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**On the identity of *Hydroporus glasunovi* ZAITZEV 1905,
with the description of *Hydroporus glasunovi dolini* nov.ssp.
(Coleoptera, Dytiscidae)**

H. FERY & J. ŠŤASTNÝ

A b s t r a c t : *Hydroporus glasunovi glasunovi* ZAITZEV 1905 and *Hydroporus glasunovi dolini* nov.ssp. are members of the *planus*-group of *Hydroporus* CLAIRVILLE 1806. They are distributed in the mountainous regions of Central Asia and north-western China. The nominotypical subspecies is re-described and the new subspecies treated in a differential diagnosis. The male and female genitalia as well as the habitus of both subspecies are illustrated. Lectotypes are designated for *Hydroporus glasunovi* ZAITZEV 1905, and *Hydroporus macrocephalus* GSCHWENDTNER 1923. The zoogeographic characteristics of the mountain areas in Central Asia are discussed and some notes on the biology of both subspecies are given.

K e y w o r d s : Coleoptera, Dytiscidae, *Hydroporus*, new subspecies, description, lectotype, zoogeography, Central Asia, China.

Introduction

In 1991 the junior author collected in Tajikistan (Fan Mountains, Lake Kulikalon) a series of *Hydroporus* provisionally identified as *H. glasunovi* ZAITZEV 1905. More or less at the same time, the Vienna Museum (NMW) acquired material which was collected by V.G. Dolin in Central Asia and which also was at first identified as that species. But serious doubts remained about the identity of all these specimens. This was due to the inadequate description and the lack of any illustrations in the original work (ZAITZEV 1905: 26), and, additionally, to the different ways in which the species was treated after Zaitzev by several authors.

ZAITZEV (1905: 26) found that his new species was, on the one hand, to some extent similar to *Laccornis oblongus* (STEPHENS 1835) (under the generic name *Hydroporus*), but on the other hand, closely related to *Hydroporus ferrugineus* STEPHENS 1829, although he pointed to the non-reticulated elytra of the new species and the distinctly reticulated ones of *H. ferrugineus*. Today the latter is accepted as a member of the *Hydroporus memnonius*-group.

SAHLBERG (1910: 176) compared *H. glasunovi* with *Hydroporus semenowi* JAKOVLEV 1897, *Hydroporus discretus* FAIRMAIRE & BRISOUT DE BARNEVILLE 1859, *Hydroporus cyprius* RÉGIMBART 1878 (today treated as junior synonym of *H. discretus*), and *Hydroporus elongulatus* STURM 1835, but found only a few superficial external similari-

ties and did not consider a close relation to any of these species. Today *H. discretus* is treated as member of the *Hydroporus planus*-group, *H. semenowi* belongs to the *Hydroporus semenowi*-group, and *H. elongatulus* to the *Hydroporus nigellus*-group.

GSCHWENDTNER (1923: 100) when describing his *Hydroporus macrocephalus* (treated as junior synonym of *H. glasunovi* since ZAITZEV 1953: 171) pointed to some external similarities to *Hydroporus notatus* STURM 1835 (a member of the *Hydroporus striola*-group), but did not assume a close relationship of both species.

ZIMMERMANN (1931: 155) has not seen any specimen and, thus, only reproduced Zaitzev's original description. However, he questioned Zaitzev's classification because the posterior margin of the metacoxal processes of *H. glasunovi* (incorrectly named "processus metasterni" = metasternal process) was described as straight and conjointly truncate, whereas that of *H. ferrugineus* is slightly sinuate.

ZAITZEV (1953: 153, 1972: 181) did not introduce groups in the subgenus *Hydroporus* s.str. (in which he included most species of the genus *Hydroporus* as it is understood today), but in the key he placed *H. glasunovi*, *Hydroporus obsoletus* AUBÉ 1838, and *Hydroporus libanus* RÉGIMBART 1901 close to *Hydroporus memnonius* NICOLAI 1822. Today *H. obsoletus* and *H. memnonius* are treated as members of the *H. memnonius*-group, and *H. libanus* as a member of the *H. longulus*-group.

GUÉORGUIEV (1963: 217) suspected that *Hydroporus goldschmidti* GSCHWENDTNER 1923 might be a junior synonym of *H. glasunovi*. We have studied, however, the lecto- and paralectotypes of *H. goldschmidti* and can state that both taxa in fact belong to the *Hydroporus planus*-group, but are undoubtedly different (see also FERY & PETROV 2006). Notes: NILSSON & HOLMEN (1995) called this species group *H. fuscipennis*-group, later it was called "*fuscipennis* or *planus*"-group (e.g. NILSSON 2001: 156).

Our studies show that *H. glasunovi* is totally misplaced in the *H. longulus*-group as well as in the *H. memnonius*-, *H. nigellus*-, *H. semenowi*- and *H. striola*-groups. It has a distinct – although not very broad – pronotal bead, the lateral margin of the elytra is ascending towards the humeral angle, and more than the anterior three fourths of the elytra are not reticulated. It is doubtlessly a species of the *H. planus*-group which was revised in large parts by WEWALKA (1992).

Material, methods and acknowledgements

The following codes are used for collections from which we have studied specimens:

- CHF..... coll. H. Fery, Berlin, Germany, property of the NMW
 CHH..... coll. H. Hebauer, Rain, Germany
 CHS..... coll. H. Shaverdo, Vienna, Austria
 CLH coll. L. Hendrich, Berlin, Germany, property of the NMW
 CJS..... coll. J. Šťastný, Liberec, Czech Republic
 CRB coll. R. Bellstedt, Erfurt, Germany
 HNHM Hungarian National History Museum, Budapest, Hungary (O. Merkl)
 MNB Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (M. Uhlig, B. Jaeger)
 MRTO..... Museo Regionale di Scienze Naturali, Torino, Italy (M. Daccordi)

MZL	Museum of Zoology, Lund University, Lund, Sweden (R. Danielsson)
NMB	Naturhistorisches Museum Basel, Switzerland (M. Brancucci)
NMPC	Národní Muzeum, Prague, Czech Republic (J. Hájek)
NMW	Naturhistorisches Museum Wien, Austria (M.A. Jäch)
OLML	Oberösterreichische Landesmuseen/Biologiezentrum, Linz, Austria (F. Gusenleitner)
SMNS.....	Staatliches Museum für Naturkunde Stuttgart, Germany (W. Schawaller)
ZISP	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (A.G. Kirejtshuk)
ZMUM.....	Zoological Museum, Moscow Lomonosov State University, Russia (N.B. Nikitsky)

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The following abbreviations are used in the text: TL: total body length; TL-H: total length without head; MW: maximum body width; IOD: interocular distance; WPr: width of pronotum at base; n: number of specimens measured. In table 1 measurements are given as follows: minimum-maximum of a value, followed by mean \pm standard deviation in brackets. Exact label data are given for all examined material. The authors' remarks and complementary data are given in square brackets.

Male aedeagi and female gonocoxosterna and gonocoxae were extracted with a pin from the last two or three abdominal ventrites, previously separated from the rest of the body. They were placed onto a piece of paper tissue and studied in wet condition with an Olympus SZX16 stereomicroscope. Then the abdomen and the genitalia were mounted with wallpaper glue onto the card, behind the beetle: aedeagi on the left, gonocoxosterna and gonocoxae on the right side of the card; to protect them from easy mechanical destruction, all were glued onto the card horizontally and not in an upright position. The terminology used to denote the orientation of the male genitalia follows MILLER & NILSSON (2003). Since we had some doubts about whether the comparatively dark colouration of *H. g. dolini* nov.ssp. might be due to a contamination with grease secreted by the dead beetles, we have kept several specimens for two days in a common thinner, but have not observed any change of colour.

Specifications of localities are taken from "Stielers Handatlas (Gotha, 1928/30)", "The Times Comprehensive Atlas of the World, 10th edition (London, 2001)", "Microsoft Encarta World Atlas 2000", SCHÜTZE & KLEINFELD (1999), and several sources in the Internet. Co-ordinates are given in decimal notation. The localities from which material is cited are marked in fig. 9 by filled squares with capitals for *H. g. glasunovi* and by filled circles with numbers for *H. g. dolini* nov.ssp. They are arranged according to longitude in ascending order (from west to east). In the text the material is listed more or less in the same order, and the localities are denoted by the respective capitals or numbers in braces. Symbols marked with an asterisk refer to specimens with doubtful identity; these as well as those from localities "X" and "Y" are specially discussed in the text.

This map was made by using "Microsoft Encarta World Atlas 2000". The designation of two lectotypes is made to support the stability of the nomenclature.

Taxonomy

Hydroporus g. glasunovi is re-described below in detail; for the new subspecies, however, only a differential diagnosis is given to avoid repeating the many features common to both subspecies. We describe the lecto- and holotype respectively, the variation of several characters is given in section **Notes on variability**.

Hydroporus glasunovi glasunovi ZAITZEV 1905

Hydroporus glasunovi ZAITZEV 1905: 26. - J. SAHLBERG 1910: 176. - GUÉORGUIEV 1963: 216. - NILSSON 1995: 52. - NILSSON 2001: 157.

Hydroporus Glasunovi ZAITZEV; ZIMMERMANN 1920: 88. - WINKLER 1924: 224. - ZIMMERMANN 1931: 155.

Hydroporus glazunovi [sic!] ZAITZEV; ZAITZEV 1953: 171 (partim). - ZAITZEV 1972: 181 (partim). - ŠTASTNÝ 1993: 78.

Hydroporus macrocephalus GSCHWENDTNER 1923: 100. - ZIMMERMANN 1931: 107. - ZAITZEV 1953: 171 (synonymy).

Lectotype of *Hydroporus glasunovi* (by present designation): ♂, "Turkestan, Lac. Kulikulan, Glasunov 1892" [printed], "Hydroporus glasunovi mihi, det. Ph. Zaicev." [hw Zaitzev in part], "ZIRL" [= Zoological Institute, Russia, Leningrad (= St. Petersburg); printed], "Syntypus, Hydro-porus glasunovi Zaitzev, 1905" [red, hw R.E. Roughley?], "Lectotype, Hydroporus glasunovi Zaitzev, 1905, Fery des. 2010" [red, printed], ca. 39.17N 68.18E {loc. D} (ZISP). **Notes**: The lectotype lacks three left mesotarsomeres and the complete left metatarsus.

Paralectotypes of *Hydroporus glasunovi*: Tajikistan: 4 ♀ ♀, same label data as the lectotype, but lacking Zaitzev's determination label {loc. D} (ZISP). 1 ♂, 1 ♀, "Turkestan, Lac. Kulikulan, Glasunov 1892" [printed], "Syntypus?, Hydroporus glazunovi Z." [red, hw R.E. Roughley?], "Hydroporus glazunovi Z., Syntypes", "Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia" [yellow, printed] {loc. D} (ZISP). **Notes**: Both specimens originally mounted on one pin, but separated by us and provided with photocopies of the original labels. 1 ♂, "Turkes. oz. [= ozero = lake] Kuli-Kulan. 12.VI.[18]92, D. Glazunow" [transliterated from Russian; hw Glazunov?], "Syntypus?, Hydroporus glazunovi Z." [red, hw R.E. Roughley?], "ZIRL" [printed] {loc. D} (ZISP).

China: 1 ♂, 2 ♀ ♀, "4.X.[18]90, Gromb. [= B. Grombtschewski (Grabczewski), collector], King Shiver [= Kangxiwar; almost illegible]" [hw Grombtschewski?], "ZIRL" [printed], ca. 36.20N 78.77E {loc. K} (ZISP). **Notes**: All three specimens originally mounted on one pin, but separated by us and provided with photocopies of the original labels. King Shiver or King-Schewer is identical with today's Kangxiwar (Encarta World Atlas); other names of that city are K'ang-hsi-wa, Keng Hsi Wa, Kengshewar, Su-mu-t'u-erh. **Notes**: All paralectotypes with the respective red printed paralectotype label. For the Chinese paralectotypes, see also section **Populations of unclear identity**.

Type locality of *Hydroporus glasunovi*: Tajikistan: "Turkestan: See Kulikulan"; this locality is situated in the Fan (or Fann) Mountains, at the altitude of 2827 m, ca. 39.25N 68.17E {loc. D}. That lake is named also Kulikalon and Kul-i Kalon (H. Schütze, personal communication).

Lectotype of *Hydroporus macrocephalus* (by present designation): ♂, "Jssyk-Kul" [printed], "Type, Gschw." [grey-brownish label, hw Gschwendtner], "Hydroporus macrocephalus" [hw Gschwendtner], "Coll. Gschwendtner" [printed], "Type" [red, hw?], "Lectotype, Hydroporus macrocephalus Gschwendtner, 1923, Fery des. 2010" [red, printed] {loc. X} (OLML). **Notes**: The lectotype lacks nine right antennomeres and most left and right protarsomeres. **Paralectotype**: According to GSCHWENDTNER (1923: 101), there should exist two male

syntypes, but we have been able to find only a single one. **Notes:** For more information on the identity of this taxon, see section **Populations of unclear identity**.

Type locality of *Hydroporus macrocephalus*: Kyrgyzstan: "Issyk-kul" [kul = lake] (also Ysyk-Köl) {loc. X}. **Notes:** GSCHWENDTNER (1923: 101) wrote "Zwei ♂♂ aus dem Issyk-kul" which might be translated either as "two males from the Issyk-Kul [region]", or also as "two males [taken directly] from [lake] Issyk-Kul". We have strong doubts, however, that the specimens have been taken indeed directly from the water of that lake. Since for other material from "Issyk-kul" Gschwendtner gave additionally "Tonfluß" [= Ton (or Tong) River, ca. 42.1N 77.0E, situated more or less in the centre of the southern shores of Issyk-Kul; see SCHÜTZE & KLEINFELD 1999: 172], one might assume that the syntypes of *H. macrocephalus* were also found in this river. On the other hand, we should consider that Gschwendtner did not collect that material himself, but acquired from the insects seller A. Winkler in Vienna the Dytiscidae material of an excursion to Central Asia by an unnamed scientist. Considering the "generous" locality data used in the 19th and early 20th century, the locality "Issyk-kul" may include not only the immediate environs of that lake, but also the entire eastern Kyrgyzstan, and even the adjacent regions in south-eastern Kazakhstan and western China. In addition, GSCHWENDTNER (1923: 95) told us that the acquired material included also specimens from "Persia, Transcaspia, Turkestan, Semirechensk, Dzungaria, Mongolia, and the northern slopes of Tibet, especially the Altyn-tag [= Altun shan]", so who can guarantee that the locality data have not been mixed by mistake? Anyway, the type locality is very inexact and doubtful, and only newly collected material from that region can help to clear up the identity of *H. macrocephalus*.

Additional material studied: Afghanistan: 3 ♀♀, 1 ex. without genitalia, "Afghanistan, Lac Chiva, 10.8.1960, Dr. K. Lindberg Leg.", on reverse "bassin central, 3100 m", "Hydroporus glasunovi Zaitz. ♀, det. V. Guéorguiev 1962", ca. 37.23N 71.24E {loc. H} (MZL). **Notes:** Abdomen of one specimen prepared separately on the glue card (by Guéorguiev?), but genitalia absent. GUÉORGUIEV (1963: 217) provided the following details: "Koul-Choghan (lac Chiva), bord du lac, bassin central, alt. 3100 m, 1 ♂ et 4 ♀ à 10.VIII.1960 (K. Lindberg)". 1 ♂, "Afghanistan, Lac Chiva, 10.8.1960, Dr. K. Lindberg Leg.", on reverse "bassin central, 3100 m", "Hydroporus glasunovi Zaitz., det. V. Guéorguiev 1970", ca. 37.23N 71.24E {loc. H} (MRTO). 1 ♂, "Shiz. [hw, almost illegible; most probably = Shidz], Rushan, Pamir, Luppova 9.-11.IX.[1]937" [transliterated from Russian], ca. 37.93N 71.32E {loc. I} (ZISP). 1 ♀, "Shiz. [hw, almost illegible; most probably = Shidz], swampy source, B-75., Rushan, Pamir, Luppova 11.IX.[1]937" [transliterated/translated from Russian], ca. 37.93N 71.32E {loc. I} (ZISP).

Tajikistan: 1 ♂, "Asia centr., Tadjikistan, Pamir-Alai, Seravshan Mts., Rudaky, 1500 m 11.VII.1990, leg. Schülke & Wrase", ca. 39.40N 67.60E {loc. C} (CLH). **Notes:** The specimen has been collected some kilometres S of the village Imeni Rudaki (personally communicated by M. Schülke). 1 ♀, "Turkestan, Lac. Kulikulan, Glasunov 1892" [printed], "Hydroporus mixtus Motsch., det. A. Jakowlew." [hw A. Jakovlev in part], "Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia" [yellow, printed] {loc. D} (ZISP). 1 ♀, "Hydroporus glasunovi m. [= mihi], det. Ph. Zaicew." [without locality label!], "Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia" [yellow, printed] {loc. D} (ZISP). **Notes:** The latter two specimens, most probably, also belong to the series of specimens collected by Glazunov in 1892 at the type locality. We assume, however, that they have not been studied by Zaitzev when he described his new species, because (1) they were not stored in the ZISP together with the lecto- and paralectotypes from Lake Kulukulan, and because (2) according to the original description (ZAITZEV 1905: 26), there should exist only eight syntypes from that locality. 21 exs. (5 ♂♂, 3 ♀♀ dissected, 1 ex. destroyed in part, others not dissected), "Tadshikistan, Fan Mts. VII.1991, lgt. J. Šťastný" [printed], on reverse "Kulikalon Lake" [hw Šťastný], "Hydroporus glazunovi Zaitz., J. Šťastný det. 1992", ca. 39.17N 68.18E {loc. D} (CJS, CHF). 3 exs., "UdSSR 20.7.[19]91, Tadschikistan, Šťastný lgt", on reverse "Fan Mts., 2700 m n.m.", "Hydroporus glazunovi Zaitz., Šťastný det. [19]91", ca. 39.17N 68.18E {loc. D} (CHH). 2 exs., "Tadshikistan, Fan Mts. 20.VII.[19]91, Šťastný lgt.", ca. 39.17N 68.18E {loc. D} (CLH). **Notes:** The following specimens have been collected at seven very closely situated localities, which we are unable to identify more exactly. Thus, we integrate them all into locality E. 1 ♀, "right bank of river Iskander-darya [darya = river], near the sources, Kiritschenkow 12.VII.[1]947" [translated from Russian], "Hydroporus glazunovi Zaitz., det. Shaverdo 1997", ca. 39.07N 68.37E {loc. E} (ZISP). 1 ex. (without genitalia), same text as above, but "20.VII.[1]947", "Hydroporus glazunovi Zaitz., det. Shaverdo 2000" {loc. E} (ZISP). 2 ♂♂, 3 ♀♀, 1 ex. (without genitalia), same text as above, but "22.VII.[1]947", one specimen with additional "Hydroporus glazunovi Zaitz., det. Shaverdo 2000" {loc. E} (ZISP). 2 ♂♂, 2 ♀♀, 1 ex. (without genitalia), same text as above, but "23.VIII.[1]947", one specimen with additional "Hydroporus glazunovi Zaitz., det. Shaverdo 2000" {loc. E} (ZISP). 1 ♀, "river Sary-tag, lake Iskander-kul, Kiritschenkow

21.VII.[1]947" [translated from Russian] {loc. E} (ZISP). 1♂, "NW bank of Iskander-kul, Giss. khr. [= Hissar mountain range], Kiritschenkow 8.VIII.[1]947" [in part illegible, translated from Russian] {loc. E} (ZISP). 1♀, same text as above, but "18.VIII.[1]947", "Hydroporus glazunovi Zait., det. Shaverdo 2000" {loc. E} (ZISP). **N o t e s :** The following specimens have been collected at four closely situated localities which we are unable to identify more exactly. Thus, we integrate them all into locality F. 1♀, "Tajikistan, southern slope of Hissar mountain range, left bank of river Takhob, 1850 m, N 12, A Sadykow, 16.VII.[19]68" [translated from Russian], "Hydroporus pubescens transgrediens Gschw.", ca. 38.87N 68.94E {loc. F} (ZISP). 1♂, 1 ex. without genitalia, "Tajikistan, Hissar mountain range, river Takhob, swampy brook, 2000 m, A Sadykow, 24.VI.[19]69" [translated from Russian], ca. 38.87N 68.94E {loc. F}; originally, both specimens mounted on one pin, separated by us and provided with photocopies of the original labels (ZISP). 2♂♂, 1♀, "Tajikistan, southern slope of Hissar mountain range, right bank of river Takhob, Takhob gorge, 1900 m, A Sadykow N 22, 21.VII.[19]69" [translated from Russian], "Hydroporus pubescens transgrediens Gschw.", ca. 38.87N 68.94E {loc. F}; originally, all specimens mounted on one pin, separated by us and provided with photocopies of the original labels (ZISP). 1♂, 2♀♀, 1 ex. without genitalia, "Tajikistan, southern slope of Hissar mountain range, right bank of river Takhob, Takhob gorge, A Sadykow N 22, 21.VII.[19]69" [translated from Russian], "Hydroporus pubescens transgrediens Gschw.", ca. 38.87N 68.94E {loc. F}; originally, all specimens mounted on one pin, separated by us and provided with photocopies of the original labels (ZISP). 5♂♂, "Tadzhikistan, Turkestan, mountain range, northern slope of river Nurlou [= Nurlow, near Vorukh], upper limit of coniferous wood, 25.VI.[19]63", "Hydroporus pubescens Gyll., glazunovi Zait." [in part illegible, translated from Russian], ca. 39.83N 70.65E {loc. G} (ZISP). 1♀, "SU, Tadshikistan, Pamir, Dschailgan [= Dzailgan], Muku-Gebiet, Sugrun-Tal, 2800 m NN, 3.VII.1990, Hartmann", "Hydroporus♀ -92, glazunovi Zaitz., det. A. Nilsson", ca. 39.32N 71.52E {loc. J} (CRB). **N o t e s :** This specimen has rather weakly impressed reticulation on the venter and, thus, making it similar to *H. g. dolini* nov.ssp. (see section **Populations of unclear identity**).

U z b e k i s t a n : 1♂, "Uzbekistan, Nuratinski g. z. [= Nuratinskiy gosudarstvennyy zapovednik(Nuratau State Nature Reserve)], mountain Khayat, 20.-24.05[19]87, leg. Baschakowa" [translated/transliterated from Russian], ca. 40.50N 66.70E {loc. A} (ZMUM). 1♀, "Uzbekistan Nuratinsky zapov. [Nuratinsky zapovednik = Nuratau Nature Reserve] khr. Nuratau [khrebet Nuratau = Nuratau Range] Fiazhakh-say Khauz [khauz is the Persian word for pond] 3.04.[1]1985, leg. V. Shakula" [translated/transliterated from Russian], "Hydroporus glazunovi Zaitz., det. Sacharenkow", ca. 40.50N 66.70E {loc. A} (ZISP). 1♂, "Usbekistan: Nuratau mts near Farisch, 800-1300 m, K. Kiontke", "Stn No 1-12", ca. 40.50N 66.70E {loc. A} (CLH). 1♂, 1 ex., "Uzbekistan, N. Kugetang Mts., valley Panzh-Ob, 12.-20.IV.[19]95 H=1600-2000" [male without head, other specimen very immature, not dissected], ca. 38.00N 67.00E {loc. B} (CHS).

R e - d e s c r i p t i o n : **H a b i t u s** in dorsal view elongate oval (fig. 1), sides sub-parallel; body outline with very weak discontinuity between pronotum and elytra. Maximum width before middle of total length, in first third of elytral length. In lateral view body rather flat, only little vaulted, outline more or less straight in posterior part of pronotum and first half of elytra, only posteriorly curved to apex of elytra. Pronotum largely black, elytra – in particular near base – rather light yellowish-reddish brown; contrast between pronotum and elytra distinct.

H e a d dark reddish brown, clypeus near anterior margin and in particular above antennal cavity reddish brown; frons near eyes indistinctly lighter than rest of frons; transverse broad marking on vertex also reddish brown; all these lighter parts very diffuse and poorly delimited. Interocular distance about same as half of pronotal width at posterior angles. Clypeus with two grooves behind anterior margin, each prolonged posteriorly by a weak longitudinal depression almost reaching a line joining middles of eyes. Entire surface microreticulated with small polygonal meshes. Punctures near anterior margin of clypeus rather small and not very sparse; posteriorly larger, their diameter smaller than that of meshes; on frons small punctures interspersed with several coarser ones, diameter of latter same as that of meshes or slightly greater; vertex impunctate. Head with impressed punctures line beside inner margin of eyes; clypeal grooves and longitudinal depression with punctures denser. Setae on head very indistinct, if present then only in clypeal grooves and near anterior margin of eyes.

P r o n o t u m largely black; sides – including bead – reddish brown, in particular near anterior and posterior angles; anterior and posterior margin transparent brownish. Lateral bead rather small (smaller than in typical representatives of the *H. planus*-group); in lateral view also slightly narrower than half of diameter of antenna. Pronotum in dorsal view trapezoidal, maximum width between posterior angles; sides of pronotum converging from posterior towards anterior angles, almost straight in posterior half, very slightly curved in most of anterior half, only near anterior angles more curved. Sublaterally near base with shallow depression on each side, this depression by no means so deeply impressed as in *H. obsoletus*; more medially with other, even more shallow depression on each side. Whole surface punctured; punctures smaller and sparser on disc, coarser and denser towards sides and anterior margin; behind anterior margin with irregular line of coarser punctures. Centre of disc with rather coarse puncture. Surface largely microreticulated, meshes more or less of same diameter as on head; smooth around central coarse puncture and in broad transversal area between this puncture and posterior margin. Most punctures provided with transparent yellowish seta, distinct on entire surface.

E l y t r a reddish brown, distinctly lighter than pronotum and head, transparent over whole surface; near base and particularly at shoulders diffusely lighter, yellowish brown; suture narrowly dark brownish. In dorsal view sides of elytra behind shoulders in anterior third almost straight and weakly diverging backwards. In lateral view elytral margin slightly ascending towards humeral angle; epipleuron visible until humeral angle. Elytral bead thinner than pronotal bead, in lateral view both forming an angle at bases of pronotum and elytra. Punctures on elytra more or less evenly distributed, somewhat larger than on disc of pronotum, but smaller than those near sides of pronotum. Distance between punctures two or three times greater than their diameter. Discal puncture line formed by coarse punctures, distinct almost from elytral base to near apex. Other three puncture lines well recognisable; directly beside elytral bead fifth line indicated by some punctures. Elytra largely smooth, only in posterior sixth microreticulated, with reticulation becoming more impressed towards apex, here, nevertheless, shiny. Setae distinct on entire elytral surface, similar to those on pronotum.

V e n t r a l s u r f a c e mostly black. Gula as black as genae. Prothoracic epipleuron (subnotum) and proepisternum brownish; blade of prosternal process dark brown. Elytral epipleura near shoulders transparent brownish, behind shoulders appearing darker because of black venter visible through semitransparent epipleuron. Apex of metacoxal processes brownish; hind margins of third, fourth and last abdominal ventrites broadly transparent brownish.

Prosternal process with blade narrowly lanceolate; in cross-section flatly tectiform, sides flattened and margin beaded; between procoxae with distinct transverse ridge; subbasally before this ridge with some fine transverse carinae; anteriorly, process not prolonged as narrow convexity on to prosternum; prosternum medially flattened and very rugosely sculptured. Posterior margins of metacoxal processes medially protruding backwards, laterally more or less straight and forming one line together; lines of metacoxal processes diverging anteriorly, not reaching posterior margin of metaventricle. Large parts of ventral surface with reticulation consisting of more or less transverse elongate meshes; surface smooth only on epipleura, centre of metaventricle, metacoxal processes, metacoxal plates posteromedially, and second ventrite medially. Reticulation less impressed on metasternum.

num and metacoxal plates, stronger so on last abdominal ventrites. Genae also reticulated, gula smooth except in anterior third. Gula centrally without punctures, at sides and anteriorly with some coarse ones.

Punctuation on epipleura, metacoxal plates, sides of metaventrite, and first two abdominal ventrites very coarse; on centre of metaventrite, metacoxal processes except apex, and rest of abdominal ventrites less coarse. Metacoxal processes near apex with rather dense smaller punctures. Last abdominal ventrite, with coarse and deeply impressed punctures in front of posterior margin.

Antennae, palpi, mouthparts and legs brownish, contrast to black venter rather prominent. Mesocoxae and procoxae also lighter brownish, latter darkened proximally. Antennomeres and palpomeres unicolourous, not darkened distally. First and second antennomeres rather long, third one shorter, fourth still shorter than third; fifth to tenth antennomeres longer than third and fourth, elliptic in cross-section; these antennomeres about 2 times as long as longer axis of that ellipse. Setae present on most parts of venter, but not very prominent.

♂♂: Protarsal claws indistinctly prolonged, less curved in middle, more curved near apex. Median lobe of aedeagus in dorsal and lateral view as in fig. 3; left paramere as in fig. 7.

♀♀: Externally similar to males, except simple protarsal claws. Gonocoxae and gonocoxosterna without distinct differences to those of *H. g. dolini* nov.ssp. (cf. figs 5 and 6).

M e a s u r e m e n t s : The lectotype has the following values: TL = 3.45 mm, TL-H = 3.05 mm, MW = 1.7 mm, TL/MW = 2.03, TL-H/MW = 1.79, WPr/IOD = 2.00, MW/WPr = 1.21. Further data can be found in table 1.

D i s t r i b u t i o n : Afghanistan, Kyrgyzstan, Tajikistan, Uzbekistan; China (?) (see fig. 9).

***Hydroporus glasunovi dolini* nov.ssp.**

?*Hydroporus glasunovi* [sic!] ZAITZEV; ZAITZEV 1953: 171 (partim). - ZAITZEV 1972: 181 (partim).

H o l o t y p e (♂): "Kyrgyzstan: Talassky Ala-Tau, Tshatkal [= Chatkal], ca. 3000 m, 30.V.1997, leg. Dolin (K-5/97)", "upper course of Chatkal river" [printed], "Holotypus, *Hydroporus glasunovi dolini* ssp. nov., Fery & Štátný det. 2010" [red, printed], ca. 42.10N 71.70E {loc. 7} (NMW).

P a r a t y p e s : K y r g y z s t a n : 5 ♀♀, 4 exs. "Kyrgyzstan, Tshatkal Rg. Mt. Tshapshama pass, 2800, 3.06.[19]98, V. Dolin, R. Andreeva", ca. 41.53N 70.80E {loc. 2} (CJS, NMPC). 1♂, "Kyrgyzstan, Talass Rg., Bord of Kasakhstan, env. Majdantal-pass [= Maydantalskiy pereval; see SCHÜTZE & KLEINFELD 1999], 2640 m, 28.05.1997, V. Dolin leg.", ca. 42.30N 70.88E {loc. 3} (NMB). **N o t e s :** In the following records the locality "Stab", called also "Shtab", is given. We have not been able to find that locality on any map or elsewhere, but A. Putschkov communicated: "All these [specimens] were collected in the environs of the town Kanysh-Kiya [ca. 41.75N 71.03E], within 5 km from this town. Mostly in the valley of the Chatkal River, upwards along the current. The valley in the environs of Kanysh-Kiya is rather broad, and there are opportunities to climb and to drive around." And R.V. Andreeva (Dolin's widow) added: "Shtab [headquarters] is a ruined concrete construction in the middle reaches of the Chatkal River between its tributaries Kedey-Say and Chanach." 1♂, "Kyrgyzstan, Mt. Rg., Tshatkal, 2000, Shtab, 28\2906.[19]98", ca. 41.75N 71.03E {loc. 4} (CJS). 3♂♂, "Kyrgyzstan: W-Tien Shan, Chatkal gorge, Stab. env., 29.VI.1998, 1800 m, leg. Dolin (K-9/98)" {loc. 4} (NMW). 1♂, 2♀♀, "Kyrgyzstan, Tshatkal valley, Shtab, 2000 m, 28.07.[19]99, V. Dolin leg." {loc. 4} (NMPC). 25♂♂, 5♀♀, "28.7.1999 Kyrgyzstan, Tshatkal mountain range, nr Stab, Bach und Pfützen, Dolin leg." {loc. 4} (NMW).

3 ♂♂, 3 ♀♀, 9 exs., "Kyrgyzstan: Sandalash G.K., Chatkal riv., ca. 2000 m, 5.VII.1997, leg. Dolin (K-9/97)" {loc. 4} (NMW). 2 ♂♂, 2 ♀♀, "Kyrgyzstan, Talassky Rg., Kara-Bura pass, 3200-2700 m, 29-30.05.1997, W. Dolin leg.", 42.20N 71.58E {loc. 6} (NMB). 2 ♂♂, 7 ♀♀, same data as the holotype {loc. 7} (NMW). 1 ♂, "Khirgizia: Kichik Alai, Kara-Goy, 2400 m, 21.-22.V.1993, leg. Schawaller", ca. 40.20N 72.45E {loc. 9} (SMNS). 3 ♂♂, 4 ♀♀, "Khirgizia: Kichik Alai, above Kara-Goy, 3000-3200 m, 23.V.1993, leg. Schawaller", ca. 40.20N 72.45E {loc. 9} (SMNS, CHF). 3 ♂♂, 5 ♀♀, "19.07.1996 Kyrgyzstan, Alaj-Bergkette, Umg. Taldyk-Pass [NW Sary-Tash], 2800 m, Dolin leg. (N 42a)", ca. 39.75N 73.16E {loc. 10} (NMW). 5 ♂♂, 5 ♀♀, "Kyrgyzstan: Ferganskyj-G.K., E-slopes, Urumbasch val., 2000 m, 14.VI.1997, leg. Dolin (K-7/97)", ca. 41.20N 73.40E {loc. 11} (NMW). 1 ♀, "Kyrgyzstan, Ferganski range, eastern slopes, nr. Bergut pass, 2015 m, 24.6.1996, leg. Dolin (n 37)", roughly estimated to 41.25N 73.7E {loc. 12} (NMW). **Notes:** This rather immature specimen was incorrectly given under *H. goldschmidti* in FERY & PETROV (2006: 255). We have not been able to find the exact co-ordinates of the "Bergut pass" on any map, however, A. Putschkov communicated that it is situated on the road from Kazarman to Karaalma. 1 ♂, 1 ♀, "13.07.1996 Kyrgyzstan, Suusamyр Plateau, 2250 m, Dolin leg. (N 40)", ca. 42.28N 73.83E "(possibly situated 30 km more SW, at ca. 42.10N 73.57E) {loc. 13} (NMW). 23 ♂♂, 31 ♀♀, "5.8.1999 Kyrgyzstan, Suusamyр Plateau, nr Tjuz-Aschu pass, 2300 m, Dolin leg." {loc. 13} (NMW). 1 ♂, 1 ♀, "Kirghizstan Kirghizsky G.-K., Karabalty-Schlucht [= gorge], 2000 m 1-6.06.[19]94", ca. 42.67N 73.88E {loc. 14} (CJS). 1 ♂, 2 ♀♀, "1.-2.06.1996 Kyrgyzstan, Karabalta-Schlucht, Sosnowka Umg., 1520 m, Dolin leg. (N 23)" {loc. 14} (NMW). 1 ♂, "Kyrgyzstan: Sosnowka env., Karabalta gorge, 1520 m, 1.-2.6.1996, Dolin leg. (n 23)" {loc. 14} (NMW). 1 ♀, "Kyrgyzstan: 14.6.1995 Fergansky G.K., 2000 m, Kasarman env. leg. Dolin (23)", ca. 41.41N 74.04E {loc. 15} (CJS). 2 ♂♂, 1 ♀, "N Kirghizia Kirghizky Mt., Range Ala-Archa, 1600 m, 29.10.2000, leg. ?, Coll. L. Hendrich", ca. 42.6N 74.5E {loc. 16} (CLH). 1 ♂, 2 ♀♀, "Kirghizstan, Moldo-Too, 2300, Kurtka valley, 10.07.[19]95 W. Dolin", roughly estimated to 41.7N 74.7E {loc. 17} (NMB). 11 ♂♂, 8 ♀♀, "Kyrgyzstan, Inner Tien-Shan, Arpa, 2800 m, 14.-18.VII.2000, unknown collector, Coll. Hendrich", ca. 40.78N 74.78E {loc. 18} (CLH). 2 ♂♂, "27.07.1996 Kyrgyzstan, Moldotoo Bergkette, nördlich vom Naryn Fluss", "ca. 100 km westlich Naryn, unter Karago-Bergpass, 1750 m, Dolin leg. (N 46)", ca. 41.75N 74.83E {loc. 19} (NMW). **Uzbekistan:** 1 ♂, "Uzbekistan, Tashkent Province, Yakka-tut near Burchmulla, 2.7.-4.7.2005, 41°38'N 70°03'E [= 41.63N 70.05N], Hendrich leg. Loc. 1a/b" {loc. 1} (CLH). **Notes:** All paratypes with the respective red printed paralectotype label.

Type locality: Kyrgyzstan: Talassky Ala-Tau, upper reaches of Chatkal River, altitude ca. 3000 m, ca. 42.10N 71.70E {loc. 7}.

Material not considered paratypes: The following specimens from Kyrgyzstan are not considered paratypes because they cannot be assigned undoubtedly to one of the two subspecies. Their shape of the body and that of the median lobe as well as the reticulation of the venter is as in *H. g. dolini* nov.ssp., the measurements also (see e.g. column "Maydan" in tab. 1) give values clearly closer to the new subspecies than to the nominotypical one. However, the lighter colouration of the upper side and that of the antennae and legs make these specimens similar to *H. g. glasunovi* (see also section **Populations of unclear identity**): 4 ♀♀, "Kyrgyzstan: Alaj-G.K., Majdan [= Maydan] gorge, ca. 2000 m, 12.VII.1997, leg. Dolin (K-11/97)", ca. 39.70N 72.15E' {loc. 8} (NMW). 4 ♂♂, 5 ♀♀, 1 ex. without genitalia, "Kyrgyzstan: Alaj-G.K., Majdan (right) gorge, 2270 m, 13.VII.1997, leg. Dolin (K-12/97)", ca. 39.70N 72.15E' {loc. 8} (NMW). 7 ♂♂, 12 ♀♀, "Kirgisistan, Sumsar, 1600 m, 15.6.1993, M. Danilevsky leg. ", ca. 41.28N 71.32E {loc. 5} (CLH, CHF). The following specimen is extremely immature and, thus, safe identification is impossible. The few better recognisable characters, however, allow us to assume that the specimen belongs to the new subspecies: 1 ♀, "Turkestan, Utsch Tjube [= Uch-Tyube], Alai Geb. [= Alai mountains], 2370 m. 10.10.[18]90, Conradt S." [light brown labels, printed], "Hydroporus glasunovi [sic!] Zaitz, det. G. Wewalka [19]88", ca. 39.90N 73.44E, ca. 40 km NE Sary-Tash (somewhat NE of loc. 10) (MNB).

The following specimens from Kazakhstan (localities 20, 21 and 22) are not considered paratypes because some of them look indeed like typical *H. g. dolini* nov.ssp., but others show strong tendencies to the nominotypical subspecies. Considering in addition the distance of about 500 km between these localities and the closest ones of *H. g. dolini* nov.ssp., we prefer to treat these specimens not as paratypes of the new subspecies. 1 ♂, 1 ♀, "Distr. Panfilov [= Sharkent], Umg. Koktal, 26.VI.1989", "USSR, O-Kasachtan (sic!), V. Dolin", the male with additional "Hydroporus ♂ glasunovi Zaitz, det. A. Nilsson", ca. 44.13N 79.80E {loc. 20} (NMB). 1 ♀, "USSR, Kasakhstan, Dzhungar A. [= Dzungarskiy Alatau] Tyshkan, 11.V.1985, leg. Shilenkov",

roughly estimated to 44.5N 80.0E {more or less same as loc. 21, see below} (HNHM). 1 ♂, "SE Kazakhstan, S Dzhungarskiy Alatau, Tyschkan Valley N Sarybel, 1700-1800 m, 5.-7.VII.2001, leg. W. Schawaller", ca. 44.51N 80.09E {loc. 21} (SMNS). 2 ♀ ♀, "Tyschkan Tau, 10 km E Sarybeh [= Sarybel, ca. 44.25N 80.02E]", "2250-2600 m, 12.VII.1990", "USSR, O Kasachstan, V. Dolin", ca. 44.39N 80.16E {loc. 22} (NMB). Another specimen has very inexact locality data: 1 ♀, "3.06.1996 Süd-Kasachstan [= southern Kazakhstan], Talass Bergkette [= mountain range], Vorgebirge [= foothills], 900 m, Dolin leg. (N24)" (NMW). *Notes*: The Talas mountain range extends south of the city Talas and the river of the same name and (in its eastern part) north of the river Naryn from ca. 42.33-42.50N 70.50-73.00E (SCHÜTZE & KLEINFELDT 1999: 169), with its largest parts in Kyrgyzstan, a small western part in southern Kazakhstan and eastern Uzbekistan. Dolin collected on June 1-2, 1996, in the Karabalta gorge {loc. 13}, possibly he subsequently left that region and already one day later collected in the Kazakh part of the Talas mountains, somewhat west of {loc. 3}.

Differential diagnosis: *Habitus* in dorsal view elongate oval (fig. 2), but sides somewhat more rounded than in *H. g. glasunovi*, not subparallel; discontinuity between pronotum and elytra more distinct, because sides of elytra behind shoulders more curved. Maximum width near middle of total length, between first and second third of elytral length; sides more rounded and less pointed at apex. In lateral view outline of dorsum more or less evenly curved from anterior margin of pronotum to apex of elytra; body distinctly more vaulted and in posterior third more descending towards apex than in nominotypical subspecies. Pronotum black, elytra lighter, of dirty dark brown; contrast between pronotum and elytra present, but not conspicuous.

Head darker than in *H. g. glasunovi*, only indistinctly lighter than pronotum. Interocular distance smaller than half of pronotal width at posterior angles. Polygonal meshes on surface somewhat smaller. Punctures on clypeus near anterior margin sparser; behind of about same diameter as meshes, on frons denser and coarser.

Pronotum almost entirely black, only lateral bead in posterior half brownish; anterior and posterior margins narrowly transparent brownish, but very indistinctly so. Lateral bead near anterior angle somewhat broader. Sides of pronotum more converging from posterior towards anterior angles. Near lateral margins punctures slightly longitudinally impressed, posterolaterally still deeper and coarser. Surface smooth only near central puncture and in small transversal area between this puncture and posterior margin.

Elytra dirty dark brown, not reddish; only very indistinctly transparent in anterior third. In dorsal view sides in anterior two thirds evenly rounded, in posterior third more rounded, apically less pointed, conjointly rounded. In lateral view elytral margin less ascending towards humeral angle than in nominotypical subspecies. Discal puncture line indistinct near elytral base, behind base formed by coarse punctures, in posterior third these becoming progressively weaker; other puncture lines less recognisable because difference in diameter of normal surface punctures and those of lines smaller. Elytral reticulation at apex less impressed than in *H. g. glasunovi*.

Ventral surface with colouration similar to that of nominotypical subspecies, but brownish parts darker. Prosternal process in cross-section almost tectiform. Large parts of ventral surface without reticulation. Genae reticulated, gula smooth except in anterior third. Metacoxal plates with traces of irregular transverse lines (or strongly reduced transverse meshes). Last three abdominal ventrites with transverse meshes, weakly impressed on fourth and fifth, strongly impressed on apical half of sixth ventrite. Last abdominal ventrite, with sculpture similar to that of *H. g. glasunovi*, but surface here more roughly sculptured. Antennae, palpi, mouthparts and legs lighter brownish, but not as light as in nominotypical subspecies and contrast to black venter less prominent. Fifth to

eleventh antennomeres and last palpomere darkened distally. Trochanters and mesocoxae darker brownish, procoxae in distal third dark brownish, elsewhere almost black. Femora slightly darkened centrally. Fifth to tenth antennomeres not much longer than 1.5 of their greatest width.

♂♂: Protarsal claws slightly prolonged, medially more or less straight, before apex more curved; differences to female claws more distinct than in *H. g. glasunovi*. Median lobe of aedeagus in dorsal and lateral view as in fig. 4; left paramere as in fig. 8.

♀♀: Externally similar to males, except simple protarsal claws. Gonocoxae as in fig. 5, gonocoxosternum as in fig. 6.

M e a s u r e m e n t s : The holotype has the following values: TL = 3.6 mm, TL-H = 3.25 mm, MW = 1.75 mm, TL/MW = 2.06, TL-H/MW = 1.86, WPr/IOD = 2.23, MW/WPr = 1.21. Further data can be found in tab. 1.

D e r i v a t i o n o m i n i s : The new subspecies is named in honour of the collector of the holotype and most parts of the other material, Vladimir Gdalich Dolin from Kiev, Ukraine, specialist in Elateridae, who left us far too early in 2004 (obituary by CATE 2005).

N o t e s o n r e l a t e d s p e c i e s : *Hydroporus g. dolini* nov.ssp. is somewhat similar to *Hydroporus transgrediens* GSCHWENDTNER 1923 from south-eastern Europe, Asia Minor and the Middle East. This species, however, can be easily distinguished from the new subspecies by the rather large non-reticulated area before the base of the pronotum and by the shape of the male genitalia (see FERY & PETROV 2006). *Hydroporus goldschmidti* is another similar species, which – beside other differentiating characters – is on the average larger (3.5–4.2 mm) and has different shape of the male median lobe (see FERY & PETROV 2006). In the latter publication the range of the TL of *H. goldschmidti* is incorrectly given as "3.3–4.2 mm", the lower value being due to a single female from "Bergut pass" cited there with the remark "specimen with pronotum totally reticulated, but elytra smooth". This specimen was now proved to belong to *H. g. dolini* nov.ssp. (see above).

D i s t r i b u t i o n : Kazakhstan, Kyrgyzstan, Uzbekistan (see fig. 9).

Notes on variability

If a "normal" *H. g. glasunovi* and a "normal" *H. g. dolini* nov.ssp. are directly compared, one would by no means have the idea that both are closely related. The body outline of *H. g. dolini* nov.ssp. is more rounded in dorsal view, more vaulted in lateral and frontal view; the general colouration of *H. g. glasunovi* is lighter with a distinct tendency to reddish, while it is darker and more dirty brownish in *H. g. dolini* nov.ssp.; the contrast between the lighter elytra and head on the one hand and the darker pronotum on the other hand is more prominent in the nominotypical subspecies. Some other characters which can be helpful are the following:

- colouration of sides of pronotum, prothoracic epipleuron and proepisternum: brownish in *H. g. glasunovi*, dark brownish to black in *H. g. dolini* nov.ssp. (except parts of the bead in most specimens);
- colouration of legs: reddish brown in *H. g. glasunovi*, brownish and darkened in part in *H. g. dolini* nov.ssp.;

- colouration of antennomeres: unicolourous and lighter reddish brown in *H. g. glasunovi*, darker brownish and darkened distally in *H. g. dolini* nov.ssp.;
- length of fifth to tenth antennomeres: about 2 times as long as wide in *H. g. glasunovi*, about 1.5 times as long as wide in *H. g. dolini* nov.ssp.;
- extent of smooth area on pronotum: rather large in *H. g. glasunovi*, smaller in *H. g. dolini* nov.ssp.;
- punctation on last abdominal ventrite: denser and coarser and apex roughly sculptured in *H. g. dolini* nov.ssp., less so in the nominotypical subspecies;
- shape of median lobe: in lateral view more curved near base in the nominotypical subspecies, wider curved in *H. g. dolini* nov.ssp. (compare figs 3 and 4).

However, all these characters (and also others not listed here) are varying considerably in part and any particular specimen can by no means be identified on the basis of only one of them. For instance, we have studied several specimens of *H. g. dolini* nov.ssp. with unicolourous antennae (possibly due to immaturity) and several specimens of *H. g. glasunovi* with distally slightly darkened antennomeres; some *H. g. glasunovi* have the last abdominal ventrite more strongly punctured and sculptured than several *H. g. dolini* nov.ssp. According to our experience, however, identification should be relatively safe if any particular specimen displays the majority of the characters of one subspecies.

Populations of unclear identity

Originally, we wanted to describe the new taxon as a species and not as a subspecies of *H. g. glasunovi*. This treatment would have been supported by the fact that – to our present knowledge – *H. g. glasunovi* is restricted to the south-west and *H. g. dolini* nov.ssp. to the north and north-east of the discussed area.

The relatively high variability of several characters of both subspecies, however, and the possible overlap between both areas of distribution south of the Fergana plain, where specimens have been found which might be interpreted as representing an intermediate form, induced us to treat both populations as subspecies (localities J and 8; situated in zoogeographical zone I/3, but not far from the south-eastern part of zone I/5). We have no information on the mechanisms which once might have led to an isolation of part of the originally single uniform population, and which later allowed an eventual contact between both. Anyway, the chance to study more material from that transition region in the south-east of the Fergana plain would be very welcome. The specimens from locality 5 also show intermediate characters, but are especially problematic, because this locality is situated near the border between zoogeographical zones I/4 and I/5 (i.e. north of the Fergana plain), and not in zone I/3. At present we have no explanation for this observation except to assume a mix-up of the label data with those from another locality.

In addition to the unclear identity of the populations from localities J, 8 and 5, we have studied further material for which we have found no satisfactory solution. On the one hand, these are the specimens from Kangxiwar {loc. K}, China, which so far have been treated as belonging to *H. g. glasunovi*. On the other hand, all the specimens from the Issyk-Kul region {locs X and Y} cannot be assigned to one of the known species or subspecies. Below we list the respective material and give some comments.

S p e c i m e n s f r o m C h i n a : The paralectotypes of *H. glasunovi* from China listed above under *H. g. glasunovi* must be included here. The fact that they are paralectotypes of this taxon does not affect in any way the following considerations.

1 ♂, 1 ♀, "4.X.[18]90, Gromb. [= Grombtschewski, collector], King Shiver [= Kangxiwar; almost illegible]" [hw Grombtschewski?], "Syntypus?, Hydroporus glazunovi Z." [red, hw R.E. Roughley?], ca. 36.20N 78.77E {loc. K} (ZISP). **Notes:** Both specimens mounted on one pin, but separated by us and provided with photocopies of the original labels. These two specimens, most probably, belong also to the series of specimens which Grombtschewski collected in 1890 at King Shiver (Kangxiwar). We assume, however, that they have not been studied by Zaitzev when he described his new species, because (1) they have not been stored in the ZISP together with those listed above under Paralectotypes, and because (2) according to the original description (ZAITZEV 1905: 26) there should exist only three syntypes from King Shiver. 4 ♂♂, 2 ♀♀, "Chin. Turkestan, King Schewer [= Kangxiwar], Kuschgar [= Kashgar], 2000 m. 3.-4.10.[18]90, Conradt S." [light brown labels, printed], four specimens with additional "Hydroporus glazunovi [sic!] Zaitz, det. G. Wewalka [19]88", ca. 36.20N 78.77E {loc. K} (MNB). **Notes:** Kashgar (or Kashi) is the administrative centre of the Kashgar prefecture in the western part of the Xinjiang Uyghur Autonomous Region of China. The name on the label has most probably the meaning of "Kashgaria" which is the ancient name of the western part of Xinjiang (SCHÜTZE & KLEINFELD 1997).

These specimens are on a first glance similar to *H. g. glasunovi*, but are still lighter, in particular, the pronotal disc is not blackish, but reddish brown to dark reddish brown; the contrast between the light elytra and the darker pronotum is not very prominent; the shape of the body is even more elongate parallel (compare the values for TL/MW, TL-H/MW, MW/WPr in tab. 1); the venter is not reticulated except the last two abdominal ventrites. On the other hand, it is not quite clear whether the lighter appearance of the specimens is not due to immaturity or any aging process. Considering these observations and the large distance (ca. 700 km) between Kangxiwar and the known distribution area of *H. g. glasunovi*, it seems not to be unlikely that in future the study of freshly collected material – eventually supported by molecular methods – may lead to the result that the Chinese population is a distinct species.

S p e c i m e n s f r o m K y r g y z s t a n , I s s y k - K u l r e g i o n : The lectotype of *H. macrocephalus* (locality X) listed above under *H. g. glasunovi* must be considered here. We can provide the following details about its external characters: The specimen is somewhat immature, which may be the reason for the rather light appearance of the specimen and the rather weak contrast between the colour of the pronotum and elytra. The head and pronotum are light reddish brown, the pronotum only slightly darker. The elytra are a little lighter than the head and largely transparent. The head appears rather large, but this may be due to the fact that it is slightly protruding. The head and pronotum – except for a very small area near the larger discal puncture – are completely microreticulated. The punctation of the pronotum and elytra is conspicuously weaker than in both subspecies of *H. glasunovi*, the puncture lines are almost absent. The reticulation of the last two abdominal ventrites is distinct, on the other ventrites and on

the metacoxal plates as well as on the metasternum, however, only very minute traces of reticulation are perceptible, and this only at high magnification (x160). The punctuation of the last abdominal ventrite is distinct, but not coarse and roughly sculptured. The median lobe and the parameres are well sclerotised, and show no distinct differences to that of both subspecies of *H. glasunovi*. The measurements are given in tab. 1. When comparing the values with those of both subspecies of *H. glasunovi*, it can be seen that these are closer to those of the nominotypical subspecies.

We have strong doubts that *H. macrocephalus* is a synonym of *H. glasunovi*, the external characters make us suspect that it probably should be treated as a distinct species. Lack of more material, however, induces us at present not to change the status of this taxon. See also the notes about the type locality of the taxon under *H. g. glasunovi*.

Unfortunately, the following two specimens from the same region are not really helpful for solving the problem with *H. macrocephalus*: 1 ♂, "Przhevalsk, Semirech. [= Semirechye (Russian) = "seven rivers land" = "Siebenstromland" (in German)], Pedashen[k]o, 7.IV.[19]08" [translated/transliterated from Russian; the collector being probably Dmitry Pedashenko 1868-1927, zoologist from St. Petersburg] {loc. Y} (ZISP). Notes: "Przhevalsk" has certainly the meaning of "environs Przhevalsk". 1 ♂, "Tien-schan., Przewalsk., Karakolthal [= valley of Karakol]", "Hydroporus ♂, glasunovi [sic!] Zaitz., det. A. Nilsson [19]87" [hw Nilsson], "compared with types, 1/4-[19]89 AN" [red, hw Nilsson] {loc. Y} (CAN). Notes: The river Karakol is formed by the confluence of the rivers Kel'-Ter and Uyun-Ter at 42.30N 78.48E, environs of the town of Karakol [formerly named Przhevalsk], and flows into Lake Issyk-Kul at 42.58N 78.28E (H. Schütze, personal communication). The specimen labelled "Przhevalsk, Semirech." is immature, the punctuation of the surface is distinctly coarser than in the lectotype of *H. macrocephalus*, the elytral puncture lines are well visible. A small smooth area between the centre of the pronotal disc and its base is present. The specimen labelled "Karakol valley" is mature, the punctuation of the surface is fine, but the puncture lines are distinct. The contrast between the lighter head and elytra and the dark brown pronotum is rather distinct. A small smooth area between the centre of the pronotal disc and its base is also present. The pronotum is rather broad, the base distinctly broader than that of the elytra. The last seven antennomeres are distally darkened. The protarsal claws are unusually short. This specimen is more similar to the "normal" *H. g. glasunovi* than the one labelled "Przhevalsk, Semirech.", which matches rather *H. g. dolini* nov.ssp. The colouration of both specimens is different from that of the lectotype of *H. macrocephalus*. On the other hand, Lake Issyk-Kul lies more or less exactly between the more south-western and the (slightly uncertain) north-eastern limits of the distribution of *H. g. dolini* nov.ssp. and is far away from those of *H. g. glasunovi*, a fact that creates additional problems, for which at present we are unable to offer a solution.

As can be seen, neither the lectotype of *H. macrocephalus* nor the two other specimens from the Issyk-Kul region {loc. Y} can be assigned with certainty to one of both subspecies of *H. glasunovi* and, additionally, all the three Issyk-Kul specimens themselves show not so many corresponding characters to be sure that they all belong to one and the same taxon. Thus, for the time being, we prefer to leave the status of *H. macrocephalus* as a junior subjective synonym of *H. glasunovi* unchanged and to treat the other two specimens as "close to *H. glasunovi*".

Notes on biology

Aquatic habitats in the Fan Mountains area are characterised by very cold water, even in summer months (Kulikalon lakes, max. 10° C), and by fluctuations of the water level due to uneven melting of the glaciers. Suitable conditions for development of water insects are found up to about 3,200 m a.s.l. (based on observations of immature stages). Lakes at altitudes between 2,600 and 3,200 m a.s.l. are inhabited by five species of predaceous diving beetles (Dytiscidae): *Hydroporus g. glasunovi*, *Nebrioporus airumulus* (KOLENATI 1845), *Agabus winkleri* (GSCHWENDTNER 1923), *Agabus dichrous* SHARP 1878, and *Hydronebrius cordaticollis* (REITTER 1896). The junior author collected *H. g. glasunovi* only at altitudes between 2,700 and 2,900 m a.s.l. {loc. D} (figs 10-12). It was found in abundance in sparsely vegetated littoral zones of lakes and places with stony bottom, where the beetles look for patches of accumulated detritus. Here the subspecies was found in association with *N. airumulus* and *A. winkleri*.

In Yakka-tut, near Burchmulla, Uzbekistan {loc. 1} (fig. 13), *H. g. dolini* nov.ssp. was found in a slowly flowing irrigation channel with sandy and muddy bottom, with green algae and *Chara* sp. Other Hydradephaga found in the same locality are *Agabus basalis* (GEBLER 1829), *Agabus bipustulatus* (LINNAEUS 1767), *Deronectes abnormicollis* SEMENOW 1900, *Deronectes vestitus* (GEBLER 1848), *Hydroglyphus geminus* (FABRICIUS 1792), *Hydroporus goldschmidti*, *N. airumulus*, *Gyrinus distinctus* AUBÉ 1838 and *Haliphus sibiricus* MOTSCHULSKY 1860 (see HENDRICH & HENDRICH 2005: 427).

Further localities where *H. g. dolini* nov.ssp. was found together with other species are the following: Stab {loc. 4}: *Agabus conspersus* (MARSHAM 1802), *A. bipustulatus*, *Agabus turcmenus* GUIGNOT 1957, *H. goldschmidti* (recorded in FERY & PETROV 2006: 255 under the name *H. glasunovi*) and *N. airumulus*; Talassky Ala-Tau {loc. 7} and Moldoo-To {loc. 19}: *A. basalis*; Maydan gorge {loc. 8}: *A. conspersus* and *Agabus sogdianus* (JAKOVLEV 1897); Taldyk-Pass {loc. 10}: *Hydroglyphus geminus*; Urumbash valley {loc. 11}: *A. conspersus* and *A. winkleri*; Bergut pass {loc. 12}: *A. winkleri* and *H. goldschmidti*; Karabalty gorge {loc. 14}: *A. basalis* and *N. airumulus*; Suusamy Plateau {loc. 13}: *A. dichrous*, *Hydroporus nigellus* MANNERHEIM 1853, and *Hygrotus impressopunctatus* (SCHALLER 1783).

Notes on zoogeography

According to KRYZHANOVSKIJ (1953), the mountain areas of the Central Asian parts of the former USSR can be divided into three separate zoogeographic zones (zones I-III in fig. 9), which are distinguished by different climatic conditions and consequent differences in the structure of the flora and fauna. Each of the areas is inhabited by endemic and apparently unrelated taxa. For our map (fig. 9) we adopted additionally the concept of physical-geographic zones of SOKOLOV & SYROETCHKOVSKIJ (1990) (called "sub-zones" below, to distinguish them from the larger "zones" of Kryzhanovskij) because of their well defined delimitations according to the botanical and geographical conditions, relief, geological structure, composition of the vegetation and ecological load. Thus, we have the following zones with their sub-zones included:

- I. Middle Asian mountains zone (I/1: Southern Tajikistan; I/2: Western Pamir; I/3: Southern Tian-Shan; I/4: Fergana basin; I/5: Western Tian-Shan; I/6: Northern Tian-Shan; I/7: Dzhungaria).

II. Central Asian mountains zone (II/1: Eastern Pamir; II/2: Inner Tian-Shan).

III. Turanic zone.

The Dzungar-Tian-Shan zone in the concept of SOKOLOV & SYROETCHKOVSKIJ (1990) includes the entire central and eastern Tian-Shan Mountains (corresponding with sub-zones I/6, I/7, and II/2). It is delimited by the Kyrgyz range in the north, by the Fergana Range in the south-west and by the Barkul and Kurug-Tag ranges and the Dzungarian Alatau Mountains in the east. The environmental conditions in this area are very heterogeneous and influenced mainly by the orientation of the mountain ranges. The climate is continental with marked differences between day and night temperatures. The rainfall increases from the south-west to the north-east; annual precipitation varies between 800 and 930 mm (Suru-Tchelek Nature Reserve). The air humidity in summer is about 45% (Naryn Nature Reserve). The average annual temperature ranges from 2.5° C (Naryn Nature Reserve) to 6.6° C (Issyk-Kul Nature Reserve). The vegetation is dominated by steppe associations; trees and shrubs occur only on the moister northern and western slopes. Mountain forests are composed of fir, rowan, birch, currant, willow and berberis (SOKOLOV & SYROETCHKOVSKIJ 1990).

The Western Tian Shan (sub-zone I/5 of SOKOLOV & SYROETCHKOVSKIJ 1990) includes the western slopes of the Fergana Range, the Talas Mountains, the Chatkal, Iskem and Urghan ranges, the Kardzhan Tag and Kara Tag Mountains and their foothills. The climate is typically continental with unevenly distributed rain- and snowfall. The summer rainfall represents only 10-15% of annual precipitation. Winters are very cold, but the snow cover provides good conditions for hibernating organisms. The annual precipitation is about 500-800 mm. The air humidity is about 52% in summer (Besh-Aral Nature Reserve). The flora is very rich and heterogeneous. Large areas are covered by mountain steppes and forests with dominant walnut trees, firs, maples, poplars and hawthorns (SOKOLOV & SYROETCHKOVSKIJ 1990).

The Pamiro-Alai zone in the concept of SOKOLOV & SYROETCHKOVSKIJ (1990) contains the mountains of the Pamiro-Alai, which form prominent mountain ranges in east-west direction (sub-zone I/3: Turkestan, Zeravshan and Gissar ranges), the Nuratau Mountains and the Pamir Mountains (sub-zones I/2 and II/1). Arid climate with marked variations in daily as well as annual temperatures is typical for this area; the variation is higher than in the preceding sub-zones. The annual precipitation is only 250 mm (Fan Mountains). The annual average of air humidity is 30-40% (Gissar Mountains). The vegetation is mainly xerophytic; typical trees in the mountain areas are the 'archa' junipers. In the Fan Mountains area (western part of the Pamiro-Alai Mountains), the highest species diversity of plants is found at altitudes from 1,500 to 2,500 m a.s.l. (SOKOLOV & SYROETCHKOVSKIJ 1990).

Sub-zone I/1 is called Southern Tajikistan by SOKOLOV & SYROETCHKOVSKIJ (1990). It contains the low mountain ranges of southern Tajikistan and Uzbekistan and the south Tajik depression (Aktau, Baisuntau, Babatagh, Djilantau, Karatau, Kuhitangtau, Paidjisky Karatau, Sukhaktau and Teriklitau mountain ranges). Sub-zone I/2 is called Western Pamir and contains the Darvazsky, Khazratishoh, Petr Perviy, Rushan, Shakh dara, Shugnan, Yazgulem, Vanch, and Vakhshsky mountain ranges. So far none of the two subspecies has been found in these two zones, however, localities H and I are situated in Afghanistan, not far from the Tajik border, and it is very likely that the character of this region is similar to that of sub-zone I/2.

Sub-zone II/1 (called Eastern Pamir by SOKOLOV & SYROETCHKOVSKIJ 1990) belongs to the Central Asian mountain. It contains the Badahsan-Pamir subdivision of KRYZHANOVSKIJ et al. (1995) and mainly the highlands above 3500 m a.s.l., with mountain xerophytic open woodlands in the west, and high mountain deserts with the prevalence of high-mountain wormwood-winterfat deserts, combined with steppes and cryophytic meadows, in the east (including the high-mountain areas of the Akademiya Nauk, North and South Alichur, Beleuli, Ishkashim, North Tanimas, Sarikul, Vakhan, Zaalay, and Muzkol mountain ranges).

The Dzungar-Tian-Shan zone (I/6, I/7, and II/2) is well separated from the zoogeographic point of view, and shares more features with the fauna of the Altai than with the strongly different Western Tian-Shan (I/5) and Pamiro-Alai sub-zones (I/2, I/3 and II/1). The Western Tian-Shan zone constitutes a transition zone with marked relations to the Pamiro-Alai, and it also shares some common features with the Dzungar-Tian-Shan. According to SOKOLOV & SYROETCHKOVSKIJ (1990), the mountains of the western Talas and Fergana Ranges create a very distinct biogeographic barrier. The Pamiro-Alai is characterised by a considerably high level of endemism (e.g. *Hydronebrius cordaticollis* and some species of *Carabus*), and it is virtually unrelated to the fauna of the Tian-Shan Mountains. On the contrary, distinct links of the fauna of the Pamiro-Alai to that of northern Afghanistan, north-western China and Himalaya are known (KRIZHANOVSKIJ 1953). The Pamiro-Alai is separated from the other two zones listed above by the broad valley of the Syrdarya river and by the Fergana basin, which form a distribution barrier for mountain species. A transition zone probably exists in the eastern part of the Alai Mountains (Alai, Trans-Alai, Kichik-Alai ranges) which include more or less the localities J, 8, 9, and 10 (fig. 9).

Two other zones marked on fig. 9 do not contain any localities of the two subspecies. Zone III is named Turanic and encloses the large flat regions in the north-west of the Central Asian Mountains, and sub-zone I/4 – the Fergana basin – is the intermountain depression whose flora is presented by steppes, semi-savannas, and semi-deserts. We have little doubt that the low altitude is the chief reason for the absence of both subspecies in these zones, probably together with some other unsuitable natural conditions.

We can state that – except the somewhat doubtful specimens – the nominotypical subspecies of *H. glasunovi* is restricted to the zoogeographical sub-zone I/3 (plus a region in northern Afghanistan which is situated very close to sub-zone I/2), while *H. g. dolini* nov. ssp. occurs in sub-zones I/5 and II/2.

Zusammenfassung

Hydroporus glasunovi ZAITZEV 1905 ist eine nur wenig bekannte Art aus der *planus*-Gruppe der Gattung *Hydroporus* CLAIRVILLE 1806. Sie ist in den Sammlungen der verschiedenen Museen nur spärlich vertreten, wurde nur in wenigen Publikationen behandelt und hier auch meist nur in Auflistungen von Sammlungsmaterial oder in Katalogen, ohne dass der Originalbeschreibung wesentliche neuere Erkenntnisse hinzugefügt wurden. Auch die systematische Stellung der Art wurde von verschiedenen Autoren unterschiedlich gedeutet. Dem Zweitautor gelang es im Jahr 1991 eine größere Serie von Exemplaren der Art am locus typicus zu sammeln. Weiterhin konnte das Naturhistorische Museum Wien (NMW) Material erwerben, das von V.G. Dolin in Zentralasien gesammelt wurde. Erste Untersuchungen ließen vermuten, dass es sich um *H. glasunovi* oder zumindest um eine nahe verwandte Art handelt.

In der vorliegenden Arbeit wird dargelegt, dass das von Dolin gesammelte Material zu einer neuen Unterart gehört, welche zu Ehren des Sammlers den Namen *Hydroporus glasunovi dolini* nov.ssp. erhält. Die nominotypische Unterart wird neu beschrieben und *H. g. dolini* nov.ssp. mittels einer Differentialdiagnose charakterisiert. Habitus und Genitale beider Unterarten werden illustriert. Außerdem werden die Lectotypen von *Hydroporus glasunovi* ZAITZEV 1905 und *Hydroporus macrocephalus* GSCHWENDTNER 1923 designiert; der letztere wird trotz einiger Zweifel weiterhin als jüngerer subjektives Synonym von *H. g. glasunovi* behandelt.

Beide Unterarten sind in deutlich verschiedenen Arealen verbreitet. Die nominotypische Unterart kommt überwiegend im Norden Tadschikistans vor, aber auch im äußersten Südosten Usbekistans, im Südwesten Kirgisiens und im äußersten Norden Afghanistans. Die neue Unterart dagegen tritt im restlichen Kirgisien auf und in einem kleinen Bereich des Nordostens Usbekistans, an der Grenze zu Kirgisien. Allerdings existieren auch Populationen, deren Zuordnung zu einer der beiden Unterarten nicht eindeutig möglich ist. Schließlich werden die Verbreitung beider Unterarten im Zusammenhang mit zoogeographischen Modellen diskutiert und Angaben zur Biologie und Begleitfauna gemacht.

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Authors' addresses:

Hans FERY
Räuschstr. 73, D-13509 Berlin, Germany
E-mail: Hanfry@aol.com

Jaroslav ŠŤASTNÝ
Kosmonautů 359, CZ-45605 Liberec, Czech Republic
E-mail: stastnyj@jergym.hiedu.cz

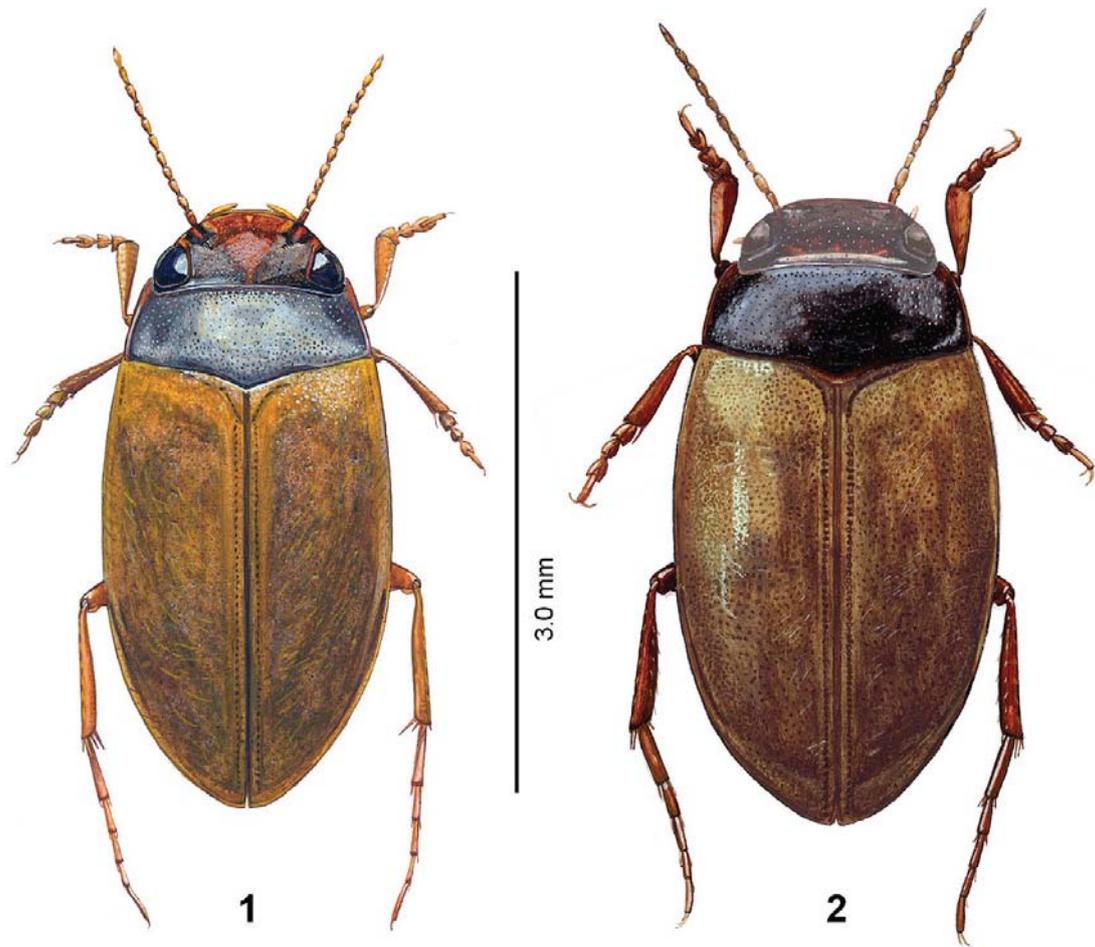
Table 1: Measurements

/	<i>glasunovi</i> {n = 39*}	<i>dolini</i> {n = 35**}	Maydan {loc. 8} {n = 13}	China {loc. K} {n = 8}	<i>macroceph.</i> {loc. X} {n = 1}	Karakol {loc. Y} {n = 1}	Przewalski {loc. Y} {n = 1}
TL (mm)	2.95-3.6 (3.31 ± 0.16)	3.2-3.6 (3.42 ± 0.08)	3.25-3.65 (3.45 ± 0.14)	3.25-3.45 (3.36 ± 0.06)	3.25	3.25	3.35
TL-H (mm)	2.65-3.2 (2.95 ± 0.14)	2.9-3.2 (3.04 ± 0.07)	2.8-3.4 (3.04 ± 0.15)	2.95-3.1 (3.02 ± 0.04)	2.85	3.0	2.95
MW (mm)	1.4-1.8 (1.62 ± 0.09)	1.6-1.8 (1.71 ± 0.04)	1.6-1.8 (1.70 ± 0.06)	1.6-1.7 (1.63 ± 0.03)	1.55	1.65	1.6
TL/MW	1.96-2.16 (2.05 ± 0.05)	1.93-2.06 (2.01 ± 0.03)	1.97-2.09 (2.03 ± 0.04)	2.03-2.09 (2.06 ± 0.03)	2.10	1.97	2.09
TL-H/MW	1.70-1.93 (1.83 ± 0.05)	1.72-1.83 (1.78 ± 0.03)	1.70-1.92 (1.79 ± 0.05)	1.82-1.88 (1.85 ± 0.02)	1.84	1.82	1.84
WPr/IOD	1.94-2.45 (2.11 ± 0.09)	2.04-2.38 (2.14 ± 0.08)	2.02-2.26 (2.14 ± 0.08)	1.93-2.15 (2.11 ± 0.07)	2.04	2.07	2.15
MW/WPr	1.08-1.22 (1.15 ± 0.03)	1.15-1.21 (1.19 ± 0.02)	1.16-1.20 (1.18 ± 0.01)	1.10-1.15 (1.13 ± 0.02)	1.15	1.16	1.14

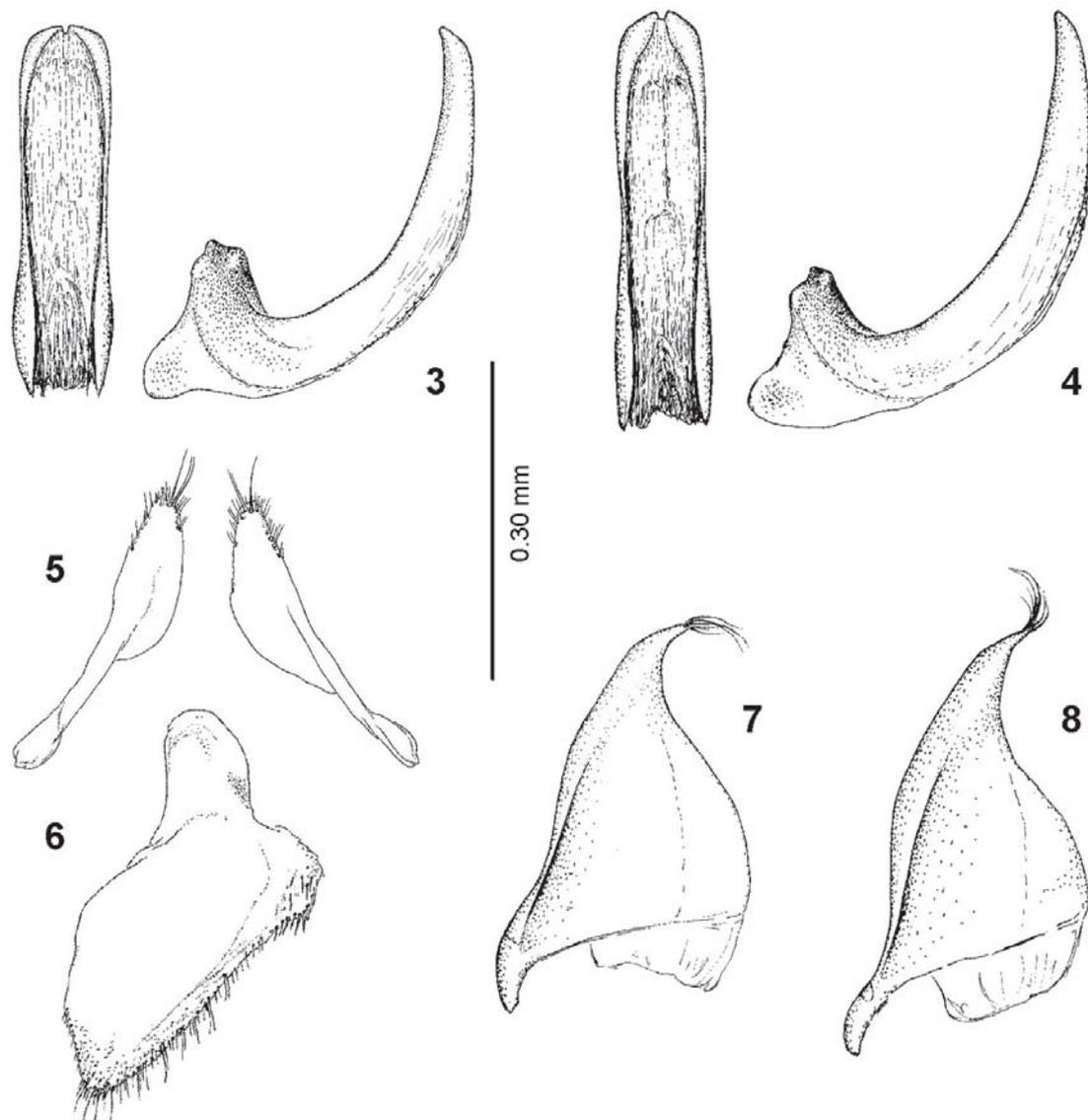
* specimens from China {loc. K} not included

** specimens from Maydan {loc. 8} not included

1025



Figs 1-2: Habitus of (1) *Hydroporus g. glasunovi* ZAITZEV; (2) *Hydroporus g. dolini* nov.ssp.



Figs 3-8: Median lobe of aedeagus of in ventral and lateral view (3) lectotype of *Hydroporus g. glasunovi* ZAITZEV. (4) holotype of *Hydroporus g. dolini* nov.ssp. Gonocoxae (5) and gonocoxosternum (6) of *Hydroporus g. dolini* nov.ssp. Left paramere of (7) lectotype of *Hydroporus g. glasunovi* ZAITZEV; (8) holotype of *Hydroporus g. dolini* nov.ssp.

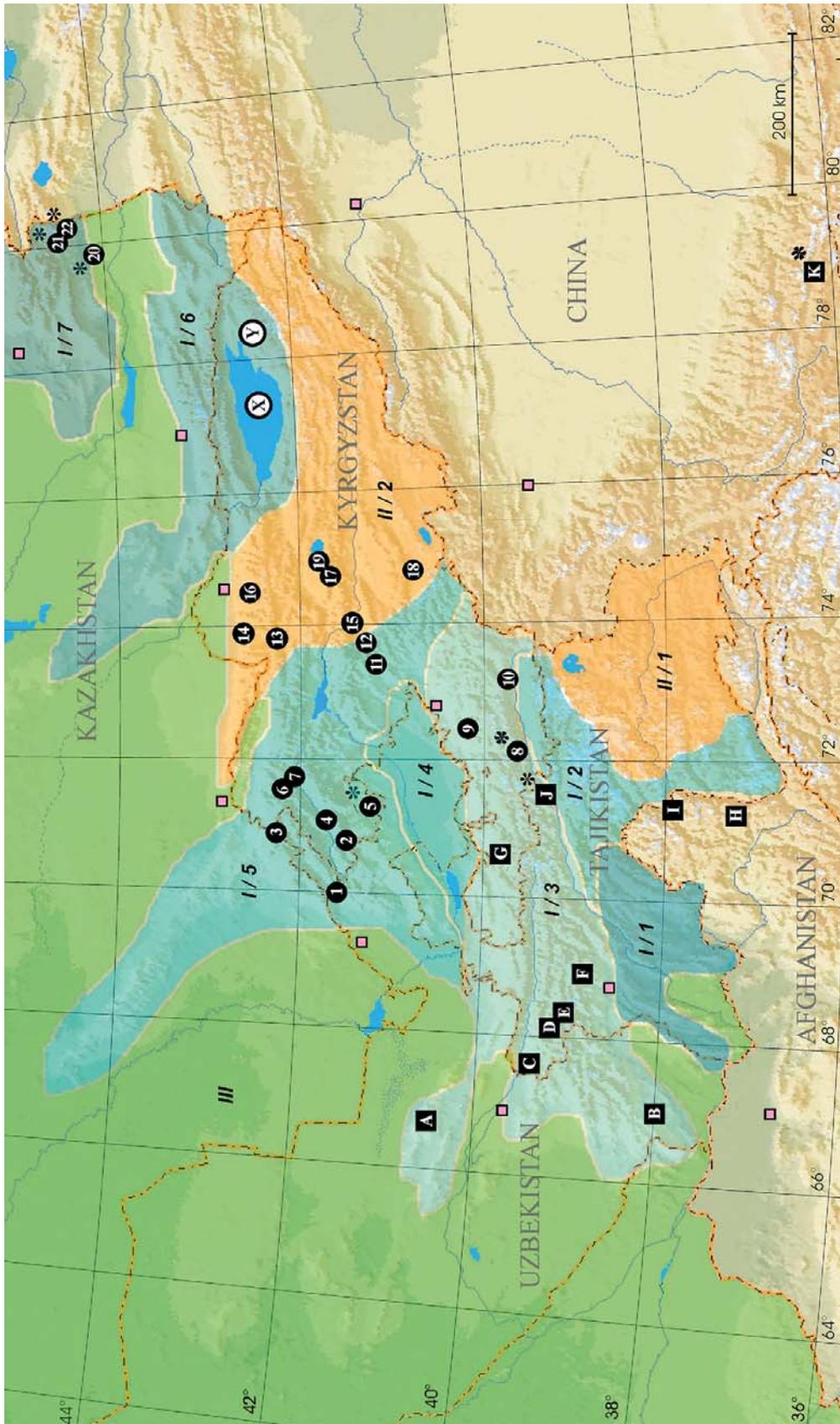


Fig. 9: Distribution of *Hydroporus g. glasmovi* ZAITZEV (filled squares with capitals) and *Hydroporus g. dolini* nov.ssp. (filled circles with numbers) For other symbols see text



Figs 10-13: Habitats of (10-12) *Hydroporus g. glasunovi* ZAITZEV, Fan Mountains, Tajikistan {loc. D} (photos by J. Šťastný) and (13) *Hydroporus g. dolini* nov.ssp., Yakka-tut near Burchmulla, Uzbekistan {loc. 1} (photo by L. Hendrich).

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