

RESEARCH PAPER

Aquatic Coleoptera of North Oman, with description of new species of Hydraenidae and Hydrophilidae

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Abstract. We report the aquatic Coleoptera (families Dryopidae, Dytiscidae, Georissidae, Gyrinidae, Heteroceridae, Hydraenidae, Hydrophilidae and Limnichidae) from North Oman, mostly based on the captures of fourteen localities sampled by the authors in 2010. Four species are described as new, all from the Al Hajar mountains, three in family Hydraenidae, *Hydraena (Hydraena) naja* sp. nov., *Ochthebius (Ochthebius) alhajarensis* sp. nov. (*O. punctatus* species group) and *O. (O.) bernard* sp. nov. (*O. metallescens* species group); and one in family Hydrophilidae, *Agraphydrus elongatus* sp. nov. Three of the recorded species are new to the Arabian Peninsula, *Hydroglyphus farquharensis* (Scott, 1912) (Dytiscidae), *Hydraena (Hydraenopsis) quadricollis* Wollaston, 1864 (Hydraenidae) and *Enochrus (Lumetus) cf. quadrinotatus* (Guillebeau, 1896) (Hydrophilidae). Ten species already known from the Arabian Peninsula are newly recorded from Oman: *Cybister tripunctatus lateralis* (Fabricius, 1798) (Dytiscidae), *Hydraena (Hydraena) gattolliati* Jäch & Delgado, 2010, *Ochthebius (Ochthebius) monseti* Jäch & Delgado 2010, *Ochthebius (Ochthebius) wurayah* Jäch & Delgado, 2010 (all Hydraenidae), *Georissus (Neogeorissus) chameleo* Fikáček & Trávníček, 2009 (Georissidae), *Enochrus (Methydrus) cf. tetraspilus* Régimbart, 1903, *Laccobius (Hydroxenus) leucaspis* Kiesenwetter, 1870, *Paracymus relaxus* Rey, 1884 (all Hydrophilidae), *Dryops lutulentus* (Erichson, 1947) (Dryopidae), and *Augyles flavidus* (Rossi, 1794) (Heteroceridae). A total of 73 species of aquatic Coleoptera are presently known from Oman, although this number is expected to increase substantially with further sampling. A checklist of the species of aquatic Coleoptera from the Arabian Peninsula is provided.

Key words. Coleoptera, Dryopidae, Dytiscidae, Georissidae, Gyrinidae, Heteroceridae, Hydraenidae, Hydrophilidae, Limnichidae, new species, new records, Oman

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Introduction

The knowledge of the aquatic Coleoptera of the Arabian Peninsula has increased considerably in the last decade, largely through the effects of two collaborative projects: the publication of the five volumes of the Arthropod Fauna of the UAE, edited by Antonius van Harten, and the Italian and Czech explorations of the fauna of Socotra, which in many cases included also the study of other areas of the Arabian mainland (summarised in BEZDĚK & HÁJEK 2017). Mostly as a result of these two initiatives 20 species of aquatic Coleoptera have been described from the

Arabian Peninsula since 2009, and many more have been newly recorded for the area. The large number of newly described species, especially in family Hydraenidae and in the southeast area of the Peninsula, could, however, be interpreted as a clear sign that the knowledge of the fauna is still very incomplete.

The first works dedicated to the aquatic Coleoptera of the Arabian Peninsula reported the results of the 1937–38 British Museum Expedition to South-West Arabia (HINTON 1948, BALFOUR-BROWNE 1951). BALFOUR-BROWNE (1951) is the single contribution with the largest number



of new species described from the area, ten, in families Dytiscidae, Hydraenidae and Hydrophilidae. The series Fauna of Saudi Arabia published several papers between 1981 and 1997 (BRANCUCCI 1979, 1980, 1981, 1985; ROCCHI 1984; GENTILI 1989; HEBAUER 1997), with occasional records from neighbouring countries. The fauna of Yemen and south Oman (the Dhofar region) was reviewed by HÁJEK & REITER (2014), and that of the UAE by different authors (FIKÁČEK 2009; FIKÁČEK & TRÁVNÍČEK 2009; MASCAGNI 2009a,b,c; FIKÁČEK et al. 2010; JÁCH & DELGADO 2010, 2014; HÁJEK 2011; HÁJEK & BRANCUCCI 2011). Thus, the only region of the Arabian Peninsula which so far has not been subject of a dedicated study is north Oman. To fill this gap we report the results of a trip to north Oman by the three authors in 2010, together with a summary of the fauna of the aquatic Coleoptera of the Arabian Peninsula. Among our captures there were four species new to science (three Hydraenidae and one Hydrophilidae), which we describe herein.

Material and methods

We sampled 14 localities in north Oman between 5–10 April 2010 (Table 1; Figs 1–13). In what follows we detail the species collected and the localities in which they were found, including in some cases additional material obtained from other sources. Exact label data are cited for the type material of the new species. A double slash (//) separates different lines and a comma (,) different labels. Additional remarks are found in square brackets.

We include as previously published records only the works which contain detailed original captures from Oman, not general catalogues or secondary references. The checklist of the species of the Arabian Peninsula (excluding Kuwait, the Sinai and Jordan) (Table 2) is mostly based on the current version of the Palaearctic catalogues, updated whenever appropriate.

Digital photographs of the habitus were taken with a Canon EOS 760D camera (Canon Inc., Tokyo, Japan) fitted

Table 1. Sampled localities in north Oman by the authors in 2010 (see Fig. 1 for their location, and Figs 2–13 for some photographs).

Loc. no.	date	locality	coordinates	m a.s.l.
1	5.iv.2010	Ad Dakhiliyah: Jebel Al-Akhdar, Rd J. Shams, ca. Ghul spring with pools	N23°11'01.7" E57°08'30.4"	908
2	5.iv.2010	Ad Dakhiliyah: Jebel Al-Akhdar, Bahla, wadi in city, residual pools	N22°57'42.1" E57°17'47.5"	559
3	6.iv.2010	Ad Dakhiliyah: Jebel Al-Akhdar, rd. Tanuf-Hat, residual pools in wadi	N23°05'36.2" E57°25'56.6"	1307
4	6.iv.2010	Al Batinah South: Jebel Al-Akhdar, source of wadi Bani Awf, on rock	N23°10'36.2" E57°24'34.1"	1300
5	6.iv.2010	Al Batinah South: Jebel Al-Akhdar, wadi Bani Awf, village below source	N23°11'38.6" E57°23'41.7"	917
6	6.iv.2010	Al Batinah South: Jebel Al-Akhdar, wadi Bani Awf, residual pools	N23°13'42.9" E57°25'25.8"	660
7	7.iv.2010	Al Batinah South: Jebel Al-Akhdar, wadi Bani Awf, residual pools	N23°17'23.8" E57°28'03.9"	487
8	7.iv.2010	Ad Dhahirah: Murri env., wadi Bani Ghafir, stream with pools	N23°29'46.2" E56°53'34.8"	759
9	8.iv.2010	Ash Sharqiyah North: Said Bin Sahran env., wadi Indam, Rd. 33 residual pools	N22°45'15.2" E58°00'56.9"	463
10	9.iv.2010	Ash Sharqiyah North: Muqal, wadi Bani Khalid residual pools	N22°36'16.9" E59°05'15.2"	649
11	9.iv.2010	Ash Sharqiyah North: 15 km SW Sur, residual pools in wadi Rd. 23	N22°27'51.9" E59°23'15.2"	85
12	9.iv.2010	Ash Sharqiyah North: 1 km W Qalhat, residual pools in wadi	N22°41'25.4" E59°22'03.0"	88
13	10.iv.2010	Muscat: Bamah, marsh next to motorway	N23°12'34.4" E58°55'34.6"	15
14	10.iv.2010	Muscat: Al-Rija env., wadi Al-Mayb, residual pools	N23°24'34.2" E58°31'26.8"	139

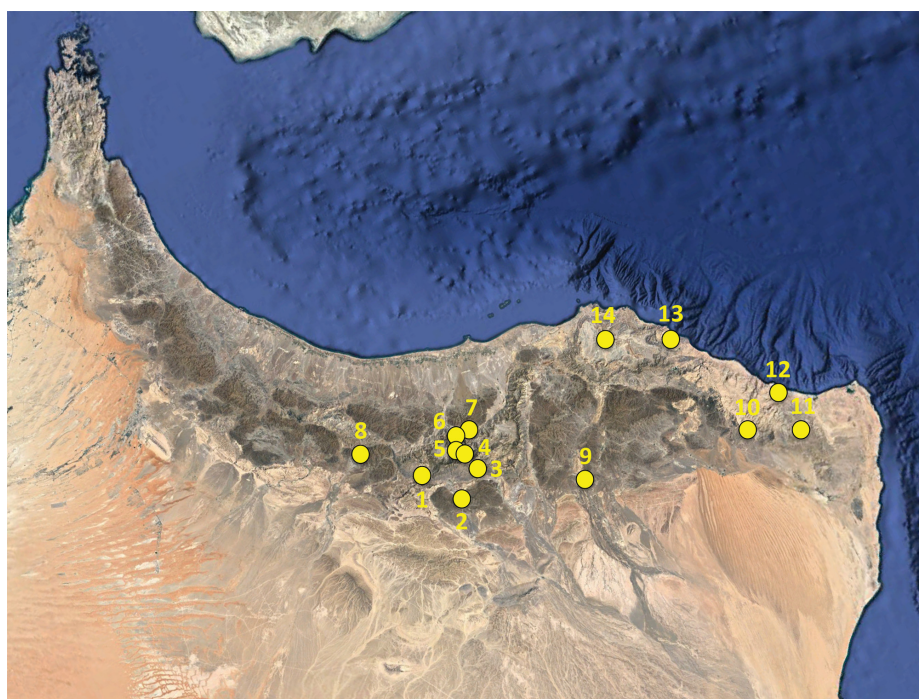


Fig. 1. Sampled localities (see Table 1 for details).

to a Canon MP-E 65mm macroscope. Image stacks were produced by hand, and combined using Zerene Stacker software (www.zerene.com). We extracted the DNA of the specimens to be sequenced non destructively, with commercial kits (mostly DNeasy Tissue Kit, Qiagen, Hilden, Germany). We sequenced different combinations of mitochondrial and nuclear gene fragments depending on the taxonomic group (see PALLARÉS et al. 2017; VILLASTRIGO et al. 2018, 2019 for details on the primers used and reaction conditions). All genetic distances reported are

uncorrected p-distances (i.e. the percentage of mismatches in the nucleotide sequence).

Unless otherwise stated, material is deposited in the CCHB and IBEB collections. Acronyms used in the text:

CCHB Carles Hernando collection, Badalona, Spain;
 IBEB Institut de Biologia Evolutiva, Barcelona, Spain;
 MNCN Museo Nacional de Ciencias Naturales, Madrid, Spain;
 NHMW Naturhistorisches Museum Wien, Austria;
 NMPC National Museum, Prague, Czech Republic;
 SEMC Snow Entomological Collection, University of Kansas, USA;
 ZSM Zoologische Staatssammlung, Munich, Germany.



Figs 2–7. Some of the sampled localities in north Oman. 2 – Loc. No. 1: Ghul spring with pools; 3 – No. 2: residual pools in wadi in Bahla city; 4 – Loc. No. 3: residual pools in wadi; 5 – Loc. No. 4: source of wadi Bani Awf; 6 – Loc. No. 4: source of wadi Bani Awf; 7 – Loc. No. 5: wadi Bani Awf. See Table 1 for details on the localities, and Fig. 1 for their geographical location.

List of recorded species

Adephaga

Family Gyrinidae

Dineutus (Cyclous) aereus (Klug, 1834)

Published records. BALFOUR-BROWNE (1951); BRANCUCCI (1985); PEDERZANI (2003); HÁJEK & REITER (2014).

Material examined. Loc. 6: 1 spec.; Loc. 8: 4 spec.; Loc. 10: 4 spec.; Loc. 11: 4 spec. (plus 1 larva).

Dineutus (Cyclous) subspinosus (Klug, 1834)

Published records. BRANCUCCI (1985); HÁJEK & REITER (2014).

Material examined. Loc. 12: 8 spec.

Family Dytiscidae

Copelatinae

Copelatus antoniorum Hájek & Brancucci, 2011

Published records. HÁJEK & BRANCUCCI (2011).



Figs 8–13. Some of the sampled localities in north Oman. 8 – Loc. No. 8: wadi Bani Ghafir; 9 – Loc. No. 9: residual pools in wadi Indam; 10 – Loc. No. 10: residual pools in wadi; 11 – Loc. No. 11: residual pools in wadi; 12 – Loc. No. 12: Qalhat, residual pools in wadi; 13 – Loc. No. 13: marsh next to Bamah; 14 – Loc. No. 14: residual pools in wadi Al-Mayb. See Table 1 for details on the localities, and Fig. 1 for their geographical location.

Material examined. Loc. 6: 1 ♂ 1 ♀ (designated as paratypes, deposited in the IBEB, ZSM) (HÁJEK & BRANCUCCI 2011).

Notes. We found the specimens in company of *Copelatus gestroi* (Sharp, 1882), in residual pools in the low reach of a wadi with some water running through filtration, a habitat very similar to those reported in the original description (HÁJEK & BRANCUCCI 2011).

Copelatus gestroi (Sharp, 1882)

Published records. SHAVERDO et al. (2008); HÁJEK & REITER (2014); WEWALKA & JÄCH (2017).

Material examined. Loc. 4: 2 spec.; Loc. 5: 2 ♀♀; Loc. 6: 2 ♀♀; Oman, Falah Cave, 2001, Sattmann leg.: 1 spec. (used for DNA extraction, voucher No. NHM-IR589, sequences published in RIBERA et al. 2008).

Cybistrinae

Cybister (Cybister) tripunctatus africanus Laporte, 1835

Published records. PEDERZANI (2003); HÁJEK & REITER (2014).

Material examined. Oman, Wadi Jebel Abu Daud, 23°16'21"N 58°47'26"E, 3.xi.2008 S. Carranza, E.N. Arnold & S. Alrabei leg.: 1 ♀.

Cybister (Cybister) tripunctatus lateralis (Fabricius, 1798)

Material examined. Oman, Al Hadd, 22°26'03"N 59°38'49"E, 20.xi.2016, S. Carranza, M. Simó & D. Fernández leg.: 1 ♂.

Notes. New record for Oman. The last edition of the World catalogue of Dytiscidae (NILSSON & HÁJEK 2018a) recognises three subspecies of *C. tripunctatus* in addition to the nominal form, two of them present in the Arabian Peninsula (*C. t. africanus* and *C. t. lateralis*). HÁJEK & BRANCUCCI (2011) recorded the subspecies *C. t. lateralis* from the UAE based on specimens with a brown venter, in contrast to *C. t. africanus*, which has a black venter. However, GUIGNOT (1961) only recognised the nominal form, with brown venter and a wider posterior part of the elytra, and *C. t. africanus*, with a black venter and narrower elytra. We follow HÁJEK & BRANCUCCI (2011) in considering this specimen, which has a brown venter, as *C. t. lateralis*, although the taxonomic status of the subspecies of *C. tripunctatus* may need to be revised.

Cybister (Melanectes) vulneratus Klug, 1834

Published records. BRANCUCCI (1985); HÁJEK & REITER (2014).

Material examined. Loc. 8: 1 ♀; Oman, Al Hadd, 22°26'03"N 59°38'49"E, 20.xi.2016, S. Carranza, M. Simó & D. Fernández leg.: 1 ♀. Additional material: Oman, Dhofar region, Dhalkut, 16°44'54"N 53°13'23"E, 15.x.2013, S. Carranza & M. Metallinou leg.: 1 ♂ 1 ♀.

Dytiscinae

Eretini

Eretes sticticus (Linnaeus, 1767)

Published records. BRANCUCCI (1980); PEDERZANI (2003); HÁJEK & REITER (2014).

Material examined. Oman, Al Hadd, 22°26'03"N 59°38'49"E, 20.xi.2016, S. Carranza, M. Simó & D. Fernández leg.: 2 ♀♀ (one used for DNA extraction, voucher No. IBE-AN688).

Notes. The identity of the species has been confirmed through the study of the COI gene (unpublished data).

Hydaticini

Hydaticus (Prodaticus) histrio Clark, 1864

Published records. BRANCUCCI (1985).

Material examined. Loc. 3: 1 ♂ (plus larvae); Loc. 6: 4 ♂♂ 1 ♀; Loc. 8: 2 ♂♂ 2 ♀♀; Oman, Al Farra'ah, 23°08'24"N 57°24'24"E, 1668 m, 9.x.2005, S. Carranza, E.N. Arnold & D. Donaire leg.: 1 ♀.

Hydaticus (Prodaticus) pictus (Sharp, 1882)

Published records. BALFOUR-BROWNE (1951); BRANCUCCI (1985).

Material examined. Loc. 6: 3 ♂♂ 2 ♀♀; Loc. 7 (observed, no specimen collected); Oman, Fallah Cave, 21–27.i.2001, W. S. Giagang leg.: 2 spec. (one used for DNA extraction, voucher No. NHM-IR583, sequences published in RIBERA et al. 2008).

Hydaticus (Prodaticus) servillianus Aubé, 1838

Published records. HÁJEK & REITER (2014).

Material examined. Loc. 13: 2 ♀♀.

Hydroporinae

Bidessini

Glareadessus stocki Wewalka & Biström, 1998

Published records. WEWALKA & BISTRÖM (1998); ALARIE & WEWALKA (2001) (description of the larvae).

Material examined. Loc. 2: 1 spec. (used for DNA extraction, voucher No. IBE-RA103); Loc. 5: 1 spec.; Loc. 6: 1 spec.; Loc. 8: 10 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA707); Loc. 12: 3 spec.; Oman, Sayq, 23°04'32"N 57°37'42"E, 1958 m, 9.x.2005, S. Carranza, E.N. Arnold & D. Donaire leg.: 1 spec.

Notes. The species was described from material collected with Bou-Rouch water pumps in the gravelly shore of wadis, "75–100 cm under the surface" (WEWALKA & BISTRÖM 1998). Due to its uniformly pale colour, body shape and habitat it was considered to be a subterranean species, being even described as "stygo-biont" despite the presence of well developed eyes and wings (ALARIE & WEWALKA 2001). According to our observations the species inhabits the gravelly shores of wadis, mostly in residual pools, in which it could be found on the surface or just a few centimetres below the first layers of gravel. Likely due to the temporality of these habitats the species retains good flying abilities and well developed eyes, in contrast to other species with a similar appearance and habitat in the western Mediterranean, such as *Graptodytes fractus* (Sharp, 1882), or some populations of *G. ignotus* (Mulsant & Rey, 1861).

Hydroglyphus angularis (Klug, 1834)

Published records. HÁJEK & REITER (2014).

Material examined. Loc. 2: 21 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA101).

Hydroglyphus farquharensis (Scott, 1912)

Material examined. Oman, Wadi Muqshin, 19°35'07"N 54°53'03"E, 108 m, iv.2011, S. Carranza leg.: 6 spec. (1 ♀ used for DNA extraction, voucher No. IBE-RA491).

Notes. New for the Arabian Peninsula. The species was described from the Seychelles, and has been recorded (under different synonyms) from Madagascar and southern and eastern Africa (BISTRÖM 1986). Externally the species

is very similar to *H. signatellus* (Klug, 1834), although the male genitalia is very characteristic (BISTRÖM 1986). It is thus likely that some of the records of *H. signatellus* from the Arabian Peninsula may actually correspond to this species. The species was found in a saline source in the desert, close to the border with Saudi Arabia (S. Carranza, pers. comm. 2018).

Hydroglyphus hormuzensis Hájek & Brancucci, 2011

Published records. HÁJEK & BRANCUCCI (2011).

Material examined. Loc. 3: 1 ♂ 1 ♀ (1 ♀ designated as paratype, deposited in the IBEB, used for DNA extraction with voucher No. IBE-RA99); Loc. 8: 1 ♀.

Notes. We found this species in a muddy residual pool with silt substratum, together with *Ochthebius bernard* sp. nov. and *Hydraena naja* sp. nov. (Fig. 4; see below) and in a stream (wadi) (localities numbers 4 and 8 respectively; Tables 1, 3 and Figs 5, 6, 8). As noted in the description (HÁJEK & BRANCUCCI 2011), the male genitalia has two-segmented parameres, in contrast to the typical three-segmented parameres of the species of *Hydroglyphus* (BISTRÖM 1986). The inclusion of *H. hormuzensis* in the genus *Hydroglyphus* has to be revised, together with that of other species with two-segmented parameres (unpublished molecular results).

Hydroglyphus signatellus (Klug, 1834)

Published records. HÁJEK & REITER (2014).

Material examined. Loc. 2: 29 spec. (one used for DNA extraction, voucher No. IBE-RA102); Loc. 8: 1 ♀; Loc. 9: 6 spec.; Loc. 10: 2 spec.; Loc. 11: 19 spec.; Loc. 12: 11 spec.; Loc. 13: 9 spec.; Loc. 14: 6 spec.

Hydroglyphus sinuspersicus Hájek & Wewalka, 2009

Published records. HÁJEK & WEWALKA (2009).

Material examined. Loc. 1: 4 spec.; Loc. 2: 6 spec.; Loc. 3: 80 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA100); Loc. 4: 2 spec.; Loc. 12: 1 ♀.

Notes. The species was recently described with material from the UAE, north Oman (Al Houty [= Al Hoota] cave) and southwestern Iran, which had in part previously been misidentified as *H. major* (Sharp, 1882) (HÁJEK & WEWALKA 2009). *Hydroglyphus major* seems to be confined to the Dhofar region, in south Oman (HÁJEK & REITER 2014). The species is frequent in residual pools of wadis, sometimes in large numbers.

Hydroporini

Nebrioporus mascatensis (Régimbart, 1897)

Published records. RÉGIMBART (1897); BRANCUCCI (1985); HÁJEK & REITER (2014).

Material examined. Loc. 3: 1 spec. (very dark specimen); Loc. 4: 1 spec.; Loc. 5: 8 spec. (one used for DNA extraction, voucher No. IBE-RA107, sequences published in ABELLÁN et al. 2013, FERY & RIBERA 2018); Loc. 6: 6 spec.; Loc. 7: 6 spec. (plus 1 larva); Loc. 8: 23 spec.

Hyphydrini

Hyphydrus pictus Klug, 1834

Published records. RÉGIMBART (1897) (as "*Hyphydrus scriptus* Klug"); PEDERZANI (2003); HÁJEK & REITER (2014).

Material examined. Loc. 1: 5 spec. (plus larvae) (one spec. used for DNA extraction, voucher No. IBE-RA555); Loc. 3: 3 spec.; Loc. 5: 1 spec. (plus one larvae); Oman, Sayq, 23°04'32"N 57°37'42"E, 1958 m, 9.x.2005 S. Carranza, E.N. Arnold & D. Donaire leg.: 1 spec. (used for DNA extraction, voucher No. IBE-RA549).

Laccophilinae

Laccophilus maindroni maindroni Régimbart, 1897

Published records. RÉGIMBART (1897); BRANCUCCI (1981, 1983, 1985); HÁJEK & REITER (2014).

Material examined. Loc. 1: 3 spec.; Loc. 2: 1 spec.; Loc. 3: 1 spec.; Loc. 5: 1 spec. (plus larvae); Loc. 6: 17 spec.; Loc. 7: 7 spec.; Loc. 8: 10 spec.; Loc. 9: 3 spec. (plus larvae); Loc. 11: 7 spec.; Loc. 12: 7 spec.; Loc. 14: 9 spec.

Polyphaga

Hydraenidae

Hydraeninae

Hydraena (Hydraena) gattolliati Jäch & Delgado, 2010

Material examined. Loc. 4: 1 ♂.

Notes. New record for Oman. The species was described from the wadi Wurayah, in the northeastern UAE, which is also the type locality of *Ochthebius wuraya* Jäch & Delgado, 2010. A third species of Hydraenidae was found in the same locality, *Hydraena putearius* Jäch & Diaz, 2000 (JÄCH & DELGADO 2010). It is remarkable that the same three species were found in our locality 4 (Figs 5, 6), but with the addition of three new species, one *Hydraena* and two *Ochthebius* (see below).

Hydraena (Hydraena) naja sp. nov. (Figs 14, 18)

Type locality. Source of wadi Bani Awf in Jebel Al-Hajar, Oman (Loc. 4; Figs 1, 5, 6).

Type material. HOLOTYPE: ♂ (NHMW), "4 Oman 6.4.2010 J. Al-Akhdar // source of wadi Bani Awf, on rock // N23 10 36.2 E57 24 34.1 1300m // Ribera, Cieslak & Hernando leg.", aedeagus dissected and mounted in DMHF on a transparent card, with holotype label. PARATYPES (210 spec.) (CCHB, IBEB, MNCN, NHMW, NMPC): 15 ♂♂ 13 ♀♀, same data as holotype, with paratype labels; 181 spec., "3 Oman 6.4.2010 J. Al-Akhdar // rd. Tanuf-Hat, residual pools in wadi // N23 05 36.2 E57 25 56.6 1307m // Ribera, Cieslak & Hernando leg." (1 spec. used for DNA extraction, voucher number IBE-RA97, sequences published in TRIZZINO et al. 2013 as "*Hydraena* sp. OMA"), with paratype labels; 1 ♂, "12 Oman 9.4.2010 1 km W Qalhat // residual pools in wadi // N22 41 25.4 E59 22 03.0 88m // Ribera, Cieslak & Hernando leg.", with paratype labels.

Description. Habitus of male as in Fig. 14; body length: 2.30–2.75 mm, width: 0.90–1.10 mm.

Elytra, legs, palpi and antennae reddish brown; pronotum darker except for anterior margin, head almost black. Apex of maxillary palpi dark brown. Anterior margin of labrum deeply excised, with coarse punctures. Clypeus entirely densely punctate, matt. Central area of frons less densely punctate, with fine sparse pubescence between punctures; lateral parts of frons (ocular groove) deeply impressed, densely micropunctate.

Pronotum distinctly cordiform, anterior margin concave. Surface very densely punctate, interstices densely micropunctate. Median longitudinal impression and

oblique posterior admedian grooves shallow. Sublateral groove deep.

Elytra elongate, subparallel-sided, with about 15 rows of punctures, with nine to ten rows between suture and shoulder; rows usually very regular, except for an admedian area in anterior third and apical area; punctures small, very densely arranged with small recumbent whitish setae; intervals narrow, very slightly convex, glabrous. Explanate margin of elytra well developed, not reaching elytral apex, weakly serrate; elytral apices more or less separately rounded.

Male meso- and metatibiae with apical expansions on ventral side, larger on metatibiae. Female with unmodified tibiae.

Ventral surface covered with a very dense short pubescence, forming a plastron except for the last abdominal ventrites and two longitudinal glabrous areas on metaventrite; abdominal ventrites with a dense fringe of setae on posterior margin.

Aedeagus as in Fig. 18.

Differential diagnosis. The species seems to be most closely related to *H. verstraeteni* Ferro, 1984 from south Iran (Hormozgan) (FERRO 1984, JÄCH 1992, SKALE & JÄCH 2011), based on the external morphology and the male genitalia. Based on the studied material both species cannot be separated on its external morphology, and only differ in the shape of the median lobe and associated appendages of the male genitalia (see fig. 41 in JÄCH 1992). Both species differ 5.3% in their COI-5 gene, based on a specimen of *H. verstraeteni* from south Iran (voucher IBE-AN461, prov. Khuzestan, Behbahan, Garmabeh river, 5.v.2011 E. Irani leg.). Phylogenetically both species are included in a clade with *H. persica* Janssens, 1981, *H. dochula* Jäch & Skale, 2009 and related species, in turn related with the species of the *H. grandis*, *H. rufipes* and *H. pulchella* groups (TRIZZINO et al. 2013 and unpublished results).

Etymology. Named after the elapid snake genus *Naja* (cobras), in reference to the shape of the enlarged setae of the aedeagus (Fig. 18), resembling a cobra in its characteristic threatening position. Noun in singular nominative, standing in apposition.

Notes on the habitat. The species was most commonly found in two localities, residual pools in a wadi (locality No. 3) and the source of wadi Bani Awf (locality No. 4). The residual pool (Fig. 4) was the result of disruption by road works of a (by then) dry wadi, producing a pool with a diameter of ca. 3–4 m with muddy and sandy substratum and very turbid water. The species was here very abundant, together with *Ochthebius bernard* sp. nov. and *Hydraena quadricollis* Wollaston, 1864 (see below), plus other species in lower numbers. The source of wadi Bani Awf (Figs 5, 6) is a spring on a rocky surface, apparently at least partially artificially excavated to form a small tunnel through which the water is diverted to an artificial open channel that goes down the valley. When the locality was visited (6th April) all the water was diverted through the channel, but occasionally the water should overflow it and run through a natural rocky bed, that at the time

of our visit was completely dry. The distance between the spring and the channel was at most ca. 10 m, with a rocky substratum with a thin layer of sand and gravel, with some green filamentous algae. Despite the reduced dimensions of the habitat the diversity was remarkably high, with six species of Hydraenidae, all of them endemic to Oman and the UAE and three of them newly described here (*Hydraena naja* sp. nov., *H. gattolliati*, *H. putearius*, *Ochthebius bernard* sp. nov., *O. alhajarensis* sp. nov., *O. wurayah*), in addition to *Copelatus gestroi*, *Nebrioporus mascatensis* and *Hydroglyphus sinuspersicus*.

Distribution. Found in the Al Hajar mountains, with an isolated specimen in a wadi in the coast of the Gulf of Oman (Fig. 1).

Hydraena (Hydraenopsis) quadricollis Wollaston, 1864

Material examined. Loc. 1: 6 spec.; Loc. 2: 3 spec.; Loc. 3: 65 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA98, sequences published in TRIZZINO et al. 2013); Loc. 6: 4 spec.; Loc. 7: 1 ♀.

Notes. New record for the Arabian Peninsula. The species was described from Tenerife (WOLLASTON 1864), and subsequently recorded from Cape Verde (WOLLASTON 1867), Algeria, Tunisia, Sudan, Ethiopia, Kenya (D'ORCHYMONT 1940, BERTHÉLEMY et al. 1991) and Djibouti (JÄCH & DELGADO 2017). In Tenerife it was collected in several occasions on the same spot the same year, but not on subsequent years (WOLLASTON 1864). D'ORCHYMONT (1940) noted that the habitat in the type locality seemed to be unaltered but the species absent, concluding that it may have been an accidental temporary colonisation. D'ORCHYMONT (1940) established the synonymy of *H. nilotica*, described from the banks of the Nile in Egypt (lectotype and paralectotype designed in BERTHÉLEMY et al. 1991). In TRIZZINO et al. (2013) two specimens of *H. quadricollis* were included, one from Tunisia (voucher No. MNCN-AI1312, 24.x.2001, road between Ouessalata and Kairouan, pond 5 km NW Rouissat, I. Ribera & A. Cieslak leg.) and one of the specimens reported here from Oman (voucher number IBE-RA98, Loc. 3). Differences between the two specimens in the gene COI-3 were close to 5%, which is well within the range of differences between well-established species of *Hydraena* (TRIZZINO et al. 2013). The examination of these specimens, as well as further specimens from Egypt and Cape Verde, demonstrated some differences in the morphology of the aedeagus, but additional material from other areas should be examined to clarify the taxonomy of the complex.

Hydraena (Phothydraena) putearius Jäch & Díaz, 2000

Published records. JÄCH & DÍAZ (2000).

Material examined. Loc. 1: 13 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA95, sequences published in ABELLAN & RIBERA 2011; ABELLAN et al. 2013; TRIZZINO et al. 2013; VILLASTRIGO et al. 2019); Loc. 2: 5 spec.; Loc. 3: 55 spec.; Loc. 4: 5 spec.; Loc. 5: 14 spec.; Loc. 6: 6 spec.; Loc. 7: 9 spec.; Loc. 8: 60 spec.; Loc. 9: 2 spec.; Loc. 10: 4 spec.; Loc. 12: 69 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA706).

Limnebius (Bilimneus) wewalkai

Jäch & Delgado 2010

Published records. JÄCH & DELGADO (2010).**Material examined.** Loc. 2: 4 spec.; Loc. 5: 2 spec.; Loc. 6: 62 spec. (2 ♂♂ used for DNA extraction, voucher Nos IBE-AR32 and IBE-RA108, sequences published in RUDOY et al. 2016, VILLASTRIGO et al. 2019); Loc. 7: 4 spec.; Loc. 8: 14 spec.; Loc. 9: 1523 spec.; Loc. 11: 11 spec.; Loc. 12: 5 spec.

Ochthebiinae

Ochthebius (Ochthebius) alhajarensis sp. nov.

(Figs 15, 19)

Type locality. Source of wadi Bani Awf in Jebel Al-Hajar, Oman (Loc. 4; Figs 1, 5, 6).**Type material.** HOLOTYPE: ♂ (NHMW), "4 Oman 6.4.2010 J. Al-Akhdar // source of wadi Bani Awf, on rock // N23 10 36.2 E57 24 34.1 1300m // Ribera, Cieslak & Hernando leg.", used for DNA extraction, voucher number IBE-RA104 (sequences published in VILLASTRIGO et al. 2019), aedeagus dissected and mounted in DMHF on a transparent card, with holotype label. PARATYPES (4 spec.): (CCHB, IBEB): 3 ♀♀, same data as holotype, with paratype labels; 1 ♂, "6 Oman 6.4.2010 J. Al-Akhdar // wadi Bani Awf residual pools // N23 13 42.9 E57 25 25.8 660m // Ribera, Cieslak & Hernando leg."**Description.** Habitus as in Fig. 15. Body length: 2.15–2.25 mm; width: 0.90–0.95 mm. Dorsal surface black (dark brown in immature specimens); palpi, antennae and legs brown.

Upper surface of head with very long, adpressed fine whitish setae. Labrum only slightly incised, surface between punctures smooth. Frontoclypeal suture distinct, strongly arched. Surface of head largely smooth, with microreticulated areas around eyes and on neck area. With two large foveae on vertex; ocelli not visible.

Pronotum trapezoidal, almost as wide as long; surface covered with same type of setae as on head but more sparse; anterior margin straight in middle; anterior angles roughly arcuated; lateral margin irregularly defined. Hyaline membrane narrow at anterior and posterior margins, very wide at posterior corners. Surface of disk smooth, with sparse punctures and some microreticulation on margins; with shallow longitudinal and lateral furrows; sides of pronotum strongly microreticulated, with granulose appearance.

Elytra oval; with very irregular rows of shallow punctures, with long and thin whitish seta on anterior part of each puncture. Lateral rim smooth, not explanate. Membranous wings well developed.

Legs relatively long, with rows of strong setae, without natatorial setae.

Ventral surface black, surface shagreened, covered with long, thin, whitish pubescence. Margins of metaventricle and abdominal ventrites with shorter, more dense setae.

Aedeagus (Fig. 19) with main piece strongly bend in almost straight angle; medial part narrow, apex dilated and sinuated. Distal lobe regularly expanded, with lower part hyaline. Parameres inserted near base of main piece, not reaching its apex.

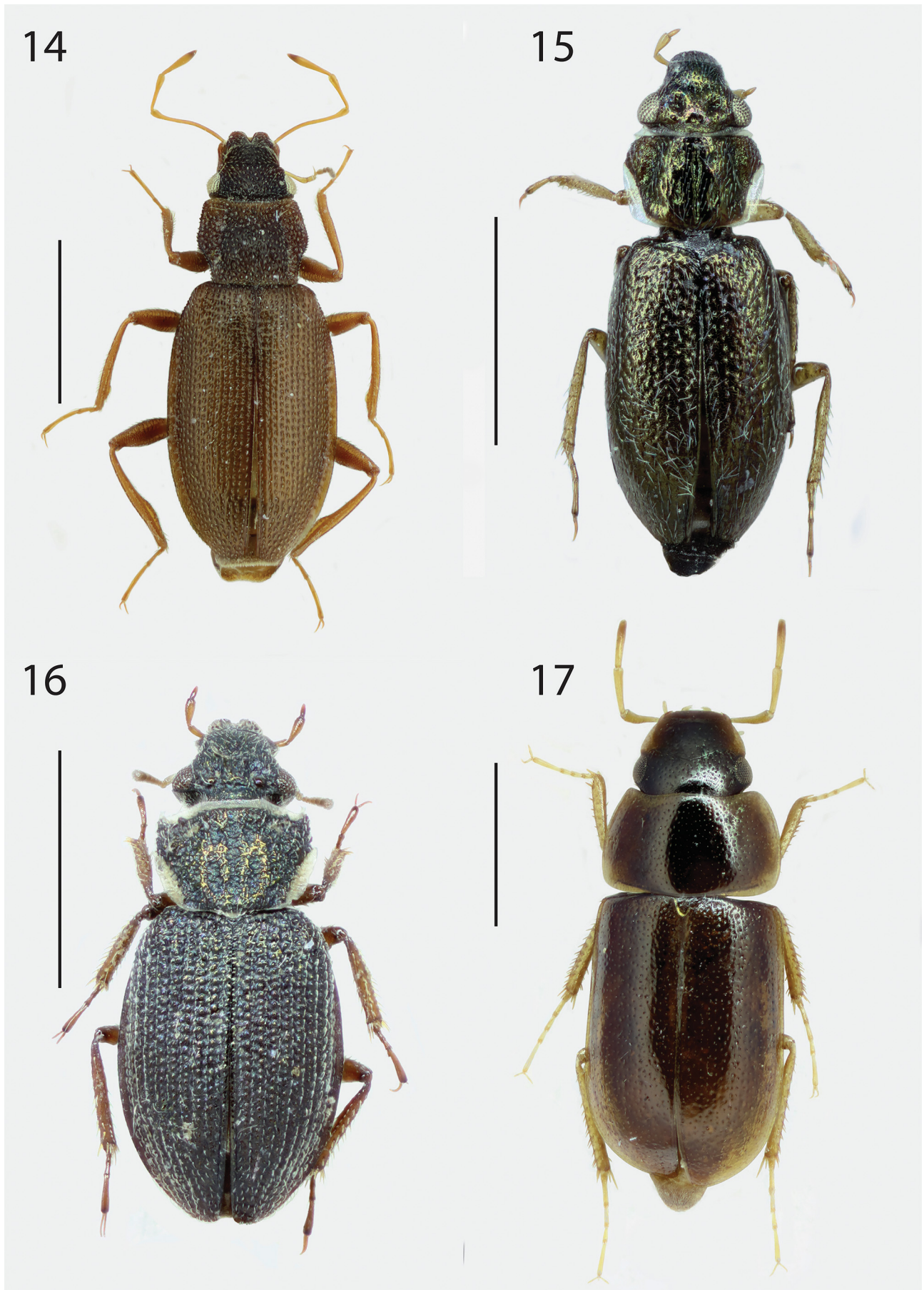
Differential diagnosis. *Ochthebius alhajarensis* sp. nov. belongs to the *O. punctatus* group. Among the species for which we have molecular data, it is most closely related to *O. klapperichi* Jäch, 1989 from central Asia (studiedspecimen voucher No. MNCN-AI1269; VILLASTRIGO et al. 2019) at a genetic distance of 7% in the COI-3 gene, and both to another unnamed species from Tajikistan (unpublished data). They are in turn related to *O. quadrifoveolatus* Wollaston, 1854 and *O. ragusae* Kuwert, 1877, both widely distributed in the Mediterranean region (JÄCH & SKALE 2015). From its known closest relative, *O. klapperichi*, and from *O. quadrifoveolatus* the new species differs clearly in the shape of the pronotum, with a much narrower base and stronger fossae. The external morphology is most similar to *O. ragusae*, from which based on the available material apparently only differs in the stronger punctuation of the elytra. The shape of the aedeagus is, however, clearly different to that of all these species (see JÄCH 1989).**Etymology.** Named after the mountain range of Al Hajar, in north Oman, where the new species was found; adjective.**Notes on the habitat.** The species was found in two localities, the source of the wadi Bani Awf (Figs 5, 6; see habitat notes for *Hydraena naja* sp. nov.) and residual pools downstream of the same wadi.**Distribution.** Only known from two localities in the same stream in the Al-Hajar mountains (Fig. 1).*Ochthebius (Ochthebius) bernard* sp. nov.

(Figs 16, 20)

Type locality. Source of wadi Bani Awf in Jebel Al-Hajar, Oman (Loc. 4; Figs 1, 5, 6).**Type material.** HOLOTYPE: ♂ (NHMW), "4 Oman 6.4.2010 J. Al-Akhdar // source of wadi Bani Awf, on rock // N23 10 36.2 E57 24 34.1 1300m // Ribera, Cieslak & Hernando leg.", aedeagus dissected and mounted in DMHF on a transparent card, with holotype label. PARATYPES (138 spec.) (CCHB, IBEB, MNCN, NHMW, NMPC): 2 ♀♀, same data as holotype, with paratype labels; 3 ♂♂ 3 ♀♀, "1 Oman 5.4.2010 J. Al-Akhdar // Rd J. Shams, ca. Ghul spring with pools // N23 11 01.7 E57 08 30.4 908m // Ribera, Cieslak & Hernando leg.", with paratype labels (1 ♂ used for DNA extraction, voucher number IBE-RA96); 130 spec. "3 Oman 6.4.2010 J. Al-Akhdar // rd. Tanuf-Hat, residual pools in wadi // N23 05 36.2 E57 25 56.6 1307m // Ribera, Cieslak & Hernando leg.", with paratype labels (1 ♂ used for DNA extraction, voucher number IBE-AN1102).**Additional material studied.** 1 ♀, "8 Oman 7.4.2010 Murri env. // wadi Bani Ghafir, stream with pools // N23 29 46.2 E56 53 34.8 759m // Ribera, Cieslak & Hernando leg."**Description.** Habitus as in Fig. 16. Body length: 1.95–2.20 mm; width: 0.90–0.95 mm. With a blackish metallic hue, immature specimens paler (dark brown); palpi dark brown, antennae yellowish except for the brown club, legs dark brown.

Upper surface of head with irregular, adpressed fine whitish setae. Labrum deeply incised, anteriorly upturned (more in males). Frontoclypeal suture distinct, strongly arched. Surface of head with a shagreened, almost rugose appearance, especially around two depressed fovea on vertex. Eyes large, with small, recumbent setae among ocelli. With two large ocelli behind fovea.

Pronotum trapezoidal, almost as wide as long; surface covered with same type of setae as on head; anterior margin straight in middle; anterior angles straight; lateral margin irregularly defined. Hyaline membrane narrow at anterior and posterior margins, very wide at posterior corners. Surface very densely punctate-granulated, with a rugose but shiny appearance; disc with a shallow



Figs 14–17. Habitus of new species: 14 – *Hydraena naja* sp. nov.; 15 – *Ochthebius alhajarensis* sp. nov.; 16 – *Ochthebius bernard* sp. nov.; 17 – *Agraphyrus elongatus* sp. nov. Scale bars: 1 mm.



Figs 18–21. Aedeagus of new species: 18 – *Hydraena naja* sp. nov.; 19 – *Ochthebius alhajarensis* sp. nov.; 20 – *Ochthebius bernard* sp. nov.; 21 – *Agraphydrus elongatus* sp. nov. Scale bars: 0.2 mm.

irregular median groove and poorly defined, irregular lateral furrows.

Elytra oval; with regular rows of punctures and small tubercles, giving a rugose appearance; with a strong, adpressed seta on anterior part of each puncture. Lateral rim smooth, wider on females. Membranous wings well developed.

Legs short and robust, with rows of strong spine-like setae, without natatorial setae.

Ventral surface black, elytral epipleura and hypomera dark brown; covered with fine, dense uniform pubescence. Margins of metaventrite and abdominal ventrites with longer setae, more orderly disposed.

Aedeagus (Fig. 20) with main piece evenly curved, with uniform width. Distal lobe regularly expanded, with a tubuliform apex. Parameres inserted near median part of main piece, not reaching its apex.

Differential diagnosis. The new species belongs to the *Ochthebius metallescens* group, being most closely related to *O. hivae* Jäch et al., 2013 from western Iran. It differs from this species in the body colouration (brownish in *O. hivae*, black with metallic reflections in *O. bernard* sp. nov.), the less strongly granulated elytra, pronotum and head of *O. hivae*, the more acuminate elytra in *O. hivae*, and the shape of the aedeagus (see JÄCH et al. 2013). As noted in JÄCH et al. (2013), the shape of the distal lobe of the aedeagus of *O. hivae* is unusually variable, but none of the different models figured matches the shape of the distal lobe of *O. bernard* sp. nov., specially those of the type locality (see Figs 2 and 3 in JÄCH et al. 2013). The two species differ by ca. 10% in their COI-3 gene, as measured with one specimen of *O. hivae* from the type locality (specimen voucher IBE-RA744, Iran: prov. Khuzestan, Behbahan, Morvarid spring, 4.ix.2010, leg. E. Irani; VILLASTRIGO et al. 2019). Despite the strong resemblance of the external morphology (see also JÄCH et al. 2013), *O. bernard* sp. nov. does not seem to be closely related to the only other species of the *O. metallescens* group from the Arabian Peninsula, *O. wurayah* Jäch & Delgado, 2010 (unpublished results), with which it was found to coexist in our locality No. 4 (Table 3; Figs 5, 6).

Etymology. We name this species after the first and last authors' son, Bernard. Noun in nominative, standing in apposition.

Notes on the habitat. The species was most common in localities Nos 3 and 4 (Figs 1, 4–6; see description under *Hydraena naja* sp. nov. above).

Distribution. So far only known from the central Al-Hajar mountains (Fig. 1).

Ochthebius (Ochthebius) harteni Jäch & Delgado 2010

Published records. JÄCH & DELGADO (2010).

Material examined. Loc. 2: 3 spec. (1 spec. used for DNA extraction, voucher No. IBE-RA705, sequences published in VILLASTRIGO et al. 2019); Loc. 3: 1 ♀; Loc. 11: 13 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA125, sequences published in ABELLÁN et al. 2013); Loc. 12: 11 spec.

Ochthebius (Ochthebius) mahmoodi Jäch & Delgado 2014

Published records. JÄCH & DELGADO (2014).

Material examined. Loc. 8: 2 ♂♂; Loc. 12: 19 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA126, sequences published in ABELLÁN et al. 2013 as *Ochthebius* nr. *difficilis*; VILLASTRIGO et al. 2019).

Notes. *Ochthebius mahmoodi* was described based on specimens from the UAE and Oman, which in part had been misidentified as *O. monseti* Jäch & Delgado, 2010, as both species were said to be indistinguishable based on external morphology (JÄCH & DELGADO 2014). However, based on molecular data of specimens of both species from Oman they are not even sisters, being *O. monseti* sister to the Iberian *O. montesi* Ferro, 1984, and *O. mahmoodi* sister to *O. micans* Balfour-Browne, 1951 (specimen from Djibouti), all at considerable genetic distance (VILLASTRIGO et al. 2019).

Ochthebius (Ochthebius) monseti Jäch & Delgado 2010

Material examined. Loc. 10: 1 ♀; Loc. 11: 26 spec. (1 ♂ used for DNA extraction, voucher No. IBE-RA124, sequences published in ABELLÁN et al. 2013; VILLASTRIGO et al. 2019).

Notes. New record for Oman. The species was described with material from UAE and southwestern Iran (JÄCH & DELGADO 2010), although the distribution of the species is somewhat uncertain, as part of the type material was subsequently recognised to be a different species, *O. mahmoodi* (see above). In addition to the specimen from Oman (voucher IBE-RA124) we have sequenced a specimen from Iran (voucher IBE-RA740, prov. Khuzestan, Behbahan, Garmabeh river, 5.v.2011, E. Irani leg.) and found them to be sisters, although at a considerable genetic distance (ca. 5% in the gen COI-5', unpublished data).

Ochthebius (Ochthebius) wurayah Jäch & Delgado, 2010

Material examined. Loc. 4: 3 ♂♂ 4 ♀♀ (1 ♂ used for DNA extraction, voucher number IBE-AN1103).

Notes. New record for Oman. The species was so far only known from two localities in the UAE (JÄCH & DELGADO 2010).

Georissidae

Georissus (Neogeorissus) chameleo Fikáček & Trávníček, 2009

Material examined. Loc. 11: 3 spec.; Loc. 12: 1 ♂.

Notes. New record for Oman. This is the only species of Georissidae known from the Arabian Peninsula, previously only recorded from the UAE (FIKÁČEK & TRÁVNÍČEK 2009). All specimens from the UAE were collected at light or Malaise traps, with no data on their habitat. In Oman specimens were found on gravelly and sandy margins of wadis (Figs 10–11).

Hydrophilidae

Acidocerinae

Agraphydrus elongatus sp. nov.

(Figs 17, 21)

Type locality. Wadi Bani Ghafir, Murri, Oman (Loc. 8; Figs 1, 8).

Type material. HOLOTYPE: ♂ (NHMW), “8 Oman 7.4.2010 Murri env. // wadi Bani Ghafir, stream with pools // N23 29 46.2 E56 53 34.8 759m // Ribera, Cieslak & Hernando leg.”, aedeagus dissected and mounted in DMHF on a transparent card, with holotype label. PARATYPES (88 spec.) (CCHB, IBEB, MNCN, NHMW, NMPC): 15 spec., same data as holotype, with paratype labels; 8 spec. “2 Oman 5.4.2010 J. Al-Akhdar // Bahla, wadi in city residual pools // N22 57 42.1 E57 17 47.5 559m // Ribera, Cieslak & Hernando leg.”, with paratype labels (1 ♂ used for DNA extraction, voucher number IBE-RA105); 6 spec. “6 Oman 6.4.2010 J. Al-Akhdar // wadi Bani Awf residual pools // N23 13 42.9 E57 25 25.8 660m // Ribera, Cieslak & Hernando leg.”, with paratype labels; 1 spec. “7 Oman 7.4.2010 J. Al-Akhdar // wadi Bani Awf residual pools // N23 17 23.8 E57 28 03.9 487m // Ribera, Cieslak & Hernando leg.”, with paratype label; 18 spec., “9 Oman 8.4.2010 Said Bin Sahran env. // wadi Indam, Rd. 33 residual pools // N22 45 15.2 E58 00 56.9 463m // Ribera, Cieslak & Hernando leg.”, with paratype labels; 1 ♂ “12 Oman 9.4.2010 1 km W Qalhat // residual pools in wadi // N22 41 25.4 E59 22 03.0 88m // Ribera, Cieslak & Hernando leg.”, with paratype labels; 3 spec. “UAE: Ras al-Khaimah // (south), Wadi Shawkah // Hajar Mountains (UAE 3) // ca. 80 km ESE Dubai // 23.1.2010, leg. M.A. Jäch”, “upper course // residual pools // ca. 318 m a.s.l. // 25°06'06.1"N // 56°03'26.4"E”; 1 ♂ “UAE: Ras al-Khaimah // (south) (UAE 10) // Hajar Mountains // ca. 80 km SE Dubai // 26.1.2010, leg. M.A. Jäch”, “small stream // ca. 385 m a.s.l. // 25°03'25"N // 56°03'40.7"E”; 19 spec. “UAE: Fujairah (UAE 12) // Wadi Madaq // Hajar Mountains // 26.1.2010, leg. M.A. Jäch”, “ca. 8 km NW Masafi // ca. 75 km E Dubai // springfed streamlet in // canyon”, “residual pools // ca. 386 m a.s.l. // 25°20'48.7"N // 56°05'28"E”; 16 spec. same label data, but “leg. K. Mahmoud”.

Description. Habitus as in Fig. 17; total length: 2.00–3.10 mm, elytral width: 0.95–1.30 mm. Habitus slender, elytra very weakly widening posterior to midlength, almost parallel-shaped, weakly convex. Labrum, clypeus and frons black, clypeus with narrow, undefined, yellow lateral margins; maxillary palpi yellow, palpomere 4 infuscated in apical third, pronotum dark brown with narrow yellowish margins, elytra dark brown in anterior two thirds, indistinctly brighter brown in posterior third, with very narrow, undefined, yellow lateral margins, ventrites dark brown, legs slightly lighter brown.

Clypeus with weakly concave anterior margin, microsculpture absent, punctures fine, interspaces about 2–3 × as wide as punctures. Eyes large, slightly protruding, oval-shaped. Maxillary palpi very slender, palpomere 4 asymmetrical. Mentum with few scattered fine punctures in lateral thirds, microsculpture absent.

Pronotal punctation as on head. Elytral punctation as on head and pronotum, four rows of punctures moderately distinct, mesal rows 1–3 strongly reduced in number of punctures, not reaching anterior margin.

Mesoventrite with a distinct mesal bulge. Abdominal ventrite 5 with uneven, roughly shaped apical margin, excision absent, or excision present, less than 8 μ deep.

Pubescence present on less than proximal half of pro- and mesofemur, on proximal third of metafemur.

Aedeagus as in Fig. 21. Phallobase slightly shorter than parameres, evenly converging to weakly defined manubrium. Lateral margins of parameres not constricted subapically, weakly pointed, apex weakly sclerotized.

Median lobe slightly shorter than parameres, apex rounded. **Differential diagnosis.** *Agraphydrus elongatus* sp. nov. can be easily separated from *A. minutissimus* (Kuwert, 1890), the only other species of *Agraphydrus* known from the Arabian Peninsula (Table 2; both species coexisted in locality No. 8, Fig. 8; see Table 3), by the general colouration (pale brown in *A. minutissimus*, uniformly dark in *A. elongatus* sp. nov.) and the body shape (almost cylindrical, parallel-sided in *A. elongatus*, not widened posteriorly). The maxillary palpi are also longer than in *A. minutissimus*, and the species can also be recognised by the male genitalia. The two species belong to a species group including other small and slender species, although none with a similar body shape as *A. elongatus* sp. nov. (A. Komarek, pers. comm. 2018).

Etymology. Named in reference to the elongated body shape. The specific name is an adjective in nominative singular.

Notes on the habitat. The species was commonly found in wadis, both in residual pools with gravelly or sandy margins and in the areas with water flow, among stones and gravel (Figs 3, 7–9, 11).

Distribution. Oman and UAE (Fig. 1).

Agraphydrus (Agraphydrus) minutissimus
(Kuwert, 1890)

Published records. HEBAUER (1997).

Material examined. Loc. 8: 22 spec.

Helochares (Hydrobaticus) crenatuloides
d'Orchymont, 1943

Published records. HEBAUER (1997).

Material examined. Loc. 1: 11 spec.; Loc. 2: 1 ♂ 1 ♀.

Chaetharthriinae

Thysanarthria wadicola Fikáček & Liu, 2019

Published records. HEBAUER (1997, 2001, as *T. sulcata* (Chiesa, 1967)); FIKÁČEK & LIU (2019).

Material examined. Loc. 8: 3 ♀♀ (paratypes, CCHB, IBEB), 1 spec. (paratype, SEMC, corresponding to voucher SLE0127 in SHORT & FIKÁČEK 2013); Loc. 9: 1 ♀ (paratype, IBEB).

Notes. The species was recorded from Oman by HEBAUER (1997, 2001) as *T. sulcata*, and from the UAE and Iran by FIKÁČEK et al. (2010) with some doubts on its identity. A recent revision of the genus has shown that *T. sulcata* is a synonym of *T. championi* (Knisch, 1924), widespread in central and south Asia (FIKÁČEK & LIU 2019). The Arabian material corresponds to a species newly described by FIKÁČEK & LIU (2019), *T. wadicola*. Specimens were found in the gravelly shores of wadis, in a microhabitat similar to that of some species of the related genus *Chaetharthria*.

Enochrinae

Enochrus (Lumetus) ater (Kuwert, 1888)

Published records. HEBAUER (1997).

Material examined. Loc. 13: 25 spec. (one used for DNA extraction, voucher No. IBE-AB267, sequences published in ARRIBAS et al. 2014, PALLARÉS et al. 2017).

***Enochrus (Lumetus) politus* (Küster, 1849)**

Published records. HEBAUER (1997).

Material examined. Loc. 11: 4 spec. (plus 1 larva?); Loc. 13: 47 spec. (plus larvae?); Loc. 14: 1 spec.

***Enochrus (Lumetus) cf. quadrinotatus*
(Guillebeau, 1896)**

Material examined. Oman, Wadi Muqshin, 19°35'07"N 54°53'03"E, 108 m, iv.2011, S. Carranza leg.: 1 ♂ 1 ♀ (♂ used for DNA extraction, voucher No. IBE-RA490/IBE-RA553, sequences published in ARRIBAS et al. 2014; PALLARÉS et al. 2017).

Notes. Species new for the Arabian Peninsula. The studied specimens were tentatively identified as *E. quadrinotatus* in ARRIBAS et al. (2014) and PALLARÉS et al. (2017), described from Syria, although it would be necessary to study the type material of this species to confirm the identification. According to the molecular data the species belongs to the *E. bicolor* complex, being sister to a clade including *E. falcarius* Hebauer, 1991, *E. segmentinotatus* (Kuwert, 1888), *E. risii* Arribas & Millán, 2013 and *E. cf. turanicus* Schödl, 1998 (PALLARÉS et al. 2017). The male genitalia and external morphology are clearly different from *E. sinuatus* d'Orchymont, 1937 (see SCHÖDL 1998) which was recorded from the UAE by FIKÁČEK et al. (2010).

***Enochrus (Methyrus) cf. tetraspilus*
Régimbart, 1903**

Material examined. Loc. 13: 2 ♀♀.

Notes. New record for Oman. The species was recorded, with some doubts on its identity, from the UAE by FIKÁČEK et al. (2010). Our specimens (2 ♀♀) agree well with the description provided by these authors.

Hydrophilinae

***Arabhydrus gallagheri* Hebauer, 1997**

Published records. HEBAUER (1997).

Material examined. Loc. 7: 2 spec.; Loc. 9: 1 ♀; Loc. 11: 2 spec.; Loc. 12: 1 ♀; Loc. 14: 51 spec. (one used for DNA extraction, voucher No. IBE-RA106, sequences published in ARRIBAS et al. 2014; PALLARÉS et al. 2017) (2 spec. in SEMC); Oman, Wadi Mayh, 23°30'42"N 58°38'40"E, 23.x.2008, S. Carranza, E. N. Arnold & S. Alrabei: 1 spec.

***Berosus (Berosus) fuscostriatus* Fairmaire, 1892**

Published records. HEBAUER (1997).

Material examined. Oman, Al Hadd, 22°26'03"N 59°38'49"E, 20.xi.2016, S. Carranza, M. Simó & D. Fernández leg.: 11 spec.

***Berosus (Berosus) nigriceps* (Fabricius, 1801)**

Published records. HEBAUER (1997).

Material examined. Loc. 13: 33 spec.

***Berosus (Berosus) rubiginosus* Kuwert, 1890**

Published records. HEBAUER (1997).

Material examined. Loc. 1: 2 spec.; Loc. 3: 4 spec.; Loc. 5: 1 ♂; Loc. 11: 1 ♂; Loc. 12: 20 spec.

***Laccobius (Hydroxenus) leucaspis* Kiesenwetter, 1870**

Material examined. Loc. 8: 2 ♂♂.

Notes. New record for Oman. The species had been previously recorded from Saudi Arabia (Hejaz mountains) by D'ORCHYMONT (1936) (Table 2).

***Laccobius (Microlaccobius) orsenigoi* Gentili, 1980**

Published records. FIKÁČEK et al. (2010).

Material examined. Loc. 2: 1 ♀; Loc. 8: 4 ♂♂ 3 ♀♀; Loc. 9: 2 spec.; Loc. 10: 12 spec.; Loc. 11: 7 spec.; Loc. 12: 9 spec.

***Laccobius (Microlaccobius) praecipuus* Kuwert, 1890**

Published records. HEBAUER (1997).

Material examined. Loc. 1: 55 spec.; Loc. 2: 7 spec.; Loc. 3: 56 ♂♂ 2 ♀♀; Loc. 5: 2 spec.; Loc. 6: 16 spec.; Loc. 8: 35 spec.; Loc. 9: 7 spec.; Loc. 10: 9 spec.; Loc. 11: 17 spec.; Loc. 12: 27 spec.; Loc. 14: 50 spec.

***Paracymus relaxus* Rey, 1884**

Material examined. Loc. 13: 14 spec.

Notes. New record for Oman. The species had been previously recorded from Saudi Arabia, UAE and Yemen by BALFOUR-BROWNE (1951), HEBAUER (1997) and FIKÁČEK et al. (2010) (Table 2).

***Sternolophus decens* Zaitzev, 1909**

Published records. BALFOUR-BROWNE (1951); HEBAUER (1997); NASSER-ZADEH & KOMAREK (2017).

Material examined. Loc. 6: 10 spec. (plus larvae, 2 spec. SEMC); Loc. 8: 6 spec. (plus larvae); Loc. 9: 2 spec.; Loc. 11: 2 spec.; Loc. 12: 1 ♂.

Sphaeridiinae

***Coelostoma (Holocoelostoma) stultum* (Walker, 1858)**

Published records. HEBAUER (1997).

Material examined. Loc. 13: 1 ♀.

***Coelostoma (Lachnocoelostoma) transcaspicum*
Reitter, 1906**

Published records. HEBAUER (1997).

Material examined. Loc. 8: 5 spec.; Loc. 12: 1 spec.; Loc. 13: 3 spec.; Loc. 14: 4 spec.

Dryopidae

***Dryops lutulentus* (Erichson, 1947)**

Material examined. Loc. 1: 1 ♀; Loc. 3: 1 ♀; Loc. 11: 1 ♂.

Notes. New record for Oman. *Dryops lutulentus* has been recorded from the province of Hormozgan in Iran (DELÈVE 1970; MASCAGNI et al. 2016), Yemen, Saudi Arabia and UAE (MASCAGNI 2009a) (Table 2).

Heteroceridae

***Augyles flavidus* (Rossi, 1794)**

Material examined. Loc. 9: 1 ♀.

Notes. New record for Oman. The species is widely distributed in the western Palaearctic and Ethiopian Regions, and was recorded from the UAE by MASCAGNI (2009c).

Table 2. Checklist of the aquatic Coleoptera of the Arabian Peninsula. In bold, species newly recorded for Oman, including the new species described here. Yemen refers to continental part only (i.e. without Socotra). ●● indicates species reported in this work.

No	species	Oman	UAE	S Arabia	Yemen	Bahrain	Qatar
Dryopidae							
1	<i>Ahaggaria acutangula</i> Bollow, 1938			●	●		
2	<i>Dryops cassius</i> Hinton, 1848			●	●		
3	<i>Dryops gracilis</i> (Karsch, 1881)				●		
4	<i>Dryops lutulentus</i> (Erichson 1947)	●●	●	●	●		
5	<i>Dryops sulcipennis</i> (Costa, 1883)				●		
Dytiscidae							
6	<i>Agabus biguttatus</i> (Olivier, 1795)			●	●		
7	<i>Colymbetes piceus</i> Klug, 1834			●	●		
8	<i>Colymbetes substrigatus</i> Sharp, 1882			●	●		
9	<i>Copelatus antoniorum</i> Hájek & Brancucci, 2011	●●			●		
10	<i>Copelatus atrosulcatus</i> Régimbart, 1906				●		
11	<i>Copelatus gestroi</i> (Sharp, 1882)	●●		●	●		
12	<i>Copelatus pulchellus</i> (Klug, 1834)			●	●		
13	<i>Cybister (Cybister) cephalotes</i> Sharp, 1882			●	●		
14	<i>Cybister (Cybister) crassipes</i> Sharp, 1882			●			
15	<i>Cybister (Cybister) tripunctatus africanus</i> Laporte, 1835	●●		●	●		
16	<i>Cybister (Cybister) tripunctatus lateralis</i> (Fabricius, 1798)	●●	●				
17	<i>Cybister (Melanectes) vulneratus</i> Klug, 1834	●●	●	●	●	●	
18	<i>Eretes griseus</i> Fabricius, 1781 ⁽¹⁾	●			●		
19	<i>Eretes sticticus</i> (Linnaeus, 1767)	●●	●	●	●		●
20	<i>Glareadessus stocki</i> Wewalka & Biström, 1998	●●	●				
21	<i>Hydaticus (Prodaticus) africanus</i> (Rocchi, 1976)	●		●	●		
22	<i>Hydaticus (Prodaticus) arabicus</i> Guignot, 1951				●		
23	<i>Hydaticus (Prodaticus) decorus</i> Klug, 1834			●	●		
24	<i>Hydaticus (Prodaticus) dorsiger</i> Aubé, 1838			●	●		
25	<i>Hydaticus (Prodaticus) dregei</i> Aubé, 1838			●	●		
26	<i>Hydaticus (Prodaticus) flavolineatus</i> Boheman, 1848			●	●		
27	<i>Hydaticus (Prodaticus) histrio</i> Clark, 1864	●●	●	●	●		
28	<i>Hydaticus (Prodaticus) pictus</i> (Sharp, 1882)	●●	●	●			
29	<i>Hydaticus (Prodaticus) ponticus</i> Sharp, 1882			●			
30	<i>Hydaticus (Prodaticus) satoi dhofarensis</i> Pederzani, 2003	●					
31	<i>Hydaticus (Prodaticus) servillianus</i> Aubé, 1838	●●	●		●		
32	<i>Hydroglyphus angularis</i> (Klug, 1834)	●●	●	●	●		
33	<i>Hydroglyphus confusus</i> (Klug, 1834)	●		●	●		
34	<i>Hydroglyphus farquharensis</i> (Scott, 1912)	●●					
35	<i>Hydroglyphus geminus</i> (Fabricius, 1792)			●			
36	<i>Hydroglyphus gujaratensis</i> (Vazirani, 1973)	●					
37	<i>Hydroglyphus hormuzensis</i> Hájek & Brancucci, 2011	●●	●				
38	<i>Hydroglyphus infirmus</i> (Boheman, 1848)	●		●	●		
39	<i>Hydroglyphus major</i> (Sharp, 1882)	●		●	●		
40	<i>Hydroglyphus signatellus</i> (Klug, 1834)	●●	●	●	●		
41	<i>Hydroglyphus sinuspersicus</i> Hájek & Wewalka, 2009	●●	●				
42	<i>Hydroporus carli</i> Wewalka, 1992 ⁽²⁾				●		
43	<i>Hydrovarus aristidis</i> Leprieur, 1879			●			
44	<i>Hydrovatus acuminatus</i> Motschulsky, 1860	●		●	s		
45	<i>Hygrotus (Coelambus) confluens</i> (Fabricius, 1787)		●	●	●		
46	<i>Hygrotus (Hygrotus) guineensis</i> (Aubé, 1838)			●	●		
47	<i>Hygrotus (Hygrotus) musicus</i> (Klug, 1834)		●	●	●		
48	<i>Hygrotus (Hyphoporus) solieri</i> (Aubé, 1838)			●			
49	<i>Hygrotus (Leptolambus) inscriptus</i> (Sharp, 1882)	●	●	●			
50	<i>Hygrotus (Leptolambus) orthogrammus</i> (Sharp, 1882)			●			
51	<i>Hyphydrus pictus</i> Klug, 1834	●●	●	●	●		
52	<i>Laccophilus inobservatus</i> Biström, Nilsson & Bergsten, 2015				●		
53	<i>Laccophilus maindroni maindroni</i> Régimbart, 1897	●●	●				
54	<i>Laccophilus pictipennis</i> Sharp, 1882	●		●	●		
55	<i>Laccophilus poecilus</i> Klug, 1834			●			
56	<i>Laccophilus sharpi</i> Régimbart, 1889			●	●		

⁽¹⁾ *Eretes griseus* was recorded from Oman in NILSSON & HÁJEK (2018b), although we have not found precise records posterior to the revision by MILLER (2002).

⁽²⁾ Recorded from Oman (without detailed data) by SHAVERDO et al. (2008) as *Hydroporus inscitus* Sharp, 1882, although the specimens from Yemen (without any record from Oman) were described as *H. carli* by WEWALKA (1992).

No	species	Oman	UAE	S Arabia	Yemen	Bahrain	Qatar
57	<i>Laccophilus sordidus</i> Sharp, 1882			•	•		
58	<i>Laccophilus sublineatus</i> Sharp, 1882 ⁽³⁾			•	•		
59	<i>Methles cribratellus</i> (Fairmaire, 1880)			•			
60	<i>Nebrioporus banajai</i> (Brancucci, 1980)			•			
61	<i>Nebrioporus crotchi</i> (Preudhomme de Borre, 1871)			•			
62	<i>Nebrioporus insignis</i> (Klug, 1834)			•	•		
63	<i>Nebrioporus lanceolatus</i> (Walker, 1871)			•			
64	<i>Nebrioporus mascatensis</i> (Régimbart, 1897)	••	•				
65	<i>Nebrioporus millingeni</i> (J. Balfour-Browne, 1951)				•		
66	<i>Nebrioporus seriatus</i> (Sharp, 1882)			•	•		
67	<i>Rhantus includens</i> (Walker, 1871)			•	•		
68	<i>Rhantus suturalis</i> (W. S. Macleay, 1825)			•			
69	<i>Uvarus occultus</i> (Sharp, 1882)			•			
70	<i>Uvarus peringueyi</i> (Régimbart, 1895)				•		
71	<i>Yola bicristata</i> (Sharp, 1882)			•	•		
72	<i>Yola buettikeri</i> Brancucci, 1985			•	•		
73	<i>Yola darfurensis</i> J. Balfour-Browne, 1947				•		
74	<i>Yola enigmatica</i> Omer-Cooper, 1954			•	•		
75	<i>Yola porcata</i> (Klug, 1834)			•			
76	<i>Yolina insignis</i> (Sharp, 1882)	•		•	•		
Elmidae							
77	<i>Potamodytes subrotundatus</i> Pic, 1939		•	•	•		
78	<i>Stenelmis</i> spp.		•	•			
Georissidae							
79	<i>Georissus (Neogeorissus) chameleo</i> Fikáček & Trávniček, 2009	••	•				
Gyrinidae							
80	<i>Aulonogyrus (Afrogyrus) ater</i> Brinck, 1955				•		
81	<i>Aulonogyrus (Aulonogyrus) concinnus</i> Klug, 1834			•			
82	<i>Dineutus (Cyclous) aereus</i> (Klug, 1834)	••	•	•	•	•	
83	<i>Dineutus (Cyclous) arabicus</i> Régimbart, 1907				•		
84	<i>Dineutus (Cyclous) grandis</i> Klug, 1834			•	•		
85	<i>Dineutus (Cyclous) subspinosus</i> (Klug, 1834)	••					
86	<i>Gyrinus (Gyrinus) distinctus</i> Aubé, 1838		•				
87	<i>Gyrinus (Gyrinus) luctuosus</i> Régimbart, 1883			•	•		
88	<i>Gyrinus (Gyrinus) urinator</i> Illiger, 1807			•			
Haliplidae							
89	<i>Haliplus (Neohaliplus) lineatocollis</i> Marsham, 1802			•	•		
Helophoridae							
90	<i>Helophorus (Helophorus) syriacus</i> Kuwert, 1885			•			
91	<i>Helophorus (Rhopalohelophorus) angustatus</i> Motschulsky, 1860		•	•			
92	<i>Helophorus (Rhopalohelophorus) mervensis</i> A. P. Semenov, 1900			•	•		
Heteroceridae							
93	<i>Augyles flavidus</i> (Rossi, 1794)	••	•				
94	<i>Augyles turanicus</i> (Reitter, 1887)		•				
95	<i>Heterocerus harteni</i> Mascagni, 2009		•				
96	<i>Heterocerus magnus</i> Mamitza, 1933	••	•				
97	<i>Heterocerus mus</i> Charpentier, 1965		•				
Hydraenidae							
98	<i>Hydraena (Hydraena) gattolliati</i> Jäch & Delgado, 2010	••	•				
99	<i>Hydraena (Hydraena) naja</i> sp. nov.	••					
100	<i>Hydraena (Phoehydraena) putearius</i> Jäch & Díaz, 2000	••	•				
101	<i>Hydraena (Hydraenopsis) arabica</i> Balfour-Browne, 1951	•		•	•		
102	<i>Hydraena (Hydraenopsis) quadricollis</i> Wollaston, 1864	••					
103	<i>Limnebius (Bilimneus) arabicus</i> Balfour-Browne, 1951				•		
104	<i>Limnebius (Bilimneus) fontinalis</i> Balfour-Browne, 1951			•	•		
105	<i>Limnebius (Bilimneus) pararabicus</i> Jäch & Delgado, 2010		•				
106	<i>Limnebius (Bilimneus) wewalkai</i> Jäch & Delgado, 2010	••	•				
107	<i>Ochthebius (Ochthebius) alhajarensis</i> sp. nov.	••					
108	<i>Ochthebius (Ochthebius) andraei andraei</i> Breit, 1920			•			
109	<i>Ochthebius (Ochthebius) arabicus</i> Jäch, 1992			•			
110	<i>Ochthebius (Ochthebius) bernard</i> sp. nov.	••					
111	<i>Ochthebius (Ochthebius) burjkhalifa</i> Jäch & Delgado, 2014		•				

⁽³⁾ Recorded from Oman by BRANCUCCI (1983) without detailed data.

No	species	Oman	UAE	S Arabia	Yemen	Bahrain	Qatar
112	<i>Ochthebius (Ochthebius) cameroni</i> Balfour-Browne, 1951				•		
113	<i>Ochthebius (Ochthebius) despoliatus</i> Jäch & Delgado, 2014		•				
114	<i>Ochthebius (Ochthebius) harteni</i> Jäch & Delgado, 2010	••	•				
115	<i>Ochthebius (Ochthebius) innexus</i> Balfour-Browne, 1951			•	•		
116	<i>Ochthebius (Ochthebius) mahmoodi</i> Jäch & Delgado, 2014	••	•				
117	<i>Ochthebius (Ochthebius) meridionalis</i> Rey, 1885			•			
118	<i>Ochthebius (Ochthebius) micans</i> Balfour-Browne, 1951			•	•		
119	<i>Ochthebius (Ochthebius) monseti</i> Jäch & Delgado, 2010	••	•				
120	<i>Ochthebius (Ochthebius) patergazellae</i> Jäch & Delgado, 2010		•				
121	<i>Ochthebius (Ochthebius) quadrioveolatus</i> Wollaston, 1854			•			
122	<i>Ochthebius (Ochthebius) ragusae</i> Kuwert, 1887			•			
123	<i>Ochthebius (Ochthebius) thermalis</i> Janssens, 1965			•			
124	<i>Ochthebius (Ochthebius) wurayah</i> Jäch & Delgado, 2010	••	•				
125	<i>Ochthebius (Ochthebius) zugmayeri</i> Kníž, 1909		•	•			
Hydrophilidae							
126	<i>Agraphydrus (Agraphydrus) elongatus</i> sp. nov.	••	••				
127	<i>Agraphydrus (Agraphydrus) minutissimus</i> (Kuwert, 1890)	••	•	•	•		
128	<i>Allocotocerus striatopunctatus</i> (Laporte, 1840)			•			
129	<i>Arabydrus gallagheri</i> Hebauer, 1997	••	•				
130	<i>Berosus (Berosus) fuscostriatus</i> Fairmaire, 1892	••	•	•	•		
131	<i>Berosus (Berosus) insolitus</i> d'Orchymont, 1937			•			
132	<i>Berosus (Berosus) nigriceps</i> (Fabricius, 1801)	••	•	•	•		
133	<i>Berosus (Berosus) problematicus</i> Schödl, 1993				•		
134	<i>Berosus (Berosus) pulchellus</i> W. S. Macleay, 1825			•			
135	<i>Berosus (Berosus) rubiginosus</i> Kuwert, 1890	••	•	•	•		
136	<i>Berosus (Enoplurus) chinensis</i> Knisch, 1922		•				
137	<i>Cercyon (Cercyon) deserticola</i> Fikáček, Gentili & Short, 2010		•				
138	<i>Cercyon (Cercyon) nigriceps</i> Marsham, 1802			•	•		
139	<i>Cercyon (Cercyon) quisquilius</i> (Linnaeus, 1760)		•	•			
140	<i>Cercyon (Clynocercion) lineolatus</i> Motschulsky, 1863		•				
141	<i>Cercyon (Paracycreon) subsolanus</i> Balfour-Browne, 1939			•			
142	<i>Coelostoma (Holocoelostoma) stultum</i> (Walker, 1858)	••	•	•	•		
143	<i>Coelostoma (Lachnocoelostoma) horni</i> (Régimbart, 1902)	•		•	•		
144	<i>Coelostoma (Lachnocoelostoma) transcasicum</i> Reitter, 1906	••	•	•			
145	<i>Cryptopleurum ferrugineum</i> Motschulsky, 1863			•			
146	<i>Dactylosternum abdominale</i> (Fabricius, 1792)		•		•		
147	<i>Dactylosternum arabicum</i> Balfour-Browne, 1951				•		
148	<i>Emmidolium excavatum</i> d'Orchymont, 1937		•				
149	<i>Enochrus (Lumetus) ater</i> (Kuwert, 1888)	••		•			
150	<i>Enochrus (Lumetus) politus</i> (Küster, 1849)	••	•				
151	<i>Enochrus (Lumetus) cf. quadrinotatus</i> (Guillebeau, 1896)	••					
152	<i>Enochrus (Lumetus) segmentinotatus</i> Kuwert, 1888		•	•			
153	<i>Enochrus (Lumetus) sinuatus</i> d'Orchymont, 1937		•				
154	<i>Enochrus (Methydrus) circumductus</i> Régimbart, 1905				•		
155	<i>Enochrus (Methydrus) esuriens</i> Walker, 1858			•			
156	<i>Enochrus (Methydrus) hesperidum</i> Sharp, 1870			•	•		
157	<i>Enochrus (Methydrus) latus</i> Kuwert, 1888			•			
158	<i>Enochrus (Methydrus) cf. tetraspilus</i> Régimbart, 1903	••	•		•		
159	<i>Helochares (Helochares) pallens</i> W. S. Macleay, 1825			•	•		
160	<i>Helochares (Hydrobaticus) andreinii</i> d'Orchymont, 1939	•		•	•		
161	<i>Helochares (Hydrobaticus) crenulatooides</i> d'Orchymont, 1943	••	•				
162	<i>Hydrochara flavipalpis</i> (Boheman, 1851)	•		•	•		
163	<i>Hydrophilus (Hydrophilus) senegalensis</i> Percheron, 1835			•	•		
164	<i>Hydrophilus (Temnopterus) aculeatus</i> (Solier, 1834)	•		•	•		
165	<i>Laccobius (Cyclolaccobius) arabicus</i> Gentili, 1980			•	•		
166	<i>Laccobius (Dimorpholaccobius) eremita</i> Gentili, 1989			•			
167	<i>Laccobius (Hydroxenus) leucaspis</i> Kiesenwetter, 1870	••		•			
168	<i>Laccobius (Hydroxenus) subpictus erlangeri</i> Régimbart, 1905			•	•		
169	<i>Laccobius (Microlaccobius) algiricus</i> Hansen, 1999			•			
170	<i>Laccobius (Microlaccobius) eximius</i> Kuwert, 1890			•	•		
171	<i>Laccobius (Microlaccobius) harteni</i> Fikáček, Gentili & Short, 2010		•				
172	<i>Laccobius (Microlaccobius) minor</i> Wollaston, 1867			•	•		

No	species	Oman	UAE	S Arabia	Yemen	Bahrain	Qatar
173	<i>Laccobius (Microlaccobius) orsenigoii</i> Gentili, 1980	••	•				
174	<i>Laccobius (Microlaccobius) praecipuus</i> Kuwert, 1890	••	•	•	•		•
175	<i>Pachysternum brunneum</i> Balfour-Browne, 1951				•		
176	<i>Paracymus relaxus</i> Rey, 1884	••	•	•	•		
177	<i>Regimbartia attenuata</i> (Fabricius, 1801)	•	•		•		
178	<i>Sphaeridium caffrum</i> Laporte, 1840				•		
179	<i>Sphaeridium exile</i> Boheman, 1851				•		
180	<i>Sphaeridium quinque maculatum</i> Fabricius, 1798			•			
181	<i>Sphaeridium senegalense</i> Laporte, 1840				•		
182	<i>Sternolophus decens</i> Zaitzev, 1909	••	•	•	•		
183	<i>Sternolophus elongatus</i> Schaufuss, 1883			•	•		
184	<i>Sternolophus solieri</i> Laporte, 1840			•	•		
185	<i>Thysanarthria brittoni</i> Balfour-Browne, 1951				•		
186	<i>Thysanarthria wadicola</i> Fikáček & Liu, 2019	••	•				
Limnichidae							
187	<i>Byrrhinus helicophallus</i> Hernando & Ribera, 2014				•		
188	<i>Limnichus arabicus</i> Hernando & Ribera, 2014				•		
189	<i>Pelochares sabaeanus</i> Hernando & Ribera, 2014				•		
190	<i>Pelochares sinbad</i> Hernando & Ribera, 2014	••	•				
Noteridae							
191	<i>Canthydrus arabicus</i> Sharp, 1882			•			
192	<i>Canthydrus luctuosus</i> Aubé, 1838			•			
193	<i>Canthydrus notula</i> (Erichson, 1843)	•			•		
	Total number of species	73	67	116	99	2	2

Heterocerus magnus Mamitza, 1933

Published records. SKALICKÝ (2004, 2014).

Material examined. Loc. 1: 1 spec. (remains); Loc. 2: 1 spec.; Loc. 8: 3 spec.; Loc. 9: 6 spec. (plus larvae and pupae); Loc. 11: 4 spec. (plus 2 larvae); Loc. 12: 12 spec. (plus larva).

Limnichidae

Pelochares sinbad Hernando & Ribera, 2014

Published records. HERNANDO & RIBERA (2014).

Material examined. Loc. 2: 1 spec.; Loc. 8: 6 spec. (paratypes, one used for DNA extraction, voucher No. IBE-RA123); Loc. 10: 1 spec. (paratype); Loc. 11: 10 spec. (holotype, paratypes); Loc. 12: 12 spec. (paratypes); Loc. 14: 1 ♀.

Notes. The species was described with the specimens reported here and material from the UAE.

Discussion

With 73 recorded species (Table 2), the fauna of aquatic Coleoptera of Oman is relatively poor (a similar, or higher number could easily be collected in many single localities in the western Palaearctic, e.g. RIBERA & AGUILERA 1996), but it is similar to that of neighbouring areas (Table 2). Some families common in the Palaearctic are absent from Oman, although, at least for those present elsewhere in the Arabian Peninsula, there is the possibility that the absence is only due to lack of sampling. Thus, further explorations are likely to increase substantially the number of species known from Oman. Obvious candidates are species of some families still not recorded but present in neighbouring areas, such as e.g. Haliplidae, Helophoridae or Elmidae. *Haliplus lineatocollis* Marsham, 1802 has been recorded from Yemen and Saudi Arabia, several species of *Helophorus* Fabricius, 1775 are known from Yemen, Saudi Arabia and the United Arab Emi-

rates, and there is one Elmidae, *Potamodytes subrotundatus* Pic, 1939, also recorded from these three countries (JÄCH 1988, MASCAGNI 2009c, JÄCH et al. 2016; Table 2). Of other families there are no records in the Arabian Peninsula (e.g. Hydrochidae, Spercheidae), but their presence cannot yet be discarded.

Within Oman, the Al-Hajar mountains in the north have proved to be one of the richest areas, both in total number of species and in the number of endemics. This mountain range includes the highest peak in the country, the Jebel Al-Akhdar with just over 3,000 m. Although altitudinal gradients at this latitude are far less pronounced than in temperate areas, the presence of different types of permanent and temporary habitats, as well as the long-term isolation, are likely some of the reasons of its relative high diversity. As an example, in the source of the wadi Bani Awf (our locality No. 4) we found six species of Hydraenidae: three new to science, for which this is the type locality (*Hydraena naja* sp. nov., *Ochthebius alhajarensis* sp. nov. and *O. bernard* sp. nov.), and three endemic to Oman and UAE. (*H. putearius*, *H. gattolliati* and *O. wurayah*). The Al-Hajar mountains have been also recently identified as a centre of endemism for other groups, specially reptiles, mostly by the recognition of cryptic lineages (e.g. GARCIA-PORTA et al. 2017; MENDES et al. 2017). The aquatic beetle fauna of the Al-Hajar mountains has a predominantly Palaearctic origin, and seems to be closely related to the fauna of south Iran. Thus, two of the species newly described here and found only on these mountains are closely related to Iranian species (*H. naja* sp. nov. and *O. bernard* sp. nov.), although some of the lowland species with clear Ethiopian affinities can also be found at high altitude (e.g. *Hydroglyphus sinuspersicus* or *H. hormuzensis*). At lower altitudes the fauna is of a more varied origin, with some species of Palaearctic affinities but others within lineages of mostly tropical distribution.

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Table 3. Species found in the 14 sampled localities in north Oman (see Table 1 for details on the localities).

No	Species	Locality	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
1	<i>Dryops lutulentus</i>		•		•								•				3
2	<i>Copelatus antoniorum</i>							•									1
3	<i>Copelatus gestroi</i>					•	•	•									3
4	<i>Cybister vulneratus</i>									•							1
5	<i>Glareadessus stocki</i>			•			•	•		•	•			•			6
6	<i>Hydaticus histrio</i>				•			•		•	•						4
7	<i>Hydaticus pictus</i>							•	•								2
8	<i>Hydaticus servillianus</i>														•		1
9	<i>Hydroglyphus angularis</i>			•													1
10	<i>Hydroglyphus hormuzensis</i>				•					•							2
11	<i>Hydroglyphus signatellus</i>			•						•	•	•	•	•	•	•	8
12	<i>Hydroglyphus sinuspersicus</i>		•	•	•	•								•			5
13	<i>Hyphydrus pictus</i>		•		•		•				•						4
14	<i>Laccophilus maindroni maindroni</i>		•	•	•		•	•	•	•	•		•	•		•	11
15	<i>Nebrioporus mascatensis</i>				•	•	•	•	•	•							6
16	<i>Georissus chameleo</i>												•	•			2
17	<i>Dineutus aereus</i>							•		•		•	•				4
18	<i>Dineutus subspinosus</i>													•			1
19	<i>Augyles flavidus</i>										•						1
20	<i>Heterocerus magnus</i>		•	•						•	•		•	•			6
21	<i>Hydraena gattolliati</i>					•											1
22	<i>Hydraena naja</i> sp. nov.				•	•									•		3
23	<i>Hydraena quadricollis</i>		•	•	•			•	•								5
24	<i>Hydraena putearius</i>		•	•	•	•	•	•	•	•	•	•		•			11
25	<i>Limnebius wewalkai</i>			•			•	•	•	•	•		•	•			8
26	<i>Ochthebius alhajarensis</i> sp. nov.					•		•									2
27	<i>Ochthebius bernard</i> sp. nov.		•		•	•				•							4
28	<i>Ochthebius harteni</i>			•	•								•	•			4
29	<i>Ochthebius mahmoodi</i>									•				•			2
30	<i>Ochthebius monseti</i>											•	•				2
31	<i>Ochthebius wurayah</i>					•											1
32	<i>Agraphydrus elongatus</i> sp. nov.			•			•	•	•	•	•			•			7
33	<i>Agraphydrus minutissimus</i>									•							1
34	<i>Arabhydrus gallagheri</i>								•		•		•	•		•	5
35	<i>Berosus nigriceps</i>												•	•			1
36	<i>Berosus rubiginosus</i>			•	•		•						•	•			5
37	<i>Coelostoma stultum</i>														•		1
38	<i>Coelostoma transcaspicum</i>									•				•	•	•	4
39	<i>Enochrus ater</i>														•		1
40	<i>Enochrus politus</i>												•		•	•	3
41	<i>Enochrus tetraspilus</i>														•		1
42	<i>Helochaeres crenatuloides</i>		•	•													2
43	<i>Laccobius leucaspis</i>									•							1
44	<i>Laccobius orsenigoi</i>									•	•	•	•	•			5
45	<i>Laccobius praecipuus</i>		•	•	•		•	•		•	•	•	•	•		•	11
46	<i>Paracymus relaxus</i>														•		1
47	<i>Sternolophus decens</i>							•		•	•		•	•			5
48	<i>Thysanarthria wadicola</i>									•	•						2
49	<i>Pelochares sinbad</i>			•						•		•	•	•		•	6
Total number of species			9	15	13	9	10	15	8	22	15	7	15	20	9	7	

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