Order Coleoptera, family Hydrophilidae

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INTRODUCTION

The water scavenger beetles (family Hydrophilidae) are the largest group of the superfamily Hydrophiloidea, comprising about 2500 known species (Hansen, 1999; Short & Hebauer, 2006). The family is known among entomologists especially due to its aquatic representatives, which are often abundant in most kinds of stagnant waters, but also commonly inhabit streams, rivers and seepage habitats. Besides these aquatic species, the family also contains terrestrial taxa that inhabit mostly leaf litter and other kinds of decaying organic material. Within the Palaearctic region, most terrestrial species inhabit excrements of various herbivorous or omnivorous mammals (e.g. cows, goats, deer, bears etc.). Most aquatic species are classified in the subfamily Hydrophilinae and most terrestrial ones in the subfamily Sphaeridiinae, but there are many exceptions in both subfamilies. Adult beetles are mostly saprophagous, feeding on different kinds of decaying organic matter, whereas larvae are predaceous, preying on various invertebrates.

The latest studies on the hydrophilid fauna of the Arabian Peninsula were published by Gentili (1989) and Hebauer (1997), who examined a large amount of recently collected as well as historical specimens. These studies, along with an older study by Balfour-Browne (1951), provide a rather comprehensive summary of the Arabian hydrophilids. However, most of the material available came from Yemen and Saudi Arabia and only a limited material from Oman was examined. In consequence, the fauna of the north-eastern part of the peninsula remained nearly unknown. The survey of the invertebrates of the UAE conducted by Antonius van Harten provided, therefore, an opportunity to complete the knowledge on Arabian hydrophilids.

Up to now, 19 genera and 53 species of the Hydrophilidae were recorded from the Arabian Peninsula (Gentili, 1989; Hebauer, 1997). Twenty six hydrophilid species were recorded from the UAE during the mentioned survey; four of these species are recorded for the first time from the Arabian Peninsula (*Laccobius orsenigoi* Gentili, *Enochrus sinuatus* d'Orchymont, *Cercyon lineolatus* (Motschulsky), *Berosus chinensis* Knisch) and two species are described as new to science (*Laccobius harteni* nov. spec. and *Cercyon deserticola* nov. spec.). Brief diagnoses, notes on the biology and distribution and habitus photographs of the recorded species are provided. Except for the material from the UAE, additional records of *Thysanarthria* cf. *sulcata* (Chiesa) and *Laccobius orsenigoi* from Iran and Oman are provided.

In addition to the Hydrophilidae, representatives of the hydrophiloid families Helophoridae and Georissidae were recorded from the UAE during the mentioned survey. Results concerning these families have already been summarized in the previous volume by Fikáček (2009) and Fikáček & Trávníček (2009).

MATERIALS AND METHODS

The material presented within this study was divided between the co-authors according their taxonomic focus as follows: Martin Fikáček (*Thysanarthria*, *Paracymus*, *Arabhydrus*, Sphaeridiinae), Elio Gentili (*Laccobius*), Andrew Short (Berosini, Hydrophilini). A portion of specimens was dissected, with genitalia mounted on a plastic card below the beetle in water-

soluble dimethyl hydantoin resin (specimens dissected by M. Fikáček), on the same label as the beetle using the same resin (specimens dissected by E. Gentili) or left attached to the beetle (specimens identified by A. Short). Drawings of genitalia were traced from photographs of the microscopic slides prepared using a Nikon TS100 light microscope. Habitus photographs were prepared using Olympus Camedia C-5060 camera attached to an Olympus SZX9 binocular microscope. The nomenclature used, including the subdivisions into subgenera follows the world catalogue by Hansen (1999), morphological nomenclature largely follows Hansen (1991) with some modifications introduced by Komarek (2004).
Examined specimens are deposited in the following collections: National Museum, Praha, Czech Republic (NMPC, M. Fikáček); Division of Entomology, University of Kansas Natural History Museum, Lawrence, USA (KSEM, A. Short); Museo Civico di Storia Naturale, Verona, Italy (MSNV, L. Latella); United Arab Emirates Invertebrate Collection (UAEIC); Natural History Museum, London (BMNH, M. Barclay); Naturhistorisches Museum, Wien, Austria (NHMW, M.A. Jäch). A part of the material of abundant species is stored in alcohol in NMPC.
If not otherwise stated, specimens were collected by A. van Harten. Abbreviations used: LT = light trap, MT = Malaise trap, PT = pitfall trap, WT = water trap, NARC = National Avian Research Centre.

SYSTEMATIC ACCOUNT

Subfamily **Hydrophilinae** Latreille, 1802

Tribe **Berosini** Mulsant, 1844

Genus ***Berosus*** Leach, 1817
Representatives of the genus *Berosus* are mostly medium-sized, brownish beetles and may have darkened spots or maculae on their pronotum or elytra. They are elongate and strongly convex, making them relatively distinctive among the water scavenger beetle fauna of Arabian Peninsula; only *Regimbartia* is similar in body shape, but that genus is entirely black and more laterally compressed. They are strong swimmers, possessing long setae on their legs, and are often associated with standing waters or slow moving, marginal areas of streams or rivers. One of the largest genera of aquatic hydrophilids, there are more than 265 species found in all biogeographic regions (Hansen, 1999; Short & Hebauer, 2006). Seven species in two subgenera (*Enoplurus* and *Berosus* s. str.) are known from the Arabian Peninsula: *B.* (s. str.) *fuscostriatus* Fairmaire, 1892, *B.* (s. str.) *insolitus* Orchymont, 1937, *B.* (s. str.) *nigriceps* (Fabricius, 1801), *B.* (s. str.) *problematicus* Schödl, 1993, *B.* (s. str.) *pulchellus* McLeay, 1825, *B.* (s. str.) *rubiginosus* Kuwert, 1890 and *B.* (*Enoplurus*) cf. *asiaticus* Kuwert, 1888. Three of these species are recorded from the UAE, along with *B. chinensis* (which is recorded for the first time from the Arabian Peninsula), and a fifth, possibly undescribed species.

Berosus (s. str.) ***fuscostriatus*** Fairmaire, 1892 Plate 1
Specimens examined: Fujairah, 1♀, 28.ii–1.iv.2006, LT. Wadi Safad, 1♂, 2–26.i.2006, WT.
Differential diagnosis: This species may be distinguished by its very large size, lack of spinose or emarginated elytral apices, lack of markings on the pronotum, and a covering of rather coarse setae on the pronotum and elytra.
Biology: Aquatic species; UAE specimens were collected at light and in pan traps.

Distribution: An element of the North Africa and Arabian faunas, this species has been previously recorded from Djibouti, Mauritania, Oman, Saudi Arabia, Yemen, and Algeria (Hansen 1999). New to the UAE.

Berosus (s. str.) ***nigriceps*** (Fabricius, 1801) Plate 2

Specimens examined: Al-Ajban, 5♂, 10 ex., 28.xii.2005–29.i.2006, LT. Fujairah, 3 ex., 28.ii–1.iv.2006, LT; 3 ex., 15–22.iv.2006, LT. Sharjah Desert Park, 1♂, 18.i–25.ii.2006, LT. NARC, near Sweihan, 1 ex., 16.xi–21.xii.2005, LT. Wadi Safad, 1 ex., 2–26.i.2006, WT; 1 ex., 31.i–21.ii.2006, LT; 1 ex., 14–21.v.2006, LT. Wadi Wurayah, 1♂, 31 ex., 18–25.iii.2007, MT.

Differential diagnosis: This species is diagnosed by its comparatively small size, lack of markings on the pronotum, lack of spinose elytral apices, and a covering of hairs on its pronotum and elytra.

Biology: Aquatic species; most UAE specimens were collected at light.

Distribution: Widely distributed species occurring throughout Africa, from the southern Sahara (Chad, Mauritania, Niger, Sudan) to South Africa. Its range extends eastward through the Arabian Peninsula (Saudi Arabia, Oman, Yemen) into India and Bangladesh (Hebauer, 1997; Schödl 1993, 1994). New to the UAE.

Berosus (s. str.) ***rubiginosus*** Kuwert, 1890 Plate 3

Specimens examined: Hatta, 2 ex., 17–28.iii.2006, LT; 1 ex., 8–26.iv.2006, LT. Near Mahafiz, 15 ex., 21–28.viii.2006, LT. Sharjah-Khor Kalba, near tunnel, 1 ex., 24–30.v.2006, LT; 1 ex., 31.v–7.vi.2006, LT. Wadi Maidaq, 1 ex., 17–24.v.2006, LT; 8 ex., 1–8.vii.2006, LT. Wadi Safad, 2 ex., 17–24.vi.2006, LT; 7 ex., 1–8.vii.2006, LT.

Differential diagnosis: This smaller species may be distinguished by dark maculae in the center of the pronotum and on the elytra, coarse dorsal punctation, and its rather short-oval body form.

Biology: Aquatic species; all UAE specimens were collected at light.

Distribution: Primarily an Afrotropical species, this species has been previously recorded as far north as Oman and Saudi Arabia (Hebauer, 1997). New to the UAE.

Berosus* (*Enoplurus*) *chinensis Knisch, 1922

Specimens examined: Wadi Maidaq, 1♂, 17–24.v.2006, LT.

Differential diagnosis: This medium sized species may be distinguished by its spinose elytral apices (as in the following species), distinctly darkened punctation on the pronotal disc, inner elytral projections prolonged in both sexes and a characteristic tooth-like shape of the apical part of the median lobe in lateral view (see Schödl, 1991, 1992).

Remarks: Even through the only examined specimen is slightly teneral, it clearly corresponds with the specimens of *B. chinensis* from Iran identified by S. Schödl (deposited in NMPC).

Biology: An aquatic species; the only specimen examined was collected at light.

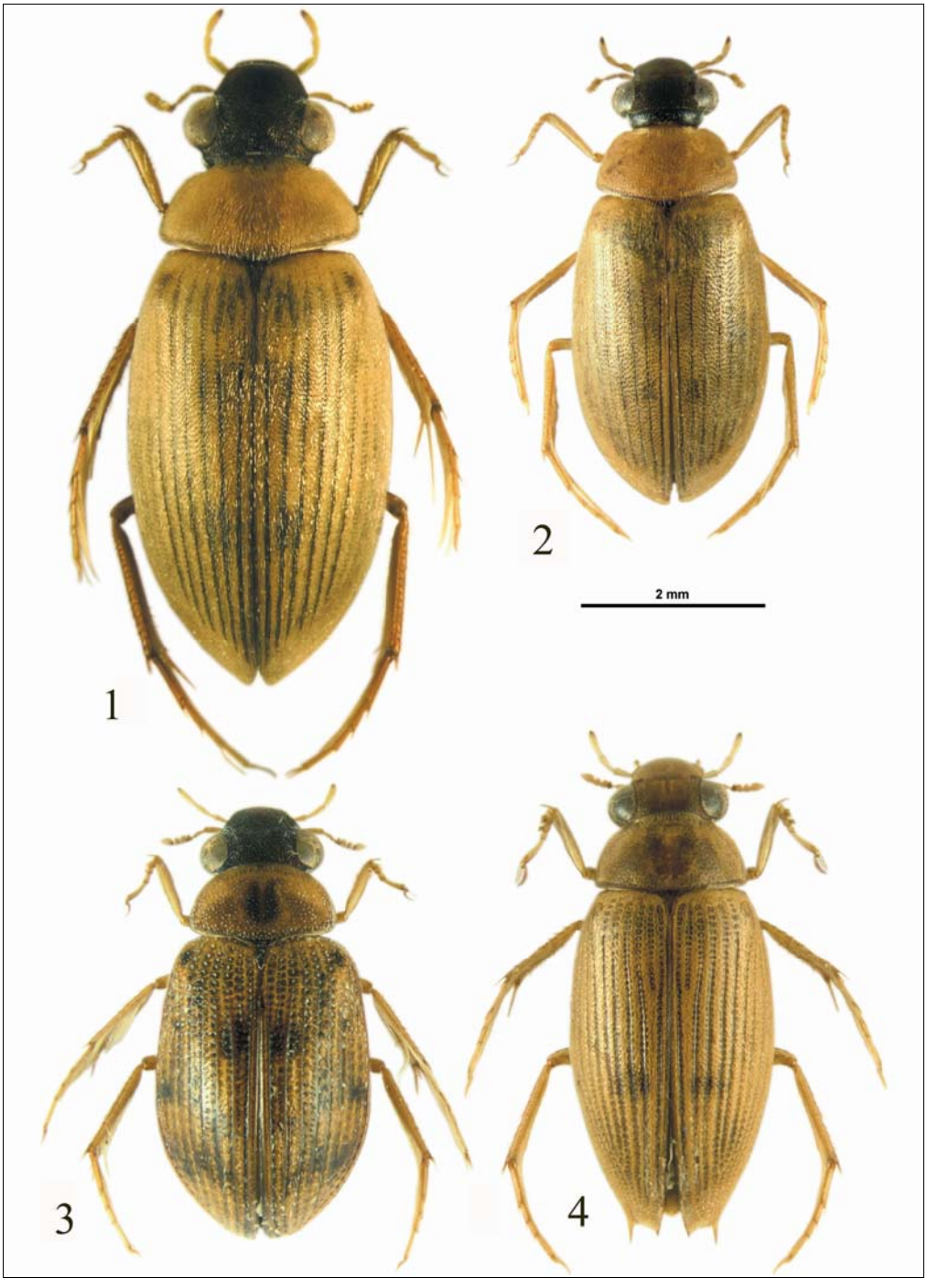
Distribution: Widely distributed species reaching from northern Arabian Peninsula and southern Iran through Pakistan, Nepal and northern India to the northeastern part of the Oriental region. The species is recorded here for the first time from the Arabian Peninsula.

***Berosus* (*Enoplurus*)** spec. Plate 4

Specimens examined: Wadi Safad, 1 ex., 2–26.i.2006, WT; 1 ex., 17–24.vi.2006, LT. Wadi Maidaq, 1 ex., 1–8.vii.2006, LT. Sharjah-Khor Kalba, near tunnel, 1 ex., 31.v–7.vi.2006, LT.

Differential diagnosis: This medium sized species may be distinguished by its spinose elytral apices, entirely pale pronotum, and the presence of multiple irregular rows of punctures on elytral interval 4.

Remarks: This species seems closely related to *B. chinensis* and allies, but the entirely pale



Plates 1–4. 1: *Berosus* (s. str.) *fuscostriatus* Fairmaire; 2: *Berosus* (s. str.) *nigriceps* (Fabricius); 3: *Berosus* (s. str.) *rubiginosus* Kuwert; 4: *Berosus* (*Enoplurus*) spec.

pronotum and slight differences in aedeagal shape do not allow us to make a positive identification at this time. It may represent an undescribed species.

Genus ***Regimbartia*** Zaitzev, 1908

Representatives of this genus are easily distinguished by their characteristic hump–backed, strongly convex and laterally compressed appearance in combination with their entirely black colouration. They are not easily confused with any other genus occurring on the Arabian Peninsula. There are currently ten described species occurring mostly in the Old World tropics (Hansen, 1999). Only a single species is known from the Arabian Peninsula, where it is here recorded from the UAE for the first time.

Regimbartia attenuata (Fabricius, 1801) Plate 5

Specimens examined: Hatta, 1♂, 4–11.iv.2006, LT.

Differential diagnosis: *Regimbartia attenuata* is the only species of the genus occurring in the Arabian Peninsula and cannot be therefore confused with any Arabian hydrophilid species (for details, see generic diagnosis above).

Biology: Aquatic species; UAE specimen was collected at light.

Distribution: Widely distributed species in the Old World, ranging from northern Australia and Japan westward to the Arabian Peninsula, where it has been previously recorded from Oman and Yemen (Balfour-Browne, 1951; Hebauer, 1997). New to the UAE.

Tribe **Chaetarthriini** Bedel, 1881

Genus ***Thysanarthria*** d'Orchymont, 1926

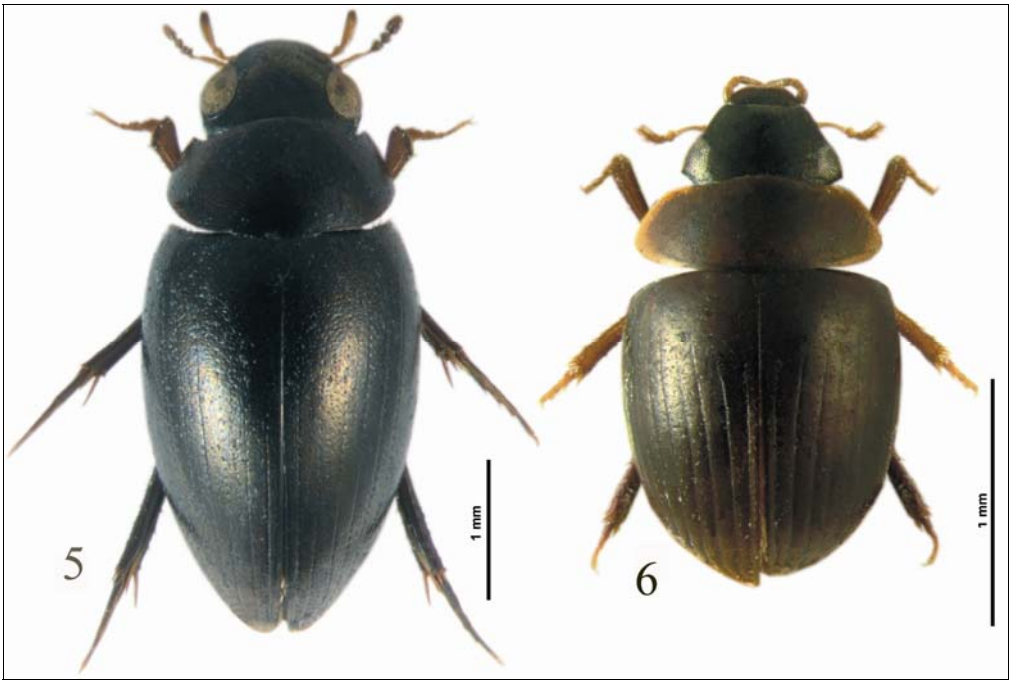
Representatives of this genus can be distinguished from remaining Arabian hydrophiloid genera by the fringe of long hairs covering the abdominal ventrite 1 and 2 (see Hansen (1987), Fig. 326, or Hansen (1991), Fig. 322) and elytra bearing 10 longitudinal striae. The genus comprises 10 species distributed from Africa through the Arabian Peninsula and central Asia to India and southeastern Asia (Hebauer, 2001). Two species, *T. brittoni* Balfour-Browne, 1951 and *T. sulcata* (Chiesa, 1967) were recorded from the Arabian Peninsula (Balfour-Browne, 1951; Hebauer, 1997).

Thysanarthria cf. ***sulcata*** (Chiesa, 1967) Plate 6

Specimens examined: Hatta, 1♀, 8–26.iv.2006, LT.

Additional specimens examined (not from the UAE): IRAN: Fars province, Aliabad, 75 km NW of Jahrom (locality no. 53), 1♂, 10.vii.1970, Expedition of the National Museum Prague, coll. NMPC. Sistan va Baluchestan province, 16 km SE of Tang-e-Sarkheh, 900 m a.s.l., locality no. 154, 1♂, 4 ex., 10.iv.1973, Expedition of the National Museum Prague, coll. NMPC.

Remarks: The taxonomy of the genus *Thysanarthria* is based nearly exclusively on the morphology of the male genitalia. Hebauer (2001) provides additional characters concerning body size, presence/absence of microsculpture on the pronotum and head, and general dorsal colouration. Based on the examined Iranian specimens, colouration seems to vary among specimens and is therefore only hardly usable for identification. Also male genitalia of the mentioned Iranian specimens vary slightly in precise shape of the parameres. Moreover, the genitalia of these specimens do not correspond with the drawing of the aedeagus of *T. sulcata* provided by Hebauer (2001) in some details, especially in the shape of the median lobe. Externally, the Iranian specimens correspond with the female from the UAE. Based on the known distribution of *T. sulcata* (see below), we consider the UAE as well as the Iranian



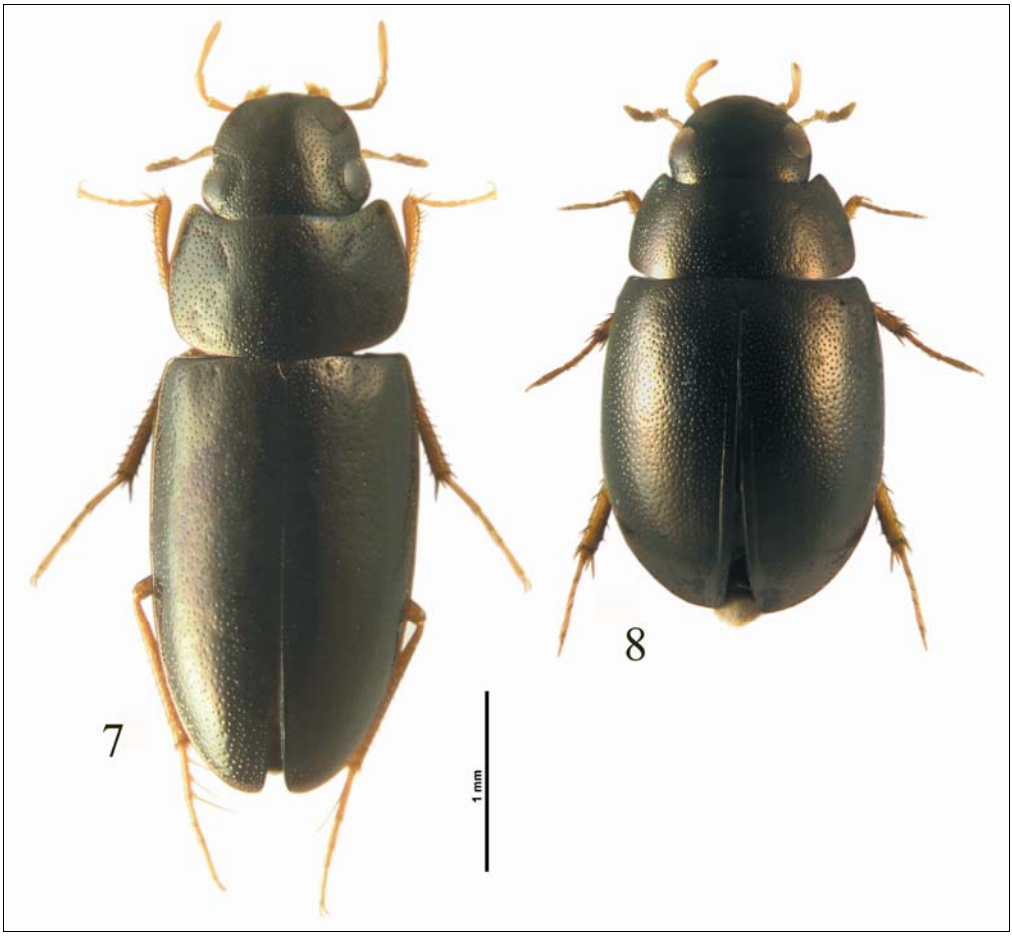
Plates 5–6. 5: *Regimbartia attenuata* (Fabricius); 6: *Thysanarthria* cf. *sulcata* (Chiesa) (specimen from Iran).

specimens to most probably represent this species, but our identification requires confirmation by the study of the type specimens.
Biology: Nothing is known about the biology of this species, the mentioned specimen from UAE was collected at light.
Distribution: *Thysanarthria sulcata* was described from north-eastern Afghanistan (Chiesa, 1967) and later recorded from eastern Oman by Hebauer (1997). The records presented here might be the first data on its occurrence in the UAE and in southern Iran.

Tribe **Laccobiini** Bertrand, 1954

Genus ***Arabhydrus*** Hebauer, 1997
Monotypic genus endemic to the northern part of the Arabian Peninsula, described and previously known only from Oman (Hebauer, 1997), in the present study it is recorded from the UAE for the first time.

Arabhydrus gallagheri Hebauer, 1997 Plate 7, Figures 12–13
Specimens examined: Hatta, 1 ex., 4–11.iv.2006, LT; 1♂, 8–26.iv.2006, LT; 1♀, 17–24.viii.2006, LT. Wadi Shawkah, 5 ex., 27.xi.2006, hand-collected, leg. J.-L. Gattolliat. Wadi Wurayah, 1♂, 1 ex., 4.xii.2006, in pool and stream, leg. J.-L.Gattolliat. Wadi Wurayah farm, 1 ex., 8–15.iii.2009, LT; 9 ex., 1–8.iv.2009, LT; 6 ex., 12–19.iv.2009, LT.
Note: Examined specimens were compared with the paratypes deposited in the collection of E. Gentili (to be deposited in MSNV). All specimens from the UAE available to us are



Plates 7–8. 7: *Arabhydrus gallagheri* Hebauer; 8: *Paracymus relaxus* Rey.

slightly smaller than those from the type series, but otherwise correspond with the latter both in external characters as well as the morphology of male genitalia (Figs. 12–13). The drawing of male genitalia published in the original description (Hebauer, 1997) differs considerably, but this seems to be caused by the fact that the aedeagus was probably drawn in a dried condition. Because of the strongly tri-dimensional shape of the median lobe, the apical toothlets illustrated in Figure 12 are less clear when the aedeagus is seen not precisely in ventral view.

Differential diagnosis: The genus and species is easily recognizable by its elongate body shape, black colouration, extremely long legs, elytra lacking sutural stria and longitudinal punctural series and abdomen with 6 ventrites. From other Arabian hydrophilids, it slightly reminds only the genus *Paracymus* based on its general habitus. However, *Paracymus* differs from *Arabhydrus* e.g. by elytra with sutural stria, abdomen with only 5 ventrites, and totally different morphology of male genitalia.

Biology: Part of the specimens examined were collected in the stream in desert wadis, remaining specimens were collected at light. Presence of swimming hairs on the meso- and metatibiae and tarsi suggest that it is an active swimmer.
Distribution: The species is endemic to northern part of the Arabian Peninsula, where it occurs in Oman and the UAE.

Genus ***Laccobius*** Erichson, 1837
Arabian representatives of the genus *Laccobius* are rather uniform in general habitus and can be easily distinguished from remaining hydrophilid genera occurring in the Arabian Peninsula by the combination of abdomen with 6 ventrites, curved posterior tibiae, and short maxillary palpi. Most Arabian species can be moreover recognized by a characteristic colouration (head dark, sometimes with pale spots anterior of eyes; pronotum yellow with dark central spot; elytra yellowish with darker spots arranged in longitudinal stripes (this colouration is not developed in *L. eximius* Kuwert, 1890 (Plate 11) and *L. arabicus* Gentili, 1980); and by the elytron usually bearing more or less serially arranged punctures (serially arranged punctures are missing only in *L. arabicus*). The genus contains nearly 250 species distributed world–wide in standing as well as running waters or at hygropetric habitats. Seven species were recorded previously from the Arabian Peninsula: *L.* (*Cyclolaccobius*) *arabicus* Gentili, 1980, *L.* (*Dimorpholaccobius*) *eremita* Gentili, 1989, *L.* (*Hydroxenus*) *leucaspis* Kiesenwetter, 1870, *L.* (*M.*) *subpictus erlangeri* (Régimbart, 1905), *L.* (*Microlaccobius*) *eximius* Kuwert, 1890, *L.* (*M.*) *minor* (Wollaston, 1867), and *L.* (*M.*) *praecipuus* Kuwert, 1890. Two addtional species are known from the Sinai Peninsula (*L.* (*Dimorpholacciobus*) *syriacus* Guillebeau, 1896, and *L.* (*Microlaccobius*) *hebaueri* Gentili, 1989) (Gentili, 1989; Hebauer, 1997). The present study adds two further species for the Arabian Peninsula: *L.* (*Microlaccobius*) *orsenigoi* Gentili, 1980, and *L.* (*M.*) *harteni* nov. spec.

Laccobius* (*Microlaccobius*) *harteni Fikáček, Gentili & Short **nov. spec.**

Plate 10, Figures16–18

Specimens examined: Holotype: ♂, Bithnah, 25°11'N 56°14'E, 31.xii.2005–2.ii.2006, in light–trap, leg. A. van Harten, coll. NMPC. Paratypes: 1♂, 1♀, Hatta, 22–29.i.2006, LT; 1♂, 1♀, 24–30.v.2006, LT. 1♀, Sharjah Desert Park, 25.ii.–25.iii.2006, LT; 1♀, 17.ii.–3.iii.2007, LT. 1♂, 2♀, Wadi Fara, al-Ghail env., 25°26'06"N 55°04'50"E, 266 m a.s.l., 17.iii.2007, leg. J. Batelka & H. Pinda. 2♂, 3♀, Wadi Hayl, 3.xii.2006, in water, leg. J.-L.Gattolliat. 1♀, Wadi Maidaq, 2–16.ii.2006, LT. 2♂, Wadi Safad, 31.i–21.ii.2006, LT; 7♂, 3♀, 14–21.v.2006, LT; 4♂, 3♀, 28.xi.2006, in stream, leg. J.–L. Gattolliat. 2♀, Wadi Shawkah, 27.xi.2006, hand-collected, leg. J.-L. Gattolliat. 4♂, 3♀, Wadi Wurayah, 4.xii.2006, in pool and stream, leg. J.–L.Gattolliat.
Differential diagnosis: The differential characters from similar two Arabian species of *Microlaccobius* Gentili, 1972 (*L. eximius* and *L. praecipuus*) are given in Table 1. From the remaining Arabian *Microlaccobius*, *L. harteni* can be distinguished by the morphology of the aedeagus: *L. hebaueri* can be distinguished by the median lobe completely divided into two halves in apical portion (median lobe is not divided apically in *L. harteni*, *L. praecipuus* and *L. eximius*), *L. orsenigoi* and *L. minor* can be distinguished by much larger, wider, shorter and more sclerotized median lobe.
Description: Body suboval, maximum width in anterior 0.35 of elytra; elytra narrowed posteriad, moderately convex. Length 2.10–2.70 mm (holotype: 2.60 mm); width 1.10–1.35 mm (holotype: 1.30 mm).
Colouration. Labrum, clypeus and frons blackish, pale preocular spots absent or very vaguely defined. Pronotum black mesally, yellowish anteriorly and laterally; black spot reaching anterior margin at least centrally. Elytra yellowish, with longitudinal black stripes

corresponding to punctural rows and disappearing near base, periphery and apical zone; shoulders with black callosity. Ventral side dark brown; trochanters and femoral bases brownish, more distal parts yellowish.

Head. Clypeus and frons with fine and unequal punctation, punctures irregularly spaced, interstices often 2–3× as wide as one puncture; interstices without microsculpture. Fronto-clypeal suture weakly visible. Clypeus larger than frons, maximum clypeal width / clypeal length ratio = 2.2; clypeus less punctate than frons. Ocular index (smallest distance between eyes / diameter of an eye in frontal view ratio) = 3.0; eyes very weakly constricted laterally by clypeus. Antennae with 8 antennomeres (scape, pedicel, 2 intermediate antennomeres, symmetrical cupule, club of 3 pubescent antennomeres of decreasing size). Maxillary palpus slender, palpomere 2 inflated, palpomere 4 without apical infuscation. Mentum nearly flat, micropunctured laterally, with sparse and rare punctures. Labial palpi slender, as long as maxillary palpomere 1. Labial palpomere 3 very small, palpomere 4 inflated.

Table 1: Characters separating *L. eximius*, *L. praecipuus* and *L. harteni* nov. spec. and the known distribution of these taxa in the Arabian Peninsula.

	L. eximius	***L. praecipuus***	***L. harteni***
Body size	2.8–3.0 mm	2.1–2.6 mm	2.1–2.7 mm
Dorsal colouration	nearly uniformly dark with reddish to blackish nuances (Plate 11)	clearly bicoloured, yellowish with dark spots (Plate 9)	clearly bicoloured, yellowish with dark spots (Plate 10)
Pale borders of pronotum	vaguely defined	well defined	well defined
Yellow stripes of elytra	scarcely visible	clearly visible, alternating with dark stripes	clearly visible, alternating with dark stripes
Preocular spots	absent	vaguely defined	absent or very vaguely defined
Length of phallobase / length of paramere	1.0	0.9	0.7
General shape of median lobe	wide, slightly widened ca. at midlength (Figs 7–9)	narrow, conical, gradually narrowing from base to apex (Figs 1–3)	wider, constricted in apical third, widely rounded apically (Figs 4–6)
Apical inflation of median lobe	absent	absent	present
Known distribution in Arabian Peninsula	Saudi Arabia (higher altitudes)	throughout Arabian Peninsula	UAE

Thorax: Punctation of pronotum as fine and sparse as on head; interstices without microsculpture. Scutellar shield black, with few very fine punctures. Elytron with 20 primary and secondary rows of punctures, primary rows more apparent, more regular and rich in

punctures; external secondary rows incomplete. Row punctures distinctly larger than pronotal punctures. Elytral margins sulciform, completely visible in dorsal view. Prosternum tectiform, carinate longitudinally before procoxae. Mesoventrite with transverse triangular projection. Metaventrite flat, smooth mesally. Anterior trochanters with hydrofuge pubescence.

Male genitalia (Figs 4–6): Aedeagus 0.57 mm long, slender, more than 3× as long as wide. Parameres 1.4× longer than phallobase. Median lobe slightly longer than parameres; base deeply excavated between basal apophyses, basal portion wide, narrowing to apical 0.33, basal 0.66 with narrow lateral projections, strongly curved dorsally; apical portion widened into rounded apex ventrally. Parameres enclosing base of median lobe, with outer margins nearly straight; inner margins straight, but diverging in a V-shape.

Biology: Examined specimens were partly collected at light, and partly in pools and streams.

Distribution: The species is so far known only from several localities situated in the north-eastern part of the UAE.

Etymology: The species is dedicated to Antonius van Harten, who led the whole project of the Arthropod inventory of the UAE and allowed us to study the hydrophilid material gained from this project.

Laccobius* (*Microlaccobius*) *orsenigoi Gentili, 1980 Plate 12, Figures 10–11

Specimens examined: Bithnah, 1♂, 31.xii.2005–2.ii.2006, LT; 1♀, 19.x.–16.xi.2006, MT. Fujairah, 1♂, 20–27.v.2006, LT. Hatta, 1♀, 24–30.v.2006, LT; 3♂, 1♀, 17–24.viii.2006, LT. Sharjah Desert Park, 1♀, 3–10.iii.2007, LT. Sharjah–Khor Kalba, near tunnel, 1♀, 31.v–7.vi.2006, LT. Wadi Fara, al Ghail env., 25°25'06"N 55°04'50"E, 266 m a.s.l., 1♂ 1♀, 28.ix.2007, leg. J. Batelka & H. Pinda. Wadi Maidaq, 1♂, 27.xi–22.xii.2005, LT. Wadi Safad, 2♂, 1♀, 2–26.i.2006, WT; 2♂, 31.i.–21.ii.2006, LT; 3♂, 1♀, 14–21.v.2006, LT; 9♂, 6♀, 28.xi.2006, in stream, leg. J.-L. Gattolliat. Wadi Shawkah, 4♀, 27–28.xi.2006, at light, leg. J.-L. Gattolliat.

Additional material examined (not from the UAE): IRAN: Hormozgan: Bandarabbas 110 km E Manujan, 1♂, 2♀, 2.vi.1974, at light, leg. G. Pretzmann, coll. NHMW, MSNV. OMAN: 40 km E Badiya, Wadi Bani Kalil, 4♂, 8♀, 19.ii.1998, leg. G. Wewalka, coll. NHMW, MSNV. Salalah, Wadis near Mughsayl, 1♀, 27.ii.1998, leg. G. Wewalka, coll. NHMW.

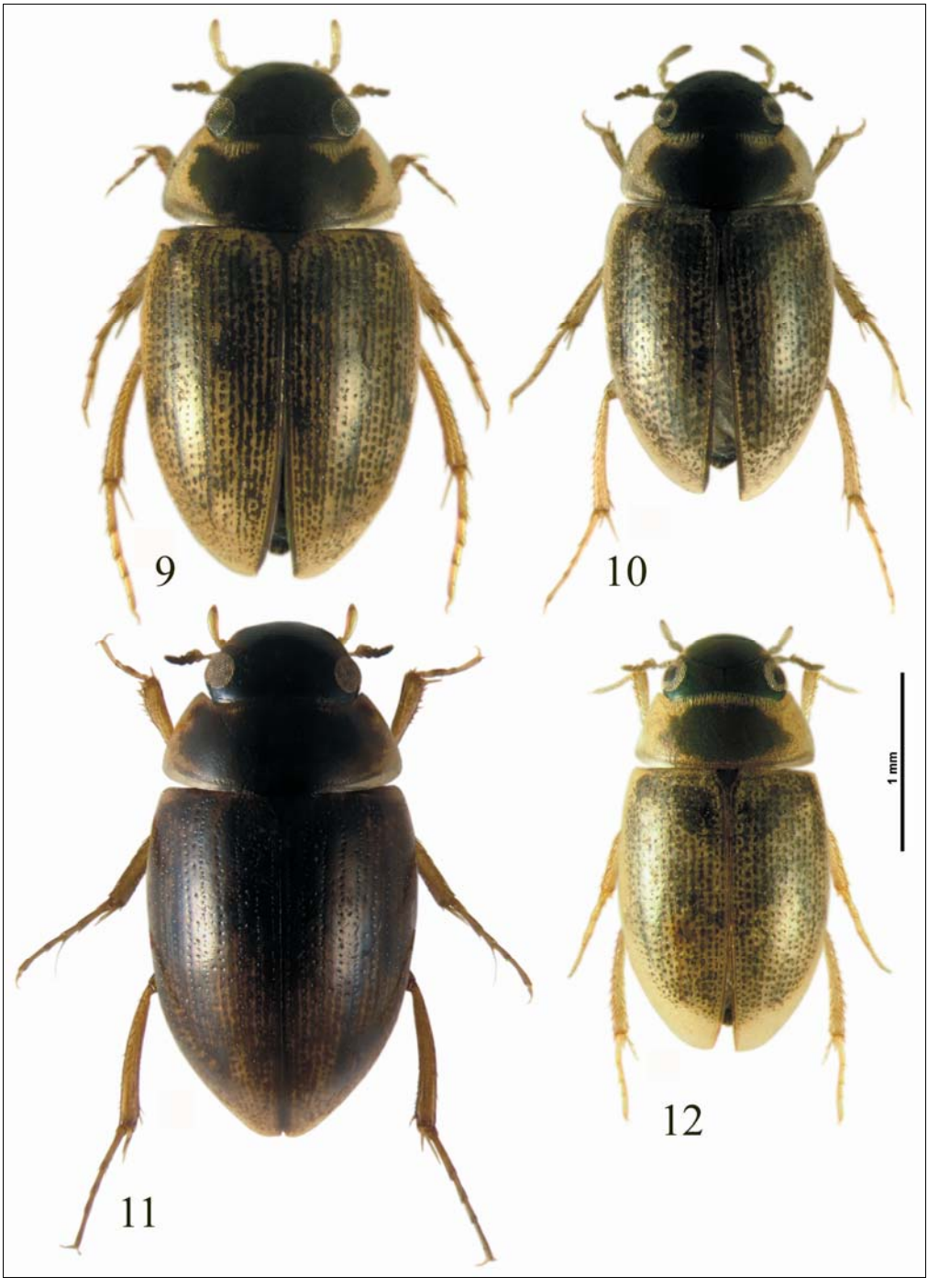
Differential diagnosis: Among the Arabian *Laccobius*, this species is easily recognizable according to its small body size (1.8–2.2 mm), shape of the dark spot on the pronotum (Plate 12) and the characteristic shape of the aedeagus (Figs 10–11).

Biology: As in *L. harteni*, examined specimens were partly captured at light and into white and yellow pan traps, part of the specimens was collected directly in various kinds of streams.

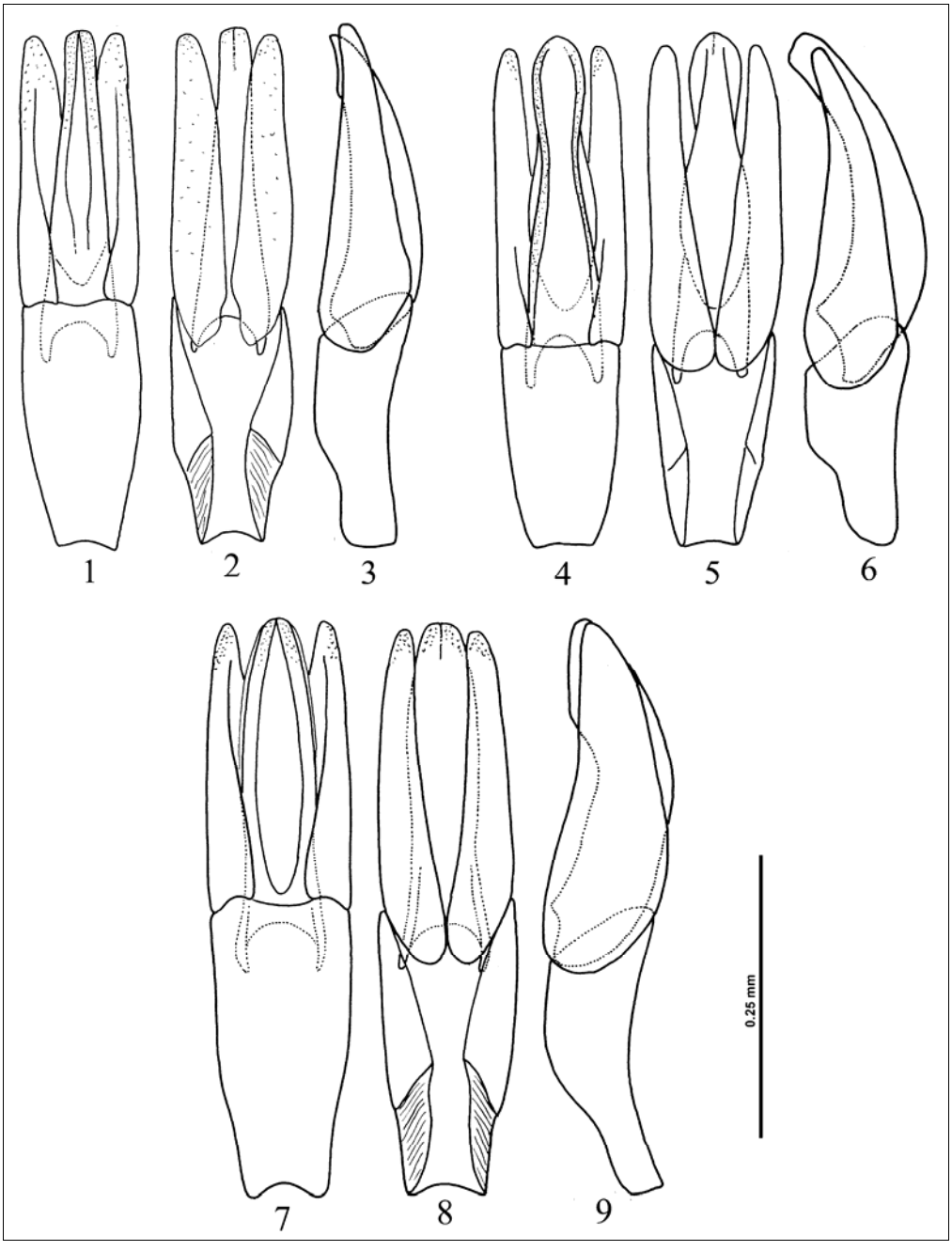
Distribution: The species was originally described from southern Iran (Sistan va Baluchestan province: Gentili, 1980) and additionally recorded from Iranian province of Hormozgan by Gentili (1982). Here we record this species for the first time from the Arabian Peninsula, where it occurs in its northernmost parts (UAE, Oman).

Laccobius* (*Microlaccobius*) *praecipuus Kuwert, 1890 Plate 9, Figures 1–3

Specimens examined: Al-Ajban, 3♂, 1♀, 9.xi–7.xii.2005, MT & LT; 4♂, 2♀, 28.xii.2005–29.i.2006, LT; 3♂, 6♀, 5–12.vi.2006, LT. Bithnah, 13♂, 12♀, 31.xii.2005–2.ii.2006, LT. Fujairah, 55♂, 38♀, 13.xi–10.xii.2005, LT; 10♂, 15♀, 28.ii–1.iv.2006, LT; 6♂, 9♀, 15–22.iv.2006, LT; 115♂, 73♀, 20–27.v.2006, LT; 3♂, 5♀, 28.xi.2006, in tank at farm, leg. J.-L. Gattolliat. Al-Hayl, 2♂, 2♀, 3.xii.2006, in water, leg. J.-L.Gattolliat. Hatta, 8♂, 12♀, 17–28.iii.2006, LT; 15♂, 6♀, 8–26.iv.2006, LT; 2♂, 1♀, 24–30.v.2006, LT; 3♂, 2♀, 17–24.viii.2006, LT. Near Mahafiz, 2♂, 3♀, 10–29.xii.2005, LT; 4♂, 11♀, 29.xii.2005–7.i.2006, LT; 1♂, 5♀, 24–30.v.2006, LT; 1♀, 21–28.viii.2006, LT. Sharjah Desert Park, 12♂, 16♀, 20.x.–8.xi.2005, LT; 20♂, 26♀, 13.xi.–11.xii.2005, LT; 26♂, 42♀, 18.i–25.ii.2006, LT; 48♂, 52♀, 25.ii–25.iii.2006, LT; 43♂, 57♀, 3–10.iii.2007, LT; 15♂, 17♀, 10–17.iii.2007, LT; 3♂, 2♀,



Plates 9–12. 9: *Laccobius praecipuus* Kuwert; 10: *Laccobius harteni* nov. spec.; 11: *Laccobius eximius* Kuwert (Saudi Arabia, Qarrah vill., Khamis Mt., 2000 m a.s.l.); 12: *Laccobius orsenigoi* Gentili.



Figures 1–9. Aedeagophores of *Laccobius* species. 1–3: *L. praecipuus* Kuwert; 4–6: *L. harteni* nov. spec.; 7–9: *L. eximius* Kuwert. (1, 4, 7: dorsal view; 2, 5, 8: ventral view; 3, 6, 9: lateral view).

17–24.iii.2007, LT. Sharjah-Khor Kalba, near tunnel, 8♂, 7♀, 24–30.v.2006, LT; 8♀, 31.v–7.vi.2006, LT. NARC, near Sweihan, 2♂, 1♀, 26.ii–2.iv.2006, LT. Wadi Bih Dam, 1♂, 22.ii.–1.iii.2007, LT. Wadi Maidaq, 9♂, 9♀, 27.xi–22.xii.2005, LT: 4♂, 11♀, 22.xii.2005–2.ii.2006, LT; 26♂, 16♀, 2–16.ii.2006, LT; 9♂, 11♀, 27.iv–4.v.2006, LT. Wadi Safad, 4♂, 4♀, 20.xii.2005–2.i.2006, LT; 2♂, 3♀, 2–26.i.2006, WT; 26♂, 18♀, 31.i–21.ii.2006, LT; 8♂, 1♀, 21.ii–4.iii.2006, LT; 2♂, 1♀, 14–21.v.2006, LT; 2♂, 17–24.vi.2006, LT. Wadi Shawkah, 1♂, 4♀, 27–28.xi.2006, at light and in pool, leg. J.-L. Gattolliat, coll. NMPC. Wadi Wurayah, 2♂, 1♀, 4.xii.2006, in pool and stream, leg. J.-L.Gattolliat; 3♂, 5♀, 18–25.iii.2007, MT.

Taxonomic remarks: The species concepts of *L. praecipuus* and related species *L. eximius* changed drastically during last decades and was not fixed until now. Based on the examination of the types deposited in the Oberthür collection in Museum of Natural History in Paris, Gentili & Chiesa (1975) considered *L. precipuus* originally as a subspecies of *L. gracilis*, whereas *L. eximius* was treated as a separate species based on its dark general colouration. Later, Gentili (1981) synonymized *L. eximius* with *L. gracilis* subsp. *praecipuus*. The same concept was followed by Gentili (1989), but the taxon was upgraded to the separate species *L. praecipuus*. In contrast, Hebauer (1997) restored *L. eximius* from synonymy, but virtually interchanged the original Gentili & Chiesa's (1975) concept of both taxa, mentioning that *L. eximius* is "easy to confuse with the dark or totally black sympatric species *L. praecipuus*". Hebauer (1997) also considered the distinguishing of both latter species by the morphology of male genitalia as difficult. The presented study revealed a third species similar to *L. eximius* and *L. praecipuus*, which is described above as *L. harteni* nov. spec. The detailed re-examination of male genitalia showed that all three taxa differ substantially in the morphology of the median lobe, concerning its ventral, lateral and dorsal aspects. Based on these differences, we consider *L. eximius*, *L. praecipuus* and *L. harteni* as well-defined separate species. However, a re-examination of type material is needed to confirm our application of species names of *L. eximius* and *L. praecipuus*. Because of the reconstruction of the Museum of Natural History in Paris, type specimens were not available to us at the moment. Therefore, we present here some diagnostic characters separating all three species occurring in the Arabian Peninsula, but their nomenclature has to be solved later.

Biology: Aquatic species; examined specimens were mostly collected at light.

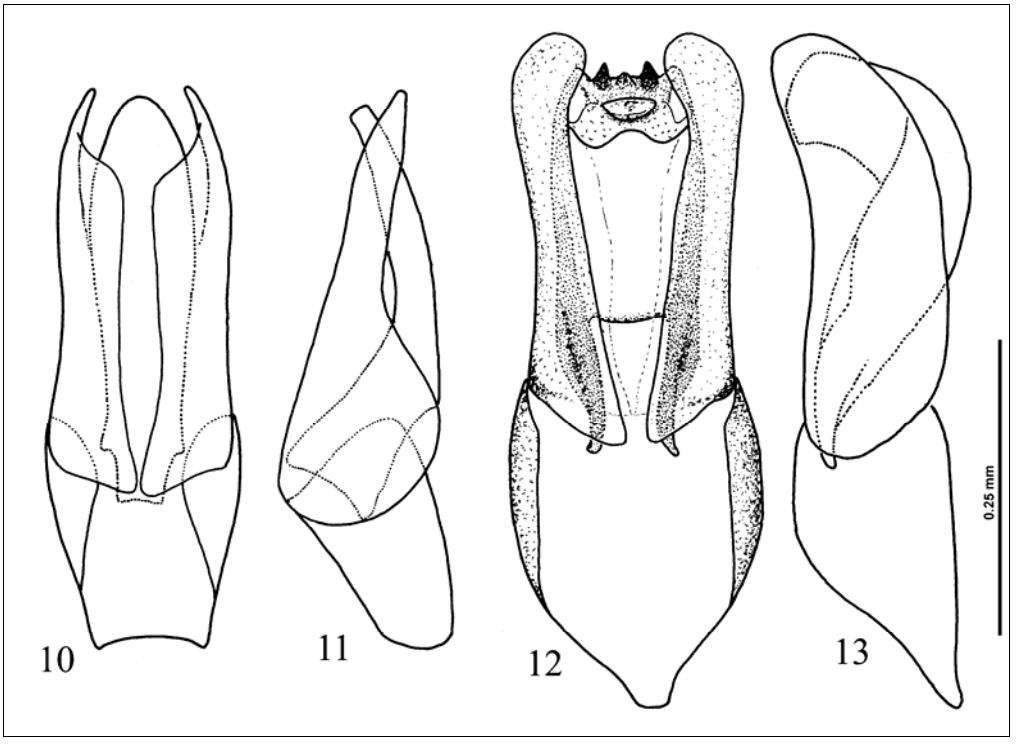
Distribution: Because of revised taxonomic status, the general distribution of *L. praecipuus* and *L eximius* has to be revised. In the Arabian Peninsula, *L. praecipuus* is widely distributed through most areas, but seems to be absent from higher altitudes, where it is replaced by *L. eximius*.

Genus ***Paracymus*** Thomson, 1867

The genus contains 81 small, rather uniformly looking species distributed world-wide. Only one species, *P. relaxus*, is known to occur in the Arabian Peninsula. This species is recorded by us also from the UAE. The genus was traditionally placed into the tribe Anacaenini. Based on a phylogenetic analysis of adult morphological characters, Komarek & Beutel (2007) showed that *Paracymus* does not belong to the Anacaenini and placed the genus into the tribe Laccobiini. However, the taxon sampling used by the latter authors was not adequate to decide about its phylogenetic position and some characters supporting this position were, moreover, misinterpreted (see e.g. Short, 2008). The phylogenetic position of *Paracymus* within the Hydrophilidae remains unclear.

Paracymus relaxus Rey, 1884 Plate 8

Specimens examined: Al-Ajban, 1♂, 2♀, 9.xi–7.xii.2005, MT & LT; 5 ex., 28.xii.2005–29.i.2006, LT; 4 ex., 2–9.iv.2006, LT; 82 ex., 6–22.v.2006, LT; 38 ex., 27.v–26.vi.2006, LT. NARC, near Sweihan, 1



Figures 10–13. Aedeagophores. 10–11: *Laccobius orsenigoi* Gentili; 12–13: *Arabhydrus gallagheri* Hebauer. (10, 12: ventral view; 11, 13: lateral view)

ex., 26.ii–2.iv.2006, LT. Wadi Safad, 1 ex., 2–26.i.2006, WT. Wadi Wurayah, 5♂, 44 ex., 18–25.iii.2007, MT.

Differential diagnosis: The species can be recognized from all other Arabian hydrophilids by its small body size (2.6–3.2 mm), uniformly dark dorsal colouration, dorsal side with sparse but coarse punctation, elytra with sutural stria but lacking punctural series and five abdominal ventrites. It may resemble dark-coloured *L. eximius*, from which it differs by last two mentioned characters, and to *Arabhydrus*, from which it differ by smaller and much wider body. Externally, the representatives of *Paracymus* are rather similar to the genus *Anacaena*, Thomson, 1859, which was, however, not recorded from the Arabian Peninsula so far.

Biology: The specimens examined were collected at light or using Malaise traps. The species is aquatic, occurring in various kinds of standing waters and at least in the European localities it seems to prefer the saline biotopes.

Distribution: *P. relaxus* is widely distributed from Canary Islands through the Mediterranean and Near East to Tadjikistan and Turkmenistan. In the Arabian Peninsula, it was recorded from Saudi Arabia (Hebauer, 1997) and Yemen (Balfour-Browne, 1951); here we provide the first records from the UAE.

Tribe **Hydrophilini** Latreille, 1802

Subtribe **Acidocerina** Zaitzev, 1908

Genus ***Agraphydrus*** Régimbart, 1903

Representatives of *Agraphydrus* are among the smallest members of the Hydrophilini, ranging from 1.5–3.0 mm. In addition to their relatively small size and often brownish colouration, they may be distinguished by the absence of elytral sutural striae and the relatively straight second maxillary palpomere. There are currently 17 described species in the genus, primarily from the Old World tropics. (Hansen, 1999), although many more species await description (Hebauer, pers. comm.). Only a single species is known from the Arabian Peninsula; here it is recorded from the UAE for the first time.

Agraphydrus minutissimus (Kuwert, 1890) Plate 13

Specimens examined: Bithnah, 1 ex., 2.ii–2.iii.2006, LT. Wadi Maidaq, 1 ex., 29.xi–22.xii.2005, LT. Wadi Safad, 2 ex., 21.ii–4.iii.2006, LT. Wadi Wurayah, 1 ex., 26.xi.2006, in water, leg. J.–L. Gattolliat.

Differential diagnosis: This relatively rare species may be distinguished from taxa in the subtribe by the combination of very small size, uniformly pale dorsal colouration, and all segments of the maxillary palps bowed inwards (the normal condition). It is most likely to be confused with *Enochrus*, particularly *E. tetraspilus*, but all members of this genus have the second maxillary palpomere bowed outward.

Biology: An aquatic species, four of the five UAE specimens were collected in light traps.

Distribution: Primarily an Arabian species, originally described from Syria and subsequently recorded from Saudi Arabia, Oman, and Yemen (Balfour–Browne, 1951; Hebauer, 1997).

Genus ***Enochrus*** Thomson, 1859

Representatives of this species–rich genus range in size and colour from small to medium, and pale brown to black. They may be distinguished by their distinctive outwardly-curved second maxillary palpomere. They also possess a sutural stria, whereas the genera *Helochares* and *Agraphydrus* do not, which most closely resemble this genus in the Middle East. There are presently slightly more than 200 described species in six subgenera in this large, cosmopolitan genus (Hansen, 1999; Short & Hebauer, 2006). A total of 11 species in two subgenera (*Methydrus* Rey, 1885, and *Lumetus* Zaitzev, 1908) are found in the Arabian Peninsula, with four species recorded here from the UAE.

Enochrus* (*Lumetus*) *politus (Küster, 1849) Plate 15

Specimens examined: Al-Ajban, 2 ex., 15–22.v.2006, LT; 3 ex., 5–12.vi.2006, LT; 5 ex., 19–26.vi.2006, LT; 1 ex., 26.vi–2.vii.2006, MT. Fujairah, 2 ex., 13.xi–10.xii.2005, LT; 6 ex., 28.ii–1.iv.2006, LT; 1 ex., 1–8.iv.2006, LT; 2 ex., 15–22.iv.2006, LT; 2 ex., 20–27.v.2006, LT. Hatta, 1 ex., 22–29.i.2006, LT; 1 ex., 8–26.iv.2006, LT; 1 ex., 24–30.v.2006, LT; 2 ex., 17–24.viii.2006, LT. Khor al–Khwair, 3 ex., 2–13.v.2007, LT. Near Mahafiz, 1 ex., 24–30.v.2006, LT. Sharjah Desert Park, 7 ex., 22.ii–9.iii.2005, LT; 13 ex., 21.iii–29.iii.2005, LT; 11 ex., 20.x–8.xi.2005, LT; 29 ex., 18.i–25.ii.2006, LT; 16 ex., 17.ii–3.iii.2007, LT; 38 ex., 3–10.iii.2007, LT; 28 ex., 10–17.iii.2007, LT; 12 ex., 17–24.iii.2007, LT; 5 ex., 24.iii–1.iv.2007, LT; 11 ex., 8–15.iv.2007, LT; 4 ex., 15–22.iv.2007, LT; 8 ex., 5–12.v.2007, LT; 14 ex., 20.x–24.xi.2007, LT; 1 ex., 24.xi–22.xii.2007, LT; 2 ex., 25.v–15.vii.2008, LT; 1 ex., 30.i–3.iii.2009, LT. NARC, near Sweihan, 1 ex., 30.i–26.ii.2006, LT; 1 ex., 26.ii–2.iv.2006, LT. Wadi Bih dam, 4 ex., 24.iv–1.v.2007, LT; 1 ex., 30.v–5.vi.2007, LT. Wadi Safad, 1 ex., 2–26.i.2006, WT; 1 ex., 31.i–21.ii.2006, LT; 1 ex., 21.ii–4.iii.2006, LT; 19 ex., 15–22.iv.2006, LT; 20 ex., 14–21.v.2006, LT; 1 ex., 17–24.vi.2006, LT. Wadi Siji, 5 ex., 24.ix–12.x.2006, WT. Wadi Wurayah, 1 ex., 18–25.iii.2007, MT.

Differential diagnosis: Among Arabian members of *Enochrus*, this species can be easily distinguished by its comparatively large size, very dark brown colouration, and lack of an emargination of the fifth ventrite.

Biology: An aquatic species. Almost all specimens from UAE were collected in light traps.

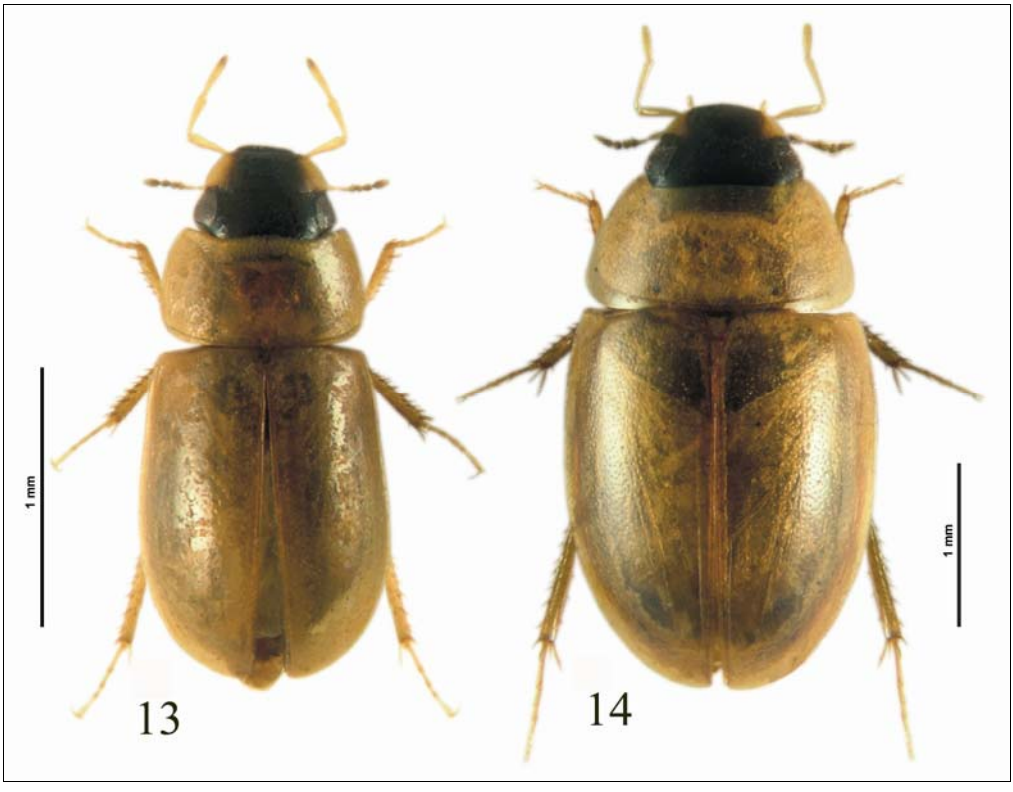
Distribution: A relatively common and widespread Mediterranean species recorded along southern Europe (Spain, Portugal, Italy), northern Africa (Algeria, Egypt, Morocco, Tunisia), and reaching the Middle East (Israel, Lebanon, Oman, Syria, Afghanistan). It is also known from the Canary Islands and Madeira.

Enochrus* (*Lumetus*) *segmentinotatus (Kuwert, 1888) Plate 16
Specimens examined: Al-Ajban, 7 ex., 28.xii.2005–29.i.2006, LT; 1 ex., 1.iv–2.v.2006, MT; 40 ex., 5–12.vi.2006, LT; 24 ex., 19–26.vi.2006, LT; 1 ex., 26.vi–2.vii.2006, MT. Near Mahafiz, 1 ex., 29.xii.2005–7.i.2006, LT. Sharjah Desert Park, 1 ex., 24.xi–22.xii.2007, LT. Wadi Safad, 1 ex., 27.xi–22.xii.2005, LT. Wadi Wurayah, 5 ex., 18–25.iii.2007, MT.
Differential diagnosis: Among the Arabian members of *Enochrus*, this species can be distinguished by its large size, light brown to yellow colouration, and lack of an emargination of the fifth ventrite.
Biology: Aquatic species; UAE specimens were collected at light and in Malaise traps.
Distribution: Broadly distributed in the Palaearctic region, including Saudi Arabia. Also known from Gambia (Schödl, 1998; Hansen, 1999).

Enochrus* (*Lumetus*) *sinuatus d'Orchymont, 1937 Plate 17
Specimens examined: Al-Ajban, 1 ex., 28.xii.2005–29.i.2006, LT; 1 ex., 26.ii–27.iii.2006, LT; 1 ex., 2–9.iv.2006, LT; 1 ex., 15–22.v.2006, LT; 23 ex., 5–12.vi.2006, LT; 1 ex., 19–26.vi.2006, LT. NARC, near Sweihan, 1 ex., 30.i–26.ii.2006, LT. Wadi Wurayah, 6 ex., 18–25.iii.2007, MT.
Differential diagnosis: In addition to its entirely pale coloured dorsum, *E. sinuatus* may be distinguished from other *Enochrus* species by its extremely long hind femora, which extend outward beyond the margin of the elytra when perpendicular to the body.
Biology: An aquatic species, almost all specimens from the UAE were collected in light traps.
Distribution: This species, rare in collections, was previously only known from Iran and Pakistan (Schödl 1998).

Enochrus* (*Methydrus*)** cf. ***tetraspilus (Regimbart, 1903) Plate 14
Specimens examined: Fujairah, 2 ex., 13.xi–10.xii.2005, LT. Sharjah Desert Park, 1 ex., 20.x–8.xi.2005, LT; 5 ex., 18.i–25.ii.2006, LT.
Differential diagnosis: As the smallest member (3.0–3.5 mm) of *Enochrus* recorded from the UAE, it is unlikely to be confused with other species recorded here.
Remarks: The examined specimens are very similar to *E. tetraspilus* in most characters (including size, colouration, and genitalia), but differ in that the abdominal emargination appears smaller, the ventral margin of the mesoventral keel is slightly more straight, the elytral ground punctation is more strongly impressed. Due to these differences, we refrain from making a positive identification at the present time.

Genus ***Helochares*** Mulsant, 1844
As with the genus *Enochrus*, representatives of this genus range in size and colour from small to medium and pale brown to black. They may be distinguished by their usually long, inwardly curving maxillary palps and lack of a sutural stria; other characteristics of this cosmopolitan genus vary widely among species. There are currently 173 described species distributed in five subgenera (Hansen, 1999; Short & Hebauer, 2006). Three of these are known from the Arabian Peninsula (Hebauer, 1997): *H.* (*Hydrobaticus*) *andreinii* d'Orchymont, 1939, *H.* (*Hydrobaticus*) *crenatuloides* d'Orchymont, 1943, and *H.* (s. str.) *pallens* (McLeay, 1825). Only *H. crenatuloides* is here recorded from the United Arab Emirates.



Plates 13–14. 13: *Agraphydrus minutissimus* Kuwert; 14: *Enochrus* cf. *tetraspilus* (Régimbart).

Helochares* (*Hydrobaticus*) *crenatuloides d'Orchymont, 1943 Plate 18

Specimens examined: Hatta, 1 ex., 24–30.v.2006, LT; 3 ex., 16–30.viii.2006, LT. Al-Hayl, 1 ex., 3.xii.2006, in water, leg. J.-L.Gattolliat. Near Mahafiz, 1 ex., 27.xi–1.xii.2005, PT & WT. Sharjah Desert Park, 2 ex., 25.ii–25.iii.2006, LT; 1 ex., 17.ii–3.iii.2007, LT; 1 ex., 24.iii–1.iv.2007, LT; 12 ex., 25.v–15.vii.2008, LT. Wadi Bih dam, 1♂, 19.ii–29.iii.2007, LT; 3 ex., 9–23.vii.2008, LT. Wadi Maidaq, 7 ex., 29.vii–26.viii.2006, MT. 1 ex., Wadi Safad, 17–24.vi.2006, LT.

Differential diagnosis: This species is diagnosed by the presence of coarse elytral punctures and the shape of the aedeagus (figured by d'Orchymont (1943)).

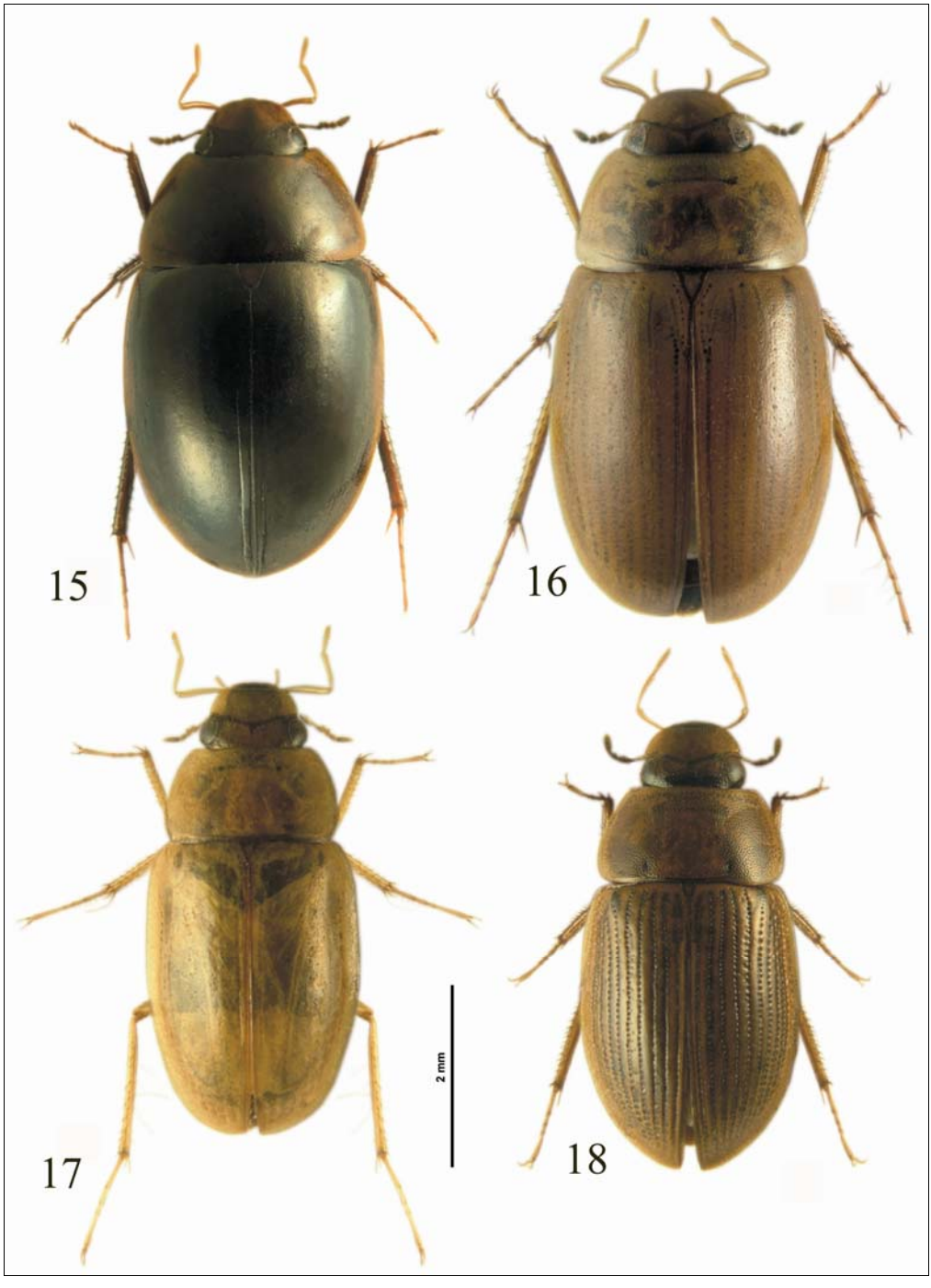
Biology: An aquatic species; UAE specimens were collected at light and Malaise traps.

Distribution: Previously only known from India and Oman (Hebauer, 1997; Hansen, 1999).

Subtribe **Hydrophilina** Latreille, 1802

Genus ***Sternolophus*** Solier, 1834

Representatives of this genus are relatively large, black, and possess a fused sternal keel along the centre of the meso- and metaventrites. They are not easily confused with any other hydrophilids known from the UAE, although two other large sternal-keel bearing hydrophilid genera (*Hydrophilus* Geoffroy, 1762, and *Hydrochara* Berthold, 1827) are known from the Arabian Peninsula; however, both these genera are larger (sometimes much larger) in body size. There are nine described species of *Sternolophus* distributed primarily in the Old World



Plates 15–18. 15: *Enochrus politus* (Küster); 16: *Enochrus segmentinotatus* (Kuwert); 17: *Enochrus sinuatus* d'Orchymont; 18: *Helochares crenatuloides* d'Orchymont.

tropics, although some extend into the southern and extreme eastern Palearctic Region (Hansen, 1999). *Sternolophus decens* Zaitzev, 1909, and *S. solieri* Castelnau, 1840, are known from the Arabian Peninsula, with the former recorded here from the UAE for the first time.

Sternolophus (s. str.) ***decens*** Zaitzev, 1909 Plate 19

Specimens examined: Fujairah, 2 ex., 20–27.v.2006, LT. Hatta, 1 ex., 17–28.iii.2006, LT. Near Mahafiz, 2 ex., 21–28.viii.2006, LT. Sharjah-Khor Kalba, near tunnel, 3 ex., 31.v–7.vi.2006, LT. Wadi Maidaq, 2 ex., 2–16.ii.2006, LT; 2 ex., 27.iv–4.v.2006, LT; 1 ex., 29.vii–26.viii.2006, MT. Wadi Safad, 1 ex., 2–26.i.2006, WT; 1 ex., 31.i–21.ii.2006, LT; 2 ex., 21.ii–4.iii.2006, LT. Wadi Wurayah farm, 1 ex., 15.i–22.ii.2009, LT.

Differential diagnosis: This species can be distinguished by the unicoloured metafemora, and the length of the sternal spine, which extends posteriorly over the abdomen to the anterior margin of the second ventrite.

Biology: An aquatic species; most specimens examined were collected at light.

Distribution: This species has previously been recorded from the Arabian Peninsula (Saudi Arabia, Oman, Yemen) as well as Iran and India (Balfour-Browne, 1951; Hebauer, 1997; Hansen, 1999).

Subfamily **Sphaeridiinae** Latreille, 1802

Tribe **Coelostomatini** Heyden, 1891

Genus ***Coelostoma*** Brullé, 1835

The representatives of the genus are easily recognizable according to the medium to large body size, black and rather convex body and the elytra lacking serial punctures or longitudinal striae except of sutural stria (Plates 21–22). Up to now, 104 species have been described from Afrotropical, Palaearctic and Oriental regions (Hansen, 1999; Short & Hebauer, 2006). Three species have been recorded from the Arabian Peninsula: *C. horni* (Régimbart, 1902), *C. stultum* (Walker, 1858) and *C. transcaspicum* Reitter, 1906. The two latter species are recorded here also for the UAE.

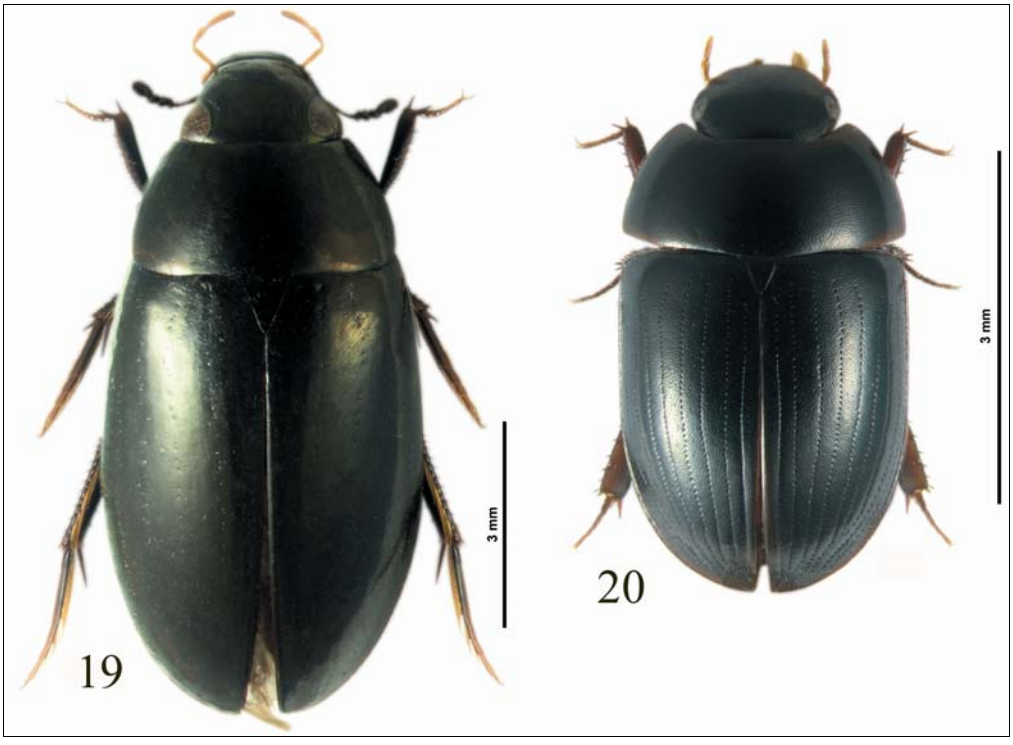
Coelostoma* (*Holocoelostoma*) *stultum (Walker, 1858) Plates 22–23

Specimens examined: Al-Ajban, 1♀, 19–26.vi.2006, LT. Fujairah, 1♂, 13.xi–10.xii.2005, LT; 1♂, 28 ex., 28.ii–1.iv.2006, LY; 4 ex., 1–8.iv.2006, LT; 6 ex., 15–22.iv.2006, LT; 11 ex., 20–27.v.2006, LT; 1 ex., 10–17.vi.2006, LT. Wadi Safad, 1 ex., 27.xi–20.xii.2005, LT; 1♂, 2 ex., 20.xii.2005–2.i.2006, LT.

Differential diagnosis: Easily recognizable from other Arabian *Coelostoma* species by the small body size (Plate 22), mesofemora lacking hydrofuge pubescence (i.e. covered only by sparsely distributed stiff setae) and small, wide aedeagus with simply rounded apex of the median lobe and the corona situated apically (Plate 23). In external habitus and body size, the species is very similar to *C. horni*. The latter species differs from *C. stultum* by trilobed apex of the median lobe (Plate 24) and mesofemora covered by dense hydrofuge pubescence.

Biology: Most specimens examined were collected at light; details on the bionomy are not available. The species is probably aquatic, similarly as many other species of the genus *Coelostoma*.

Distribution: Widely distributed Oriental species reaching from south-western Asia to Japan and South Korea and to Arabian Peninsula (Oman, Saudi Arabia, UAE). Eastwards, it reaches



Plates 19–20. 19: *Sternolophus decens* Zaitzev; 20: *Dactylosternum abdominale* Fabricius.

as far as to Sumbawa Island. It was also recorded from Andaman Islands, Nicobar Islands and Mascarene Islands (Hansen, 1999).

Coelostoma* (*Lachnocoelostoma*) *transcaspicum Reitter, 1906 Plates 21, 25

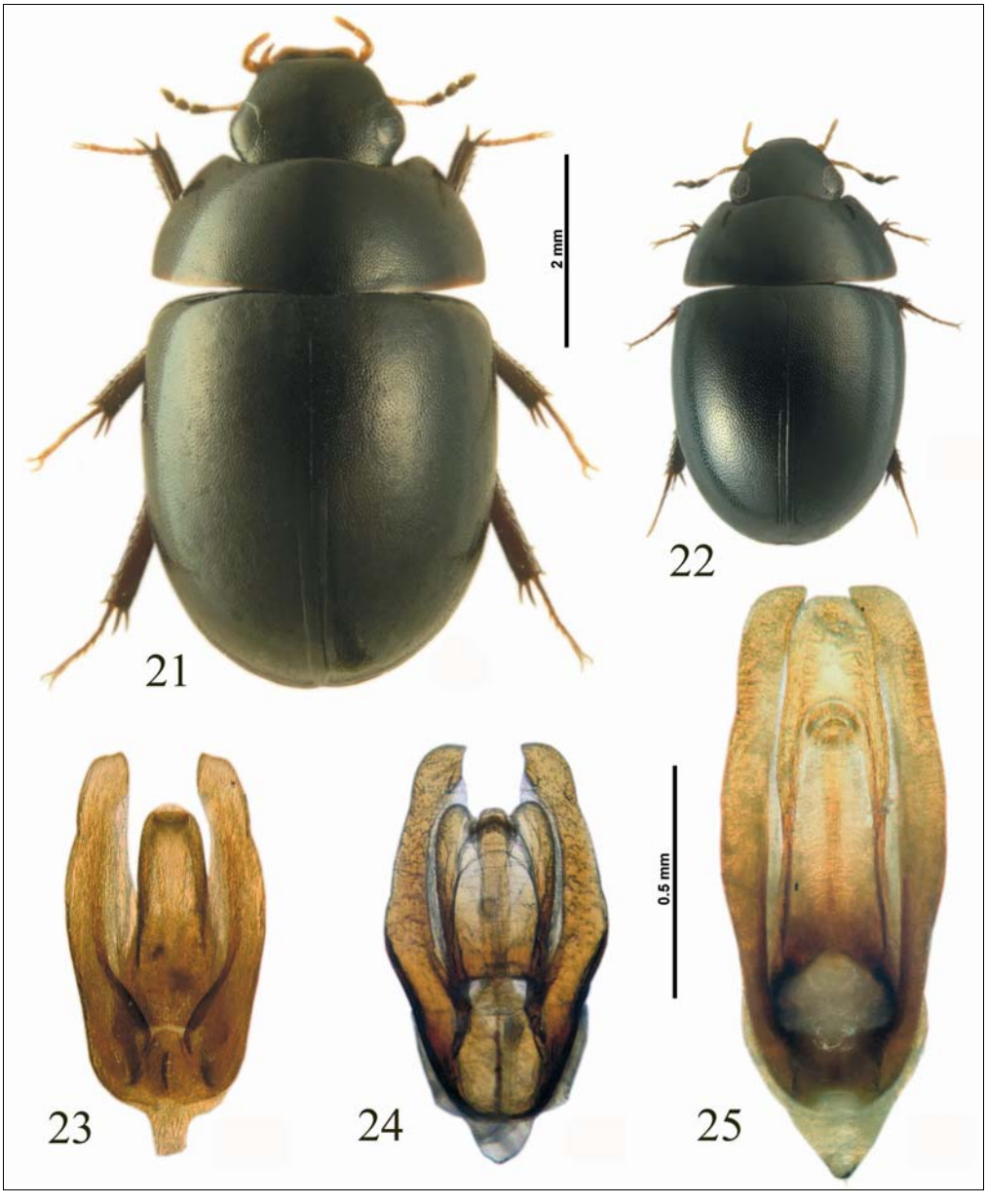
Specimens examined: Sharjah-Khor Kalba, near tunnel, 2 ex., 24–30.v.2006, LT. Wadi Maidaq, 1 ex., 27.iv–4.v.2006, LT. Wadi Safad, 1♀, 21.ii–4.iii.2006, LT. Wadi Shawkah, 1♂, 1 ex., 20.iii.2007, leg. J. Batelka. Wadi Wurayah, 1 ex., 26.xi.2006, in water, leg. J.-L. Gattolliat. Wadi Wurayah farm, 2 ex., 8–15.iii.2009, LT.

Differential diagnosis: The species is easily distinguishable from remaining Arabian *Coelostoma* species by considerably larger body (Plate 21) and narrow, elongate aedeagus with the median lobe simply rounded apically and the corona situated in apical 0.25 of the median lobe (Plate 25). From *C. stultum* it can be separated also by dense hydrofuge pubescence covering the anterior part of mesofemora.

Remarks: The identification was clarified by comparison with the type specimen housed in the d'Orchymont collection (Institut Royal des Sciences naturelles de Belgique, Brussels, Belgium).

Biology: Aquatic to hygropetric species. In Iran, the species occurs in the algae and rotting plant remains at the edges of streams (J. Hájek, pers. comm.), in Turkey it was recorded in hot springs (Mart et al., 2006). Most of the material from UAE was collected at light.

Distribution: Palaearctic species occurring from eastern Turkey through Iran to Tajikistan, Turkmenistan and Uzbekistan, southwards reaching northern part of the Arabian Peninsula



Plates 21–25. Arabian *Coelostoma*. 21, 25: *Coelostoma transcaspicum* Reitter; 22–23: *Coelostoma stultum* (Walker); 24: *Coelostoma horni* (Régimbart) (W Yemen, Jabal Bura, coll. NMPC). 21–22: Habitus; 23–25: Aedeagus.

(Oman, Saudi Arabia) (Hebauer, 1997; Hansen, 1999; Ryndevich, 2004; Mart et al., 2006). Records from Oriental region (China, Laos, Vietnam, peninsular Malaysia) are probably based on misidentification and need confirmation (Balfour-Browne, 1951).

Genus ***Dactylosternum*** Wollaston, 1854

The representatives of the genus can be recognized by the combination of the folowing characters: medium to large body size (over 5 mm), elytra bearing longitudinal striae, bases of antennae concealed under lateral parts of clypeus, and body colouration black. Up to now, 71 species have been described from all biogeographical regions. Three species have been recorded from the Arabian Peninsula: *D. abdominale* (Fabricius, 1792), *D. depressum* (Klug, 1833) and *D. arabicum* Balfour-Browne, 1951. One of these species is recorded here also from the UAE.

Dactylosternum abdominale (Fabricius, 1792) Plate 20

Specimens examined: Fujairah, 1♂, 1–8.iv.2006, LT.

Differential diagnosis: In contrast to *D. arabicum*, *D. abdominale* bears compact antennal club, carinate first abdominal ventrite and more depressed and parallel-sided body. In all these characters, *D. abdominale* agrees with *D. depressum*, from which it could be distinguished by smaller body size (3.8–5.0 mm), less impressed elytral series and characteristic aedeagus with apically widened parameres (Smetana, 1978, Fig. 22).

Biology: The species inhabit all kinds of decaying organic, especially plant matter. The records from the excrements are, however, very rare (Smetana, 1978).

Distribution: The species is widely distributed throughout the tropics and subtropics all over the world; rarely it also reaches the adjacent temperate areas (Smetana, 1978; Hansen, 1999).

Tribe **Megasternini** Mulsant, 1844

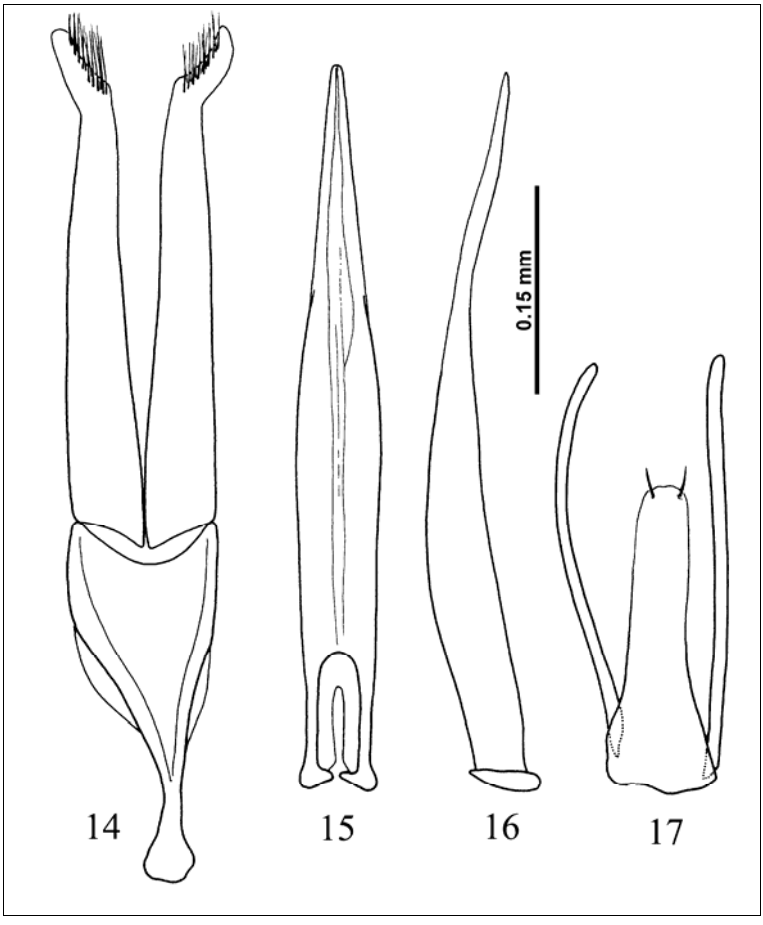
Genus ***Cercyon*** Leach, 1817

The representatives of the genus *Cercyon* are very variable in general habitus, but they can be easily distinguished from remaining megasternine genera occurring in the Arabian Peninsula (*Cryptopleurum* Mulsant, 1844, *Emmidolium* d'Orchymont, 1937, and *Pachysternum* Motschulsky, 1863) by pronotum without deep longitudinal impressions, antennal grooves not reaching the lateral margins of prothorax, and preepisternal elevation of mesothorax in form of narrowly elongate plate or sharp longitudinal keel (for further differential characters see Hansen (1991) and Fikáček & Boukal (2004)). More than 250 species of the genus are known from all zoogeographical regions (Hansen, 1999; Short & Hebauer, 2006). Hebauer (1997) recorded three species from the Arabian Peninsula (*Cercyon nigriceps* (Marsham, 1802), *C. quisquilius* (Linnaeus, 1761) and *C. subsolanus* Balfour-Browne, 1939) along with one unidentified species. In this paper, we recorded three species of *Cercyon* from the UAE, of which one is new to Arabian Peninsula and one is new to science.

Cercyon* (*Cercyon*) *deserticola Fikáček, Gentili & Short **nov. spec.**

Plates 26–29, Figures 14–17

Specimens examined: Holotype: ♂, Fujairah, 8.xii.2005–2.i.2006, light trap, leg. A. van Harten, coll. NMPC. Paratypes: 1♂, 1 ex., same data as holotype. 2♂, 6 ex., same locality but 13.xi–10.xii.2005, LT; 5♂, 40 ex., 28.ii–1.iv.2006, LT; 48 ex., 1–8.iv.2006, LT; 1♂, 28 ex., 8–29.iv.2006, LT; 1♂, 18 ex., 20–27.v.2006, LT; 1 ex., 10–17.vi.2006, LT. 6 ex., Bithnah, 31.xii.2005–2.ii.2006, LT; 1 ex., 4–26.iii.2006, LT. 5 ex., Hatta, 22–29.i.2006, LT; 14 ex., 30.i.–26.ii.2006, LT; 1♂, 21 ex., 4–26.iv.2006, LT; 1 ex., 17–24.v.2006, LT; 3 ex., 16–30.viii.2006, LT. 2♂, 2 ex., near Mahafiz, 10–29.xii.2005, LT; 5 ex., 29.xii.2005–7.i.2006, LT; 2 ex.., 2.ii–2.iii.2006, LT; 13 ex., 21–28.iii.2006, LT; 1 ex., 4–11.iv.2006, LT; 3 ex., 19–26.iv.2006, LT. 1 ex., Sharjah Desert Park, 21–29.iii.2005, LT; 4 ex., 18.i–25.ii.2006, LT; 1♂, 2 ex., 25.ii–25.iii.2006, LT; 1 ex., 21.xii.2006–23.i.2007, LT; 1 ex., 8–15.iv.2007, LT; 1 ex., 25.v–15.vii.2008, LT. 1 ex., Sharjah-Khor Kalba, near tunnel, 31.v–7.vi.2006, LT; 1 ex., 7–14.vi.2006, LT. 1



Figures 14–17. *Cercyon deserticola* nov. spec., male genitalia of the holotype. 14: Tegmen; 15: Median lobe, dorsal view; 16: Median lobe, lateral view; 17: Sternite 9.

ex., NARC, near Sweihan, 16.xi–21.xii.2005, LT. 2 ex., Wadi Bih dam, 19.ii–29.iii.2007, LT. 1♂, 3 ex., Wadi Maidaq, 27.xi–22.xii.2005, LT; 3 ex., 22.xii.2005–2.ii.2006, LT; 3 ex., 27.iv–4.v.2006, LT; 1 ex., 6–13.v.2006, LT. 1 ex., Wadi Safad, 31.i–21.ii.2006, LT; 1 ex., 21.ii–4.iii.2006, LT; 1 ex., 15–22.iv.2006, LT. 1 ex., Wadi Wurayah farm, 1–8.iv.2009, LT.

Differential diagnosis: *C. deserticola* can be distinguished from all *Cercyon* species known to us by the following combination of characters: body small (1.45–2.00 mm); elytra brown with pale apical portion (Plate 26); femoral lines present; preepisternal plate 2.2–3.8× longer than wide, with concave surface (Plates 27–28); apical portion of parameres membranous, everted laterad, bearing dense row of long setae (Fig. 14).

There are only few other *Cercyon* species characterized by small body size and presence of femoral lines, all of them classified into the *C. haemorrhoidalis* and *C. nigriceps* species groups (Balfour-Browne, 1958; Smetana, 1978): *C. pygmaeus* (Illiger, 1801), *C. nigriceps* (Marsham, 1802), *C. minax* Balfour-Browne, 1958 and two undescribed species from the Russian Far East and Cameroon (F. Hebauer, pers. comm.). All mentioned species except *C. pygmaeus* differ from *C. deserticola* by very narrow preepisternal plate (8–10× longer than

wide). *C. pygmaeus* also has slightly narrower preepisternal plate (3.9× longer than wide) and the plate is flat, without concave median part (in contrast, preepisternal plate is concave in *C. deserticola*).

In morphology of male genitalia, *C. deserticola* seems to be rather similar to *C. pygmaeus* and *C. terminatus* (Marsham, 1802) in possessing long, narrow parameres with row of long setae on apex and in posteriorly widened manubrium. However, median lobes of both these species are broader and bluntly rounded at apex and apices of parameres are not everted laterad. Genitalia of *C. nigriceps* also bear tuft of setae on apex of the paramere, and median lobe is of similar shape to that of *C. deserticola*. However, the manubrium is not widened posteriad and apices of parameres are not everted laterad.

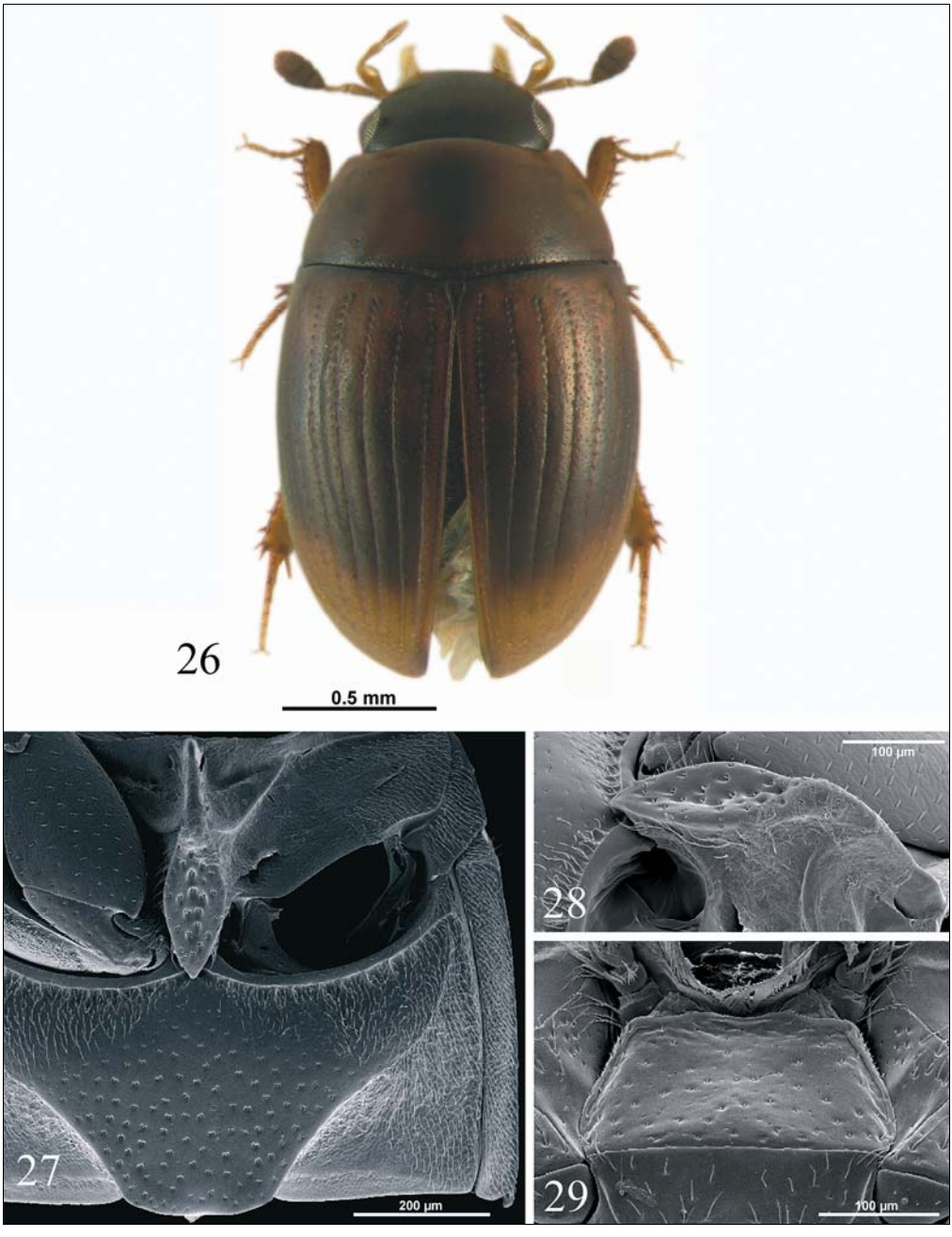
In addition to the mentioned species, *C. tachyorictidis* Jeannel & Paulian, 1945, described from the *Tachyoryctes* (Mammalia: Spalacidae) burrows in Ethiopia, seems to be rather similar to *C. deserticola*, even though it is not clear from the original description whether this species bears femoral lines of metaventrite. We had no opportunity to examine the type specimens of the latter species, but Jeannel & Paulian (1945) provided a detailed drawing of male genitalia in their description which disagrees with those of *C. deserticola* (apical portion of the paramere is not everted, bears only four setae on apex, median lobe is wider and manubrium of the phallobase is not widened posteriorly in *C. tachyoryctidis*).

Description: Body elongate oval, maximum width in anterior 0.4 of elytra; elytra narrowed posteriad, moderately and evenly convex in lateral view. Length 1.45–2.00 m (holotype 1.45 mm); width 0.90–1.20 mm (holotype 0.90 mm).

Colouration (Plate 26). Head dark brown to black; anterior margin of clypeus reddish. Pronotum rufotestaceous, with slightly darker median and posterolateral spots, lateral margins and anterolateral corner paler, yellowish. Elytra rufotestaceous, intervals 2–7 with slightly darker spot between in posterior 0.5; apical part of elytra with pale yellowish spot reaching posterior 0.15 on intervals 2–6 and posterior 0.35 on intervals 7–9; epipleuron pale, yellowish. Ventral side of prothorax reddish brown; head, meso- and metaventrite dark brown, median part of preepisternal plate reddish; abdominal ventrites dark brown with reddish posterior margins. Femora brown, tibiae, tarsi, antennae and mouthparts pale rufotestaceous.

Head. Clypeus with fine, not very dense punctation, punctures crescent-like; intervals without microsculpture; anterior margin straight, narrowly rimmed. Vertex with punctation similar to that on clypeus, punctures slightly larger, narrowly crescent-like; intervals without microsculpture. Eyes large, separated by 6× width of one eye. Mentum wider than long; anterior margin narrowly rimmed, slightly convex, with a very shallow emargination medially; surface with sparsely distributed, rounded punctures, interstices without microsculpture (Plate 29). Maxillary palpomere 2 as long as palpomere 4, swollen apically; palpomere 3 slightly shorter than palpomere 4; palpomere 4 spindle-like. Antenna with 9 antennomeres; scapus ca. as long as antennal club; antennomeres 2–6 combined ca. 0.5× as long as scapus; antennal club widely elongate oval, antennomere 9 blunt at apex, constricted subapically.

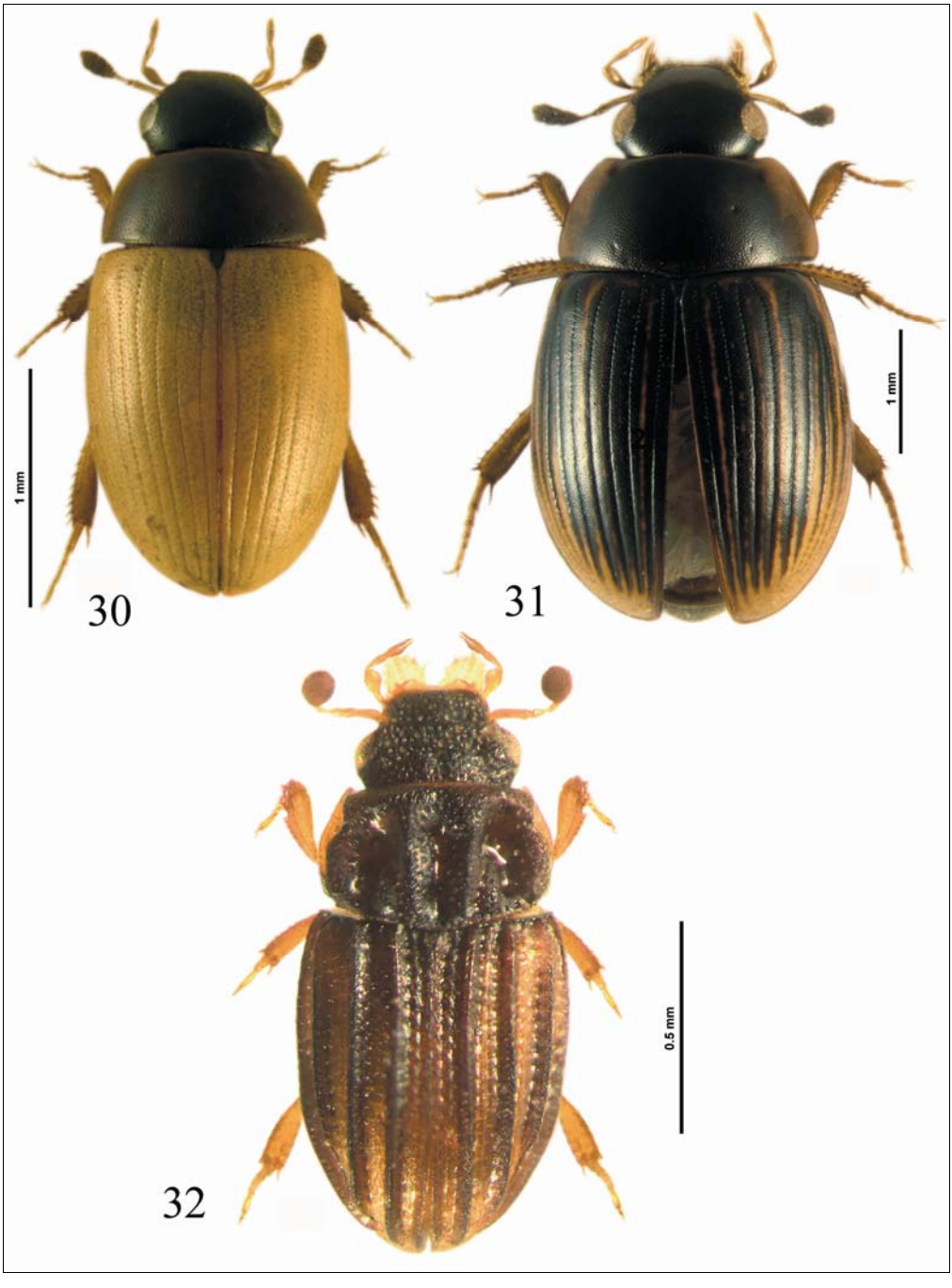
Prothorax. Pronotum arcuatelly narrowed anteriad, widest at posterior angles; lateral margins evenly rounded (as in *C. terminatus*; see Hansen (1987), Fig. 240), finely rimmed; punctation sparse, consisting of moderately sized, sharply impressed, narrowly crescent-like transverse punctures; intervals without microsculpture. Prosternum carinate medially, cut off (i.e. without notch) posteromedially; lateral portions indistinctly divided from mesal portion; mesal portion bearing sparse long setae. Antennal grooves well developed, rather large; hypomeron bearing sparse long setae.



Plates 26–29. *Cercyon deserticola* nov. spec. 26: General habitus; 27: Preepisternal plate and metaventrite, ventral view; 28: Preepisternal plate, ventrolateral view; 29: Mentum.

Mesothorax. Scutellar shield small, slightly longer than wide, bearing a few very fine punctures. Elytron with 10 punctural series (including sutural series); series 1–5 reaching elytral base, series 6, 7 and 10 arising subbasally, series 8–9 arising in anterior 0.15 of elytral length; series 2 and 9 joining at elytral apex, series 3 and 8 joining subapically, series 4 and 5 reaching apical 0.2, series 5 and 6 apical 0.3 of elytral length, series 10 reaching elytral midlength; series 1–9 finely impressed except for basal parts and portions at elytral apex, series 10 not impressed; serial punctures rounded, moderately large, sparsely distributed. Elytral intervals flat medially, becoming slightly convex laterad; interval punctation very fine and sparse; interstices without microsculpture. Epipleuron ca. as wide as pseudoepipleuron basally, narrowing posteriad to level of metathorax. Preepisternal plate 2.2× longer than wide, slightly overlapping anterior margin of metaventrite; surface concave, sparsely punctate, interstices without microsculpture. Grooves for reception of procoxae shallow.
Metathorax. Metaventrite with median elevated pentagonal portion lacking pubescence and microsculpture, bearing rather dense punctation consisting of moderately sized, slightly rasp-like punctures. Anterolateral ridges reaching anterolateral corner along the posterior margin of mesocoxal cavity. Femoral lines present, well distinct, almost reaching anterolateral corner of metaventrite. Anepisternum 3 narrow, 10× longer than wide.
Legs short, tibiae slightly longer than femora. Apex of anterior femur without cleft, outer margin with 6 stout and 2 fine setae. Protarsomeres 2 and 3 much longer and slightly thicker than remaining ones.
Abdomen. Abdominal ventrite 1 with strong median carina, anterior part of ventrite 1 with fine longitudinal ridges. Ventrites 2–5 smooth, without ridges.
Male genitalia (Figs 14–17). Parameres 1.5× longer than phallobase, only very slightly narrowing from base apicad; apical 0.15 membranous, everted laterad, with dense series of long setae on inner margin. Phallobase slightly asymmetrical, with rather long, posteriorly widened manubrium. Median lobe ca. 0.85× as long as parameres and phallobase combined; slightly widened from base to anterior 0.45, narrowed into long pointed apex more apically; Sternite 9 tongue-like, membranous in apical portion, bearing two small setae on apex.
Variability: Rather variable species, varies especially in colouration and shape of preepisternal plate. Preepisternal elevation of some specimens is narrower than described above, and in fact the length/width ratio varies between 2.2 and 3.8. Rarely, the preepisternal plate is flat or only very slightly concave. Colouration of the examined specimens if often paler than of Plate 26, with uniformly pale elytra and pronotum and slightly darker head or with pale elytra possessing indistinct darker spot at midlength. As many of the specimens examined could be at least slightly teneral (teneral specimens are mostly attracted at light in many Hydrophilidae, Fikáček, pers. observ.), it is difficult to assess whether the observed colour variation really represents normal variability. Male genitalia do not exhibit any significant differences in all specimens examined.
Biology: All specimens were collected in light traps in the desert areas from sea level to 450 m a.s.l. No more details are known about the biology of this species.
Distribution: The species is known only from several localities situated in north-eastern part of the UAE, where it seems to be quite common. A wider distribution (at least in Oman) can be expected.
Etymology: Derived from Latin ‘desertum’ (desert, wasteland) and ‘incola’ (inhabitant), standing as noun in apposition.

Cercyon* (*Cercyon*) *quisquilius (Linnaeus, 1761) Plate 30
Specimens examined: Al-Ajban, 2 ex., 9.xi–7.xii.2005, MT & LT; 20 ex., 28.xii.2005–29.i.2006, LT; 2 ex., 2–9.iv.2006, LT; 4 ex., 15–22.v.2006, LT; 15 ex., 5–12.vi.2006, LT. Bithnah, 36 ex., 31.xii.2005–



Plates 30–32. 30: *Cercyon quisquilius* Linnaeus; 31: *Cercyon lineolatus* (Motschulsky); 32: *Emmidolium excavatum* d'Orchymont.

2.ii.2006, LT. Fujairah, 9 ex., 13.xi–10.xii.2005, LT: 37 ex., 28.ii–1.iv.2006, LT; 10 ex., 1–8.iv.2006, LT; 24 ex., 8–29.iv.2006, LT; 26 ex., 20–27.v.2006, LT. Hatta, 73 ex., 22–29.i.2006, LT; 10 ex., 17–28.iii.2006, LT; 5 ex., 4–11.iv.2006, LT; 3 ex., 11–26.iv.2006, LT; 1 ex., 24–30.v.2006, LT; 2 ex., 16–30.viii.2006, LT. Near Mahafiz, 7 ex., 22–29.xii.2005, LT; 15 ex., 29.xii.2005–7.i.2006, LT; 1 ex., 2.ii–2.iii.2006, LT; 2 ex., 4–11.iv.2006, LT. Sharjah Desert Park, 6 ex., 22.ii–9.iii.2005, LT; 6 ex., 21–29.iii.2005, LT; 11 ex., 20.x–8.xi.2005, LT; 6 ex., 13.xi–11.xii.2005, LT; 20 ex., 18.i–25.ii.2006, LT; 26 ex., 25.ii–25.iii.2006, LT; 2 ex., 21.xii.2006–23.i.2007, LT; 15 ex., 17.ii–3.iii.2007, LT; 10 ex., 3–10.iii.2007, LT; 2 ex., 10–17.iii.2007, LT; 5 ex., 17–24.iii.2007, LT; 5 ex., 24.iii–1.iv.2007, LT; 6 ex., 8–15.iv.2007, LT; 3 ex., 20.x–24.xi.2007, LT; 1 ex., 24.xi–22.xii.2007, LT; 4 ex., 30.i–3.iii.2009, LT. NARC, near Sweihan, 4 ex., 16.xi–21.xii.2005, LT; 7 ex., 30.i–26.ii.2006, LT; 14 ex., 26.ii–2.iv.2006, LT. Wadi Bih dam, 9 ex., 19.ii–29.iii.2007, LT. Wadi Maidaq, 12 ex., 27.xi–22.xii.2005, LT; 2 ex., 22.xii.2005–2.ii.2006, LT; 8 ex., 2–16.ii.2006, LT; 1 ex., 27.iv–4.v.2006, LT; 1 ex., 1–8.vii.2006, LT. Wadi Safad, 27 ex., 27.xi–22.xii.2005, LT; 2 ex., 20.xii.2005–2.i.2006, LT; 2 ex., 31.i–21.ii.2006, LT; 2 ex., 21.ii–4.iii.2006, LT. Wadi Wurayah, 1 ex., 18–25.iii.2007, MT. Wadi Wurayah farm, 3 ex., 22.ii–2.iii.2009, LT; 1 ex., 15–30.iii.2009, LT.

Differential diagnosis: Easily distinguishable from other Arabian *Cercyon* by general colouration (pale elytra, black pronotum with widely pale lateral margins and black head, see Plate 30), absence of femoral lines on the metaventrite and preepisternal elevation of mesothorax in form of narrow plate. Body length 1.8–2.6 mm.

Biology: In Europe and North America, the species inhabits excrement of various herbivorous mammals (cows, horses, sheep) and frequently occurs also in various kinds of decaying organic matter (e.g. compost piles) (Smetana, 1978; Hansen, 1987; Boukal et al., 2008). All listed specimens from the UAE were collected at light.

Distribution: Widely distributed Palaearctic species introduced also to the Nearctic, Neotropical, Australian and Pacific Regions, therefore at present is has a nearly cosmopolitan distribution (Hansen, 1999).

Cercyon* (*Clinocercyon*) *lineolatus (Motschulsky, 1863) Plate 31

Specimens examined: Sharjah Desert Park, 1 ex., 17.ii–3.iii.2007, LT. Wadi Bih dam, 1 ex., 19.ii–29.iii.2007, LT. Wadi Siji, 2 ex., 24.ix–12.x.2006, WT.

Differential diagnosis: *C. lineolatus* is easily distinguishable from all Arabian representatives of the genus by its large body size (3.8–4.5 mm), dark pronotum, black elytral striae and yellow stripes on elytral intervals, rather small antennal grooves, preepisternal elevation of mesothorax bearing very narrow longitudinal plate, and metaventrite lacking femoral lines. By the laterally protruding eyes and very narrow preepisternal elevation of mesothorax it slightly resembles *C. subsolanus*, which is, however, much smaller (2.4 mm), bears pale pronotum and elytra without any trace of dark longitudinal stripes, and the preepisternal elevation forms sharp longitudinal keel instead of narrow plate.

Biology: According to Bameul (1986), *C. lineolatus* is coprophilous species inhabiting cow and rabbit excrement. The specimens from UAE were collected at light or in water traps.

Distribution: Oriental species distributed in India, Sri Lanka and south-eastern Asia (Vietnam), eastwards reaching Sumatra and Philippines, westwards the Arabian Peninsula. Vinson (1958) recorded it also from Mauritius Is., Bameul (1986) from Reunion Is.

Genus ***Emmidolium*** d'Orchymont, 1937

Monotypic genus. The only species, *E. excavatum*, was recorded recently by Fikáček (2007) for the first time for the Arabian Peninsula.

Emmidolium excavatum d'Orchymont, 1937 Plate 32

Specimens examined: NARC, near Sweihan, 1♀, 29.xii.2005–22.i.2006, LT. Sharjah Desert Park, 1♂, 6–30.iv.2005, LT; 2 ex., 14.ii–1.iv.2008, LT.

Differential diagnosis: Very small species (1.2–1.4 mm), easily recognizable by three deep longitudinal depressions on pronotum. For detailed description see Orchymont (1937), Hori & Satô (2002) or Fikáček (2007).

Biology: Coprophilous species inhabiting excrement of large herbivorous mammals (cows, buffalos, elephants).

Distribution: Widely distributed thoughout tropical regions of Old World, so far recorded from southeast Asia, Arabian Peninsula and Africa. Known records were summarized by Fikáček (2007); Hebauer (2006) recorded it from Kenya.

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