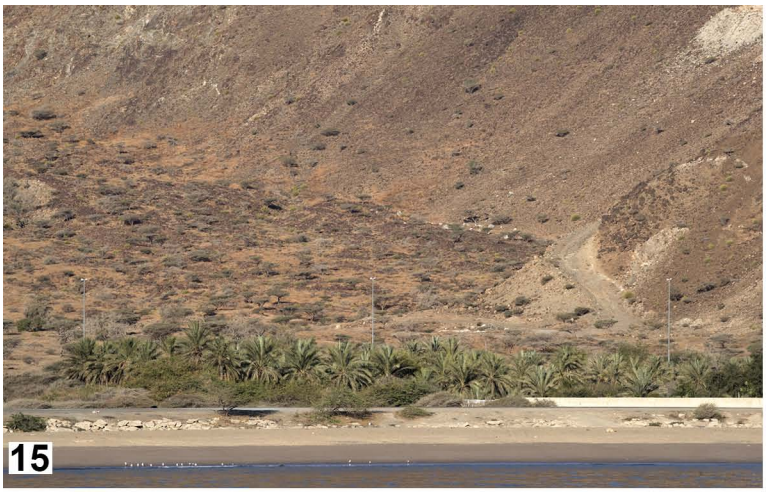
Figures 10-13. *Orthochirus glabrifrons* from United Arab Emirates, Fujairah, Dhadna District. **Figures 10–11**. Male, dorsal (10) and ventral (11) views. **Figures 12–13**. Female, dorsal (12) and ventral (13) views. Scale bar: 10 mm.



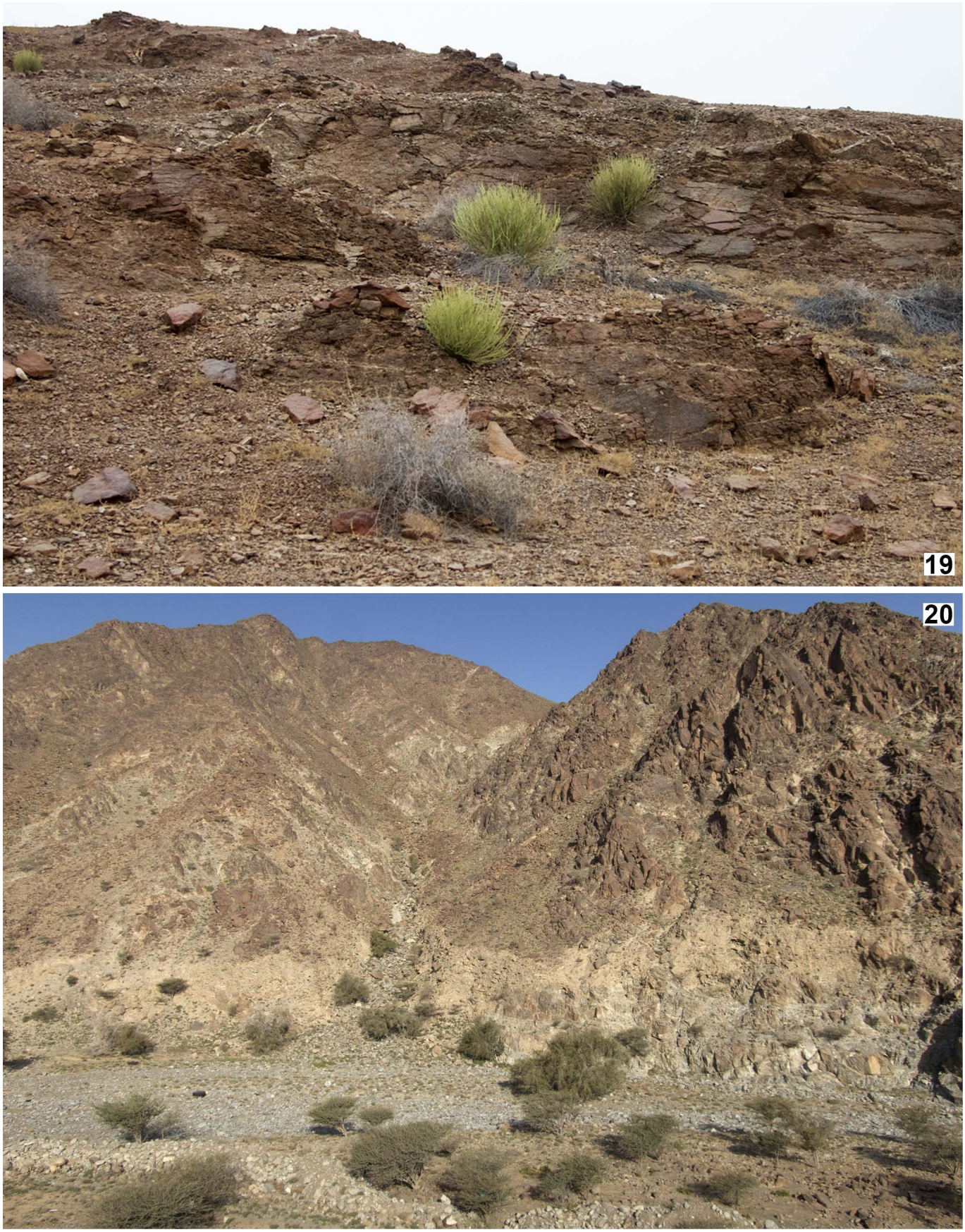
Figures 14. Distribution of *Orthochirus glabrifrons* in Oman and the United Arab Emirates. Red circles: type locality. Blue squair: new locality records.

Khaimah, 25.32606°N 56.15100°E, 509 m a. s. l., 3 November 2017, 1♂, (FKCP), leg. B. Farkas; 25.33102°N 56.14643°E, 532 m a. s. l., 24 February 2019, 1♂ (BLFH,), leg. B. Buzas; Al Aqah, Fujairah, 25.49479°N 56.35474°E, 60–70 m a. s. l., 18 March 2020, 1♀ (AMS, scUAE281), 1♂1♀ (FKCP), leg. B. Buzas et R. Racz; S of Al Khulaybiyah, Masafi area, Fujairah, 25.36570°N 56.17124°E, 605–606 m a. s. l., 27 April 2020, 2♂ (FKCP), leg. B. Buzas; Wadi Ghulayyil Khun, near Bidiya, Fujairah, 25.43969°N 56.31955°E, 127-131 m a. s. l., 28 July 2019, 1♂1♀ (FKCP), 1♂ (BLFH), leg. B. Buzas; Wadi Mai, Fujairah, 25.04391°N E56.24018°E, 400–435 m a. s. l., 22 July 2019, 2♂1♀1♀juv. (BLFH); Wadi Madhab, Fujairah, 25.14449°N 56.31823°E, 16 m a. s. l., 18 August 2014 1♀ (BLFH), 2014, 1♂ (BLFH), 25 May 2015, 1unsexed (HNHM, scUAE012, Scorp-1451), 13 June 2016, 1unsexed (HNHM, scUAE038), 22 September 2016 1♂ (HNHM, scUAE041), leg. B. Buzas et J. Nagy; Wadi Saham, Fujairah, 25.13337°N 56.22208°E, 278–402 m a. s. l., 26–29 April 2020, 5♂1♀ (FKCP), leg. B. Buzas; Wadi Wurrayah NP, Fujairah, N25.39065° E56.30980° 88–100 m a. s. l., 24 October 2018, 1♂1♀ (FKCP), 4♂ (BLFH), leg. B. Buzas, 25.39321°N 56.30604°E, 87 m a. s. l., 24 July 2019, 1♂1♀ (FKCP), leg. B. Buzas et A. Borisov; unnamed wadi N of the Yabsa Bypass Road (E184), 1.5 km W from Jebel Sakamkam, Fujairah, 25.19051°N 56.29519°E, 485 m a. s. l., 26 March 2020, 1♂ (FKCP), leg. B. Buzas.

Diagnosis (♂♀). Total length 24–32 mm. Trichobothrium d_2 on dorsal surface of pedipalp femur usually present. Pectinal teeth number 18–24 in males, 16–21 in females. Movable finger of pedipalps with 8–9 rows of denticles, 8–9 ID and OD. Dorsal carinae on pedipalp patella developed and smooth. Pedipalp femur granulated. Metasoma I–V dorsal surface mesially finely granulated. Metasoma I with 10 carinae, metasoma II–III with 6–8 carinae, metasoma IV–V with 2 dorsolateral carinae; complete ventrolateral carinae indicated and present in posterior part also on metasoma V. Metasoma IV–V ventrally and laterally with fine punctation reduced, present only in posterior part of metasoma V, spaces among punctae rather smooth; metasoma I laterally granulated and bumpy with punctation reduced. Tergites roughly to finely granulated. Sternite VII granulated, with four irregularly granulated carinae present. Pedipalp, metasoma and telson glabrous. Moderate to strong tibial spurs present on legs III and IV. Tarsomere I of legs I–III with 2–5 long setae.



Figures 15-18. Localities of *Orthochirus glabrifrons* in the United Arab Emirates. **Figure 15**. Al Aqah, Fujairah. **Figure 16**. Green Mubazzarah, Al Ain. **Figure 17**. Wadi Madhab, Fujairah. **Figure 18**. Environs of Masafi, Ras al-Khaimah.



Figures 19-20. Localities of *Orthochirus glabrifrons* in the United Arab Emirates. **Figure 19**. Wadi Ghulayyil Khun, near Bidiya, Fujairah. **Figure 20**. Wadi Saham, Fujairah.

Figures 21-22. *Orthochirus glabrifrons*. **Figure 21**. United Arab Emirates, Wadi Wurayah NP, Fujairah. **Figure 22**. Male from the United Arab Emirates, Wadi Saham, Fujairah, *in vivo* habitus.

Comments. Lourenço & Huber (2000) did not list any valid characters that could differentiate *Paraorthochirus kaspareki* and *P. kinzelbachi* from *Orthochirus glabrifrons*. These authors mainly compared their two new species with other species from Iran and Pakistan and listed characters, which are inside a range of variation of characters of *O. glabrifrons*. The type localities of both species were inside the area of distribution of *O. glabrifrons*. Both new species precisely match *O. glabrifrons* in the key characters listed in the diagnosis. The obvious conclusion is that *Paraorthochirus kaspareki* Lourenço & Huber, 2000 and *Paraorthochirus kinzelbachi* Lourenço & Huber, 2000 are junior synonyms of *Orthochirus glabrifrons* (Kraepelin, 1903), **syn**. **n**.

Comments on localities. The type locality of *O. glabrifrons* Muscat (Oman) is located at the seashore, at the low elevation. Among the new collection localities in the United Arab Emirates, only the Dhadna District locality in Fujairah is also located in the seashore at low elevation, while all other new records are from higher altitudes, up to 1734 m a. s. l. (Oman, Jabal Bani Jabir). Further comments on the localitieas in the United Arab Emirates are given below.

Al Aqah, Fujairah (Fig. 15). The lower hillsides of the Hajar Mountains close to the shore receive more humidity from the nearby Gulf of Oman, therefore are more vegetated most of the time. The ground is covered with sharp rocks and only loamy under the present plant *Neltuma juliflora* and all the scorpion specimens were found under those trees.

Green Mubazzarah, Al Ain, Abu Dhabi (Fig. 16). Typical limestone habitat on the lower slopes of the Jebel Hafit, just behind the Green Mubazzarah Chalets. The nearby irrigated areas attract more insects, a good food source for scorpions.

Wadi Madhab, Fujairah (Fig. 17). Typical broad and flat, lower wadi environment northwest of Fujairah City. Vegetation and *Acacia tortilis* trees covering the lower slopes and the bottom of the wadi.

Environs of Masafi, Ras al-Khaimah (Fig. 18). The remains of an early settlement provide good hiding spots for the species.

Wadi Ghulayyil Khun, near Bidiya, Fujairah (Fig. 19). During the dry, summer months the scorpions occupy dry riverbeds, known as wadis, and nearby slopes.

Wadi Saham, Fujairah (Fig. 20). A typical Hajar Mountains wadi habitat west of Fujairah City. Specimens found at the edge of the dry wadi.

Wadi Wurayah NP, Fujairah (Fig. 21). Specimens of of *O. glabrifrons* were found in high numbers along with *Hottentotta jayakari* (Pocock, 1895) and *Compsobuthus maindroni* (Kraepelin, 1901) near the main entrance of the park. The area is well vegetated and irrigated in most parts.

Acknowledgements

Balázs Buzás is grateful to the Crown Prince Office – Fujairah for support of his research during his time in the Al Mayya Sanctuary (Wadi Madhab, Fujairah, UAE). Live specimens in the Emirate of Fujairah for research purposes under permission number CPO/78/178 to B. Buzás. Specimens were held in the Al Mayya Sanctuary (Wadi Madhab) for further study, then preserved when deceased. We also thank Edit Horváth for the information on the specimens held in the HNHM and Dr. Csaba Géczy for a habitat photo (Figure 16). Other photographs of localities are by Balázs Buzás. The third author thanks his family members, Henri, Lilli and Carina, for always supporting the passion during their holidays and Dr. Michael Seiter (Vienna, Austria) for his friendship and backing him.

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