

New species of *Bembidion* Latreille, 1802, subgenus *Ocydromus* Clairville, 1806 from India and Tibet (Insecta: Coleoptera: Carabidae: Bembidiini)

JOACHIM SCHMIDT

Summary

Bembidion (Ocydromus) loebli sp. n. is described from the Eastern Ghats of southern India (locus typicus: Nilgiri Hills, Ootacamund – Pykara), and *Bembidion (Ocydromus) salweenum* sp. n. is described from the eastern Tibetan Plateau (locus typicus: upper Salween River, Kema SSE Naqu). Both these species are representatives of the species group of *B. saxatile* Gyllenhal, 1827. *Bembidion saxatile himalotibeticum* ssp. n. is described from the Transhimalaya and the Tibetan Himalaya in central South Tibet (People's Republic of China) and from the upper Kali Gandaki Valley in Nepal (locus typicus: Yam Tso near Nagartse).

Zusammenfassung

Neue Arten der Gattung *Bembidion* Latreille, 1802, Untergattung *Ocydromus* Clairville, 1806 aus Indien und Tibet (Insecta: Coleoptera: Carabidae: Bembidiini)

Bembidion (Ocydromus) loebli sp. n. wird von den Eastern Ghats in Südindien (Locus typicus: Nilgiri Hills, Ootacamund – Pykara), und *Bembidion (Ocydromus) salweenum* sp.n. wird vom östlichen Tibet-Plateau beschrieben (Locus typicus: oberer Salween, Kema SSE Naqu). Beide Arten gehören zur Gruppe des *B. saxatile* Gyllenhal, 1827. *Bembidion saxatile himalotibeticum* ssp. n. wird vom Transhimalaya und Tibetischen Himalaya im zentralen Südtibet (Volksrepublik China) und aus dem oberen Kali Gandaki-Tal in Nepal beschrieben (Locus typicus: Yam Tso bei Nagartse).

Key words: Taxonomy, new species, China, Eastern Ghats, Himalaya, India, Nepal, Tibet, *Bembidion*, *Ocydromus*

Introduction

Although a great deal of progress has been made in the investigation of the *Bembidion* fauna of Central and

South Asia (e.g., TOLEDANO & SCIAKY 1998, TOLEDANO 2000, 2008, SCHMIDT 2004, TOLEDANO & SCHMIDT 2008, 2010) wide parts of these areas remain poorly investigated up to today. Due not least to the tremendous restrictions for foreign researchers the ground beetle fauna of India, and particularly of its southern parts, is one of the least studied faunas of Asia. Consequently, for many species groups, including *Bembidion*, the current state of knowledge in India is hardly any better than it was in the first half of the 20th century (see ANDREWES 1935, NETOLITZKY 1942, 1943a, b). Then as now less than a dozen of *Bembidion* species are known to occur in South India. In the modern catalogues these species are attributed to the subgenera *Chlorodium* Motschulsky, 1864, *Eutrachelus* Motschulsky, 1850, *Notaphocampa* Netolitzky, 1914, and *Testediolum* Motschulsky, 1864 (e.g., LORENZ 2005). In the present paper a first representative of the *Ocydromus* complex sensu MADDISON (2012) will be described from the Eastern Ghats of South India based on material that was collected more than 40 years ago.

Regarding Bembidiini ground beetles another poorly known area is the Tibetan Plateau. However, some *Bembidion* species groups with Central Tibetan representatives were already revised by TOLEDANO (2000, 2008), and TOLEDANO & SCHMIDT (2008). In the present paper a new *Ocydromus* species related to *B. (Ocydromus) saxatile* Gyllenhal, 1827 will be described from the eastern Tibetan Plateau.

The Palaearctic species group of *B. (Ocydromus) saxatile* was recently revised by RÉBL & TOLEDANO (2013). These authors provide an overview to diagnostic characters and distributions of the numerous *B. saxatile* subspecies and some related species, and described *B. (Ocydromus) muemo* Rébl & Toledano, 2013 from Iran and Afghanistan. In this revision the fauna of High Asia was not considered in detail. However, based on two *B. saxatile* (s.l.) specimens from Nepal the authors already pointed to the existence of a presumably undescribed subspecies in the Central Himalaya (RÉBL & TOLEDANO 2013: 602). This assumption can now be confirmed

based on comprehensive material from the Himalaya and South Tibet which includes populations from numerous localities. As a result a new subspecies of *B. saxatile* (s.l.) will be described in the present paper.

Material and Methods

Material: This study is based on 525 specimens of the three newly described taxa, in addition to comprehensive comparative material comprising all *Ocydromus* species and subspecies hitherto known from Asia. The specimens are deposited in the following collections:

- CHTZ – Coll. Andreas Hetzel, Darmstadt, Germany.
- CIBIK – Coll. Igor Belousov & Ilya Kabak, St. Petersburg, Russia.
- CMGG – Coll. Werner Marggi, Thun, Switzerland.
- CSCHM – Coll. Joachim Schmidt, Admannshagen, Germany.
- CTOL – Coll. Luca Toledano, Verona, Italy.
- CWG – Coll. Andreas Weigel, Wernburg, Germany.
- CWP – Coll. Jörg Weipert, Plaue, Germany.
- CWR – Coll. David W. Wrase, Berlin, Germany.
- MHNG – Muséum d'Histoire Naturelle, Genève (Dr. I. Löbl, Dr. G. Cuccudoro).
- NMBB – Naturhistorisches Museum der Burgergemeinde Bern (Dr. C. Huber).
- NME – Naturkundemuseum Erfurt (M. Hartmann).
- OSAC – Oregon State Arthropod Collection, Oregon State University (Dr. D. R. Maddison).
- SCAU – South China Agricultural University, Guangzhou (Dr. T. Mingyi).
- SMTD – Senckenberg Staatliches Museum für Tierkunde, Dresden (O. Jäger).
- ZSM – Zoologische Staatssammlung, München (Dr. M. Bahlke, Dr. L. Hendrich).

Measurements: Body size was measured from the apex of the longer mandible in closed position to the apex of the longer elytron. The width of the head (HW) was measured across the widest portion including the compound eyes. The widths of the pronotum (PW) and of the elytra (EW) were measured at their widest points. The width of the pronotal apex (PWA) was measured between the tips of the apical angles, the width of the pronotal base (PWB) between the tips of the basal angles. The length of the pronotum (PL) was measured

from the anterior to the posterior margin along the midline; the length of the elytra (EL) was measured from the tip of the scutellum to the apex of the longer elytron.

Examination: Specimens were examined with a stereomicroscope Leica M205-C. The photographs of the habitus (figs. 1–3) were taken by Johannes Reibnitz (SMNS) with a Leica DFC320 digital camera on a Leica MZ16 APO microscope, and were then processed by him with Auto-Montage (Syncroscopy) software. The genitalic photographs (figs. 4–6) were taken with a Leica DFC450 digital camera using a motorised focusing drive, light base Leica TL5000 Ergo, subsequently processed with Leica LAS application software, and enhanced with CorelDRAW Graphics Suite X5.

Genitalic preparations: Genitalia were prepared after soaking specimens in water with vinegar and mild detergent for one day, followed by dissection. The aedeagus was cleared in lactic acid for up to five days. After examination, genitalic preparations were placed in Euparal on acetate labels or cards, which were pinned beneath the specimen.

Bembidion (Ocydromus) loebli sp. n.

Figs. 1, 4.

Type material. Holotype male, with label data „INDIA Madras / Nilgiri 2100 m / Ootacamund – Pykara / 21.XI.72 / Besuchet Löbl Mussard“ in MHNG.

Paratypes: 2 males and 1 female with same label data as holotype in CSCHM and MHNG.

Etymology. This species is dedicated to Dr. Ivan Löbl, Genève, former curator and head of the Department of Entomology of the MHNG, one of the two editors of the Catalogue of Palaearctic Coleoptera, and one of the discoverers of the new Indian species of *Bembidion*, in honour of his many substantial contributions to coleopterology and taxonomy.

Diagnosis and Recognition. A typical member of the *Bembidion* subgenus *Ocydromus*, with several deep punctures on frons at the level of the hind half of the eyes, with a relatively small and moderately sclerotized central sclerite of the endophallus, and with a long and well sclerotized flagellum. In external shape and body color very similar to *B. saxatile* (sensu lato), and *B. muemo*; for comparison see the comprehensive iconography of different geographical morphs of the latter

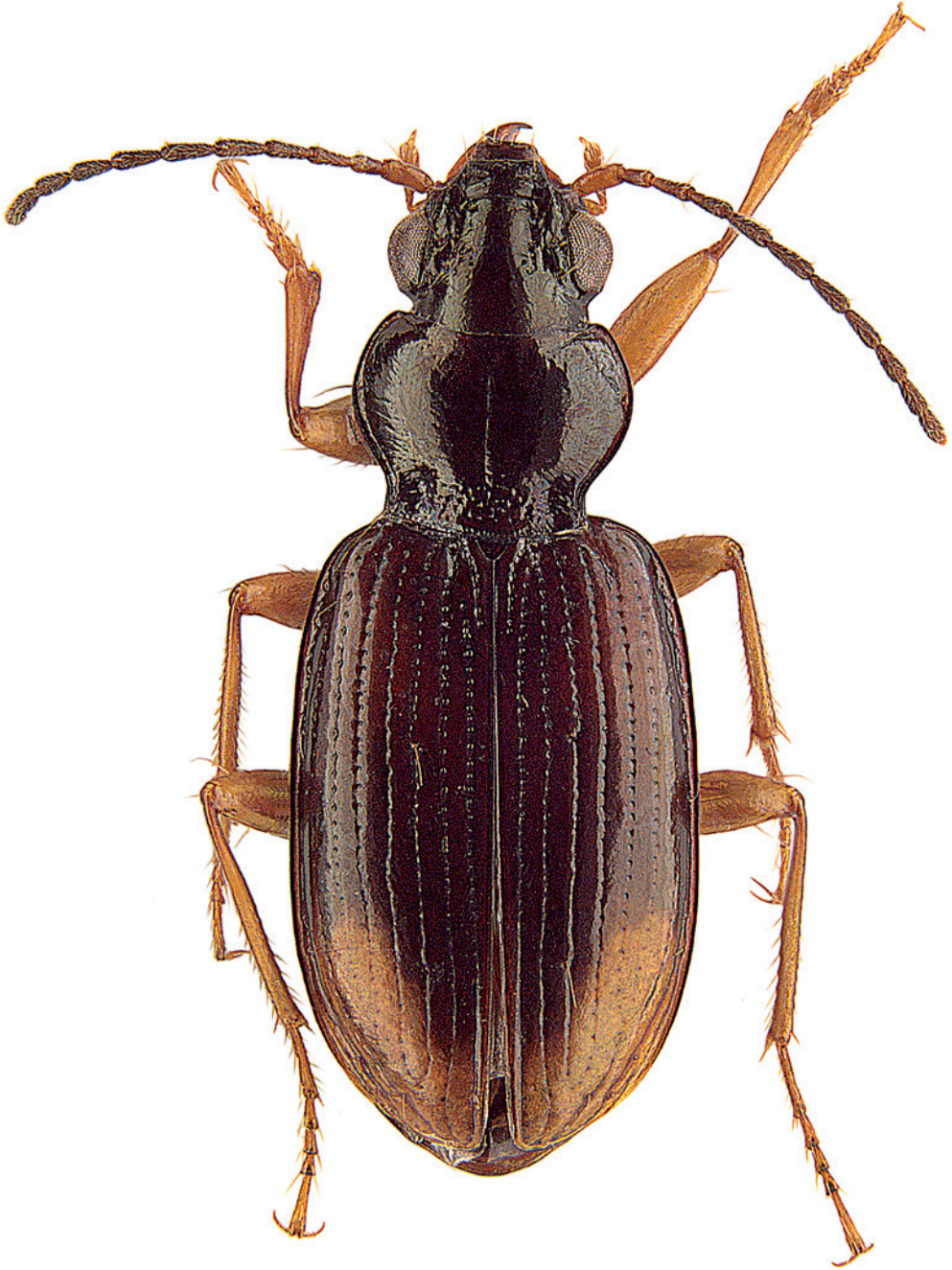


Fig. 1: *Bembidion (Ocydromus) loebli* sp. n., holotype.

species in RÉBL & TOLEDANO (2013). *Bembidion loebli* sp. n. is easily to distinguish from both these species by the broader head with more protruded eyes, more transverse pronotum with a longer and sharper laterobasal carina, larger ventral sclerite of the endophallus, and by the lack of well sclerotized scales on the ostial flag.

Description. Body length: 4.5–5.0 mm.

Colour: Head and pronotum blackish brown with very slight greenish metallic reflections; elytra brown, vague lightened in the basal third, with large testaceous preapical maculae; the latter join the margin in the apical elytral third and meet each other along suture in the apical elytral sixth. Palpi, antennal base, and legs testaceous; antennae darkened from the apical half of the third joint.

Microsculpture on dorsal surface: Discs of head and pronotum with very slightly engraved micromeshes, only visible under magnification > 100 x (discs appearing polished under magnification of 50 x); labrum, base of head, and lateral margin of pronotum with isodiametric sculpticells which are well visible under magnification of 40 x. Surface of elytra with moderately transverse meshes which are visible under magnification of 40 x; the meshes are somewhat larger in female than in male.

Head: Smaller than pronotum ($HW/PW = 0.81-0.85$), with eyes large, almost hemispheric; tempora small, approximately 1/8 of eyes diameter, markedly wrinkled to the neck. Antennae rather elongate, the tip of the eighth antennal joint extended to the pronotal base. Clypeus and frons markedly convex between the broad and deep frontal furrows; frons with several punctures at the level of the hind half of the eyes; the punctures are deeper, more closely together, and partly wrinkled near the frontal furrows.

Pronotum: Transverse ($PW/PL = 1.37-1.40$), distinctly narrower than elytra ($EW/PW = 1.41-1.47$), cordate, with sides markedly narrowed towards base ($PW/PWB = 1.38-1.44$), the anterior margin approximately same as broad as the posterior margin ($PWA/PWB = 0.98-1.00$). Sides evenly rounded in apical 3/4 and concavely rounded in basal quarter. Anterior angles rounded, slightly protruded, anterior margin moderately concave, not bordered. Hind angles large and rectangular, very slightly protruded laterally, with laterobasal carina sharp and straight, approximately 1/5 as long as pronotal length. Posterior margin not bordered, slightly convex in mid-

dle. Disc markedly convex, smooth, without punctures. Median line deep in middle, absent near anterior and near posterior margin. Frontal transverse impression shallow, surrounded by some fine punctures. Basal transverse impression broad, laterobasal foveae large and deep; both these impressions coarsely punctuate throughout.

Elytra: Moderately depressed on disc; in dorsal view moderately slender ($EL/EW = 1.43-1.52$), subovate with shoulders relatively broad, with maximum width at the end of the second third; preapical sinuation lacking. Parascutellar seta and two discal setae present; the latter situated on third interval near third stria. Parascutellar stria approximately 1/6 as long as elytra. Striae I–VI deeply punctuate-striate, but striae II–VI distinctly shallower impressed from beginning of apical third towards apex. Seventh stria distinctly shallower impressed than sixth stria, but present throughout. Apical stria short, deep, connected with the fifth stria. Intervals moderately convex on elytral disc.

Male genitalia: Aedeagal median lobe as in Fig. 4, in lateral view slender, slightly bent throughout, with apex moderately broad, shortly rounded, indistinctly bent ventrally. Central sclerit of internal sac relatively small, moderately sclerotized, somewhat irregularly shaped; ventral sclerite relatively large; flagellum long, well sclerotized, extends to the level of the broader portion of the ostial flag on dorsal side of the median lobe; ostial flag (= ostial microtrichial patch) moderately sclerotized throughout, without well sclerotized scales.

Distribution. Up to now only known from the Nilgiri Hills of the Eastern Ghats in South India.

Habitat. Unknown.

Bembidion (Ocydromus) salweenum sp. n.

Figs. 2, 5.

Type material. Holotype male, with label data “S TIBET 26–29.IX.2010 / Kema SSE Naqu 4450 m / Salween River, banks, alpine / steppe, 31°16'34N 92°06'20E” in ZSM.

Paratypes: 83 specimens (males and females) with same label data as holotype in CIBIK, CMGG, CSCHM, CTOL, CWR, NMBB, NME, OSAC, ZSM; 11 specimens (males and females) with label data “CH Qinghai 30.VII.2012 / Qumahe 4320 m / leg. R. Schultz / 34°51'28”N 94°56'25”E” in CSCHM, OSAC.

Etymology. The species is named after the Salween

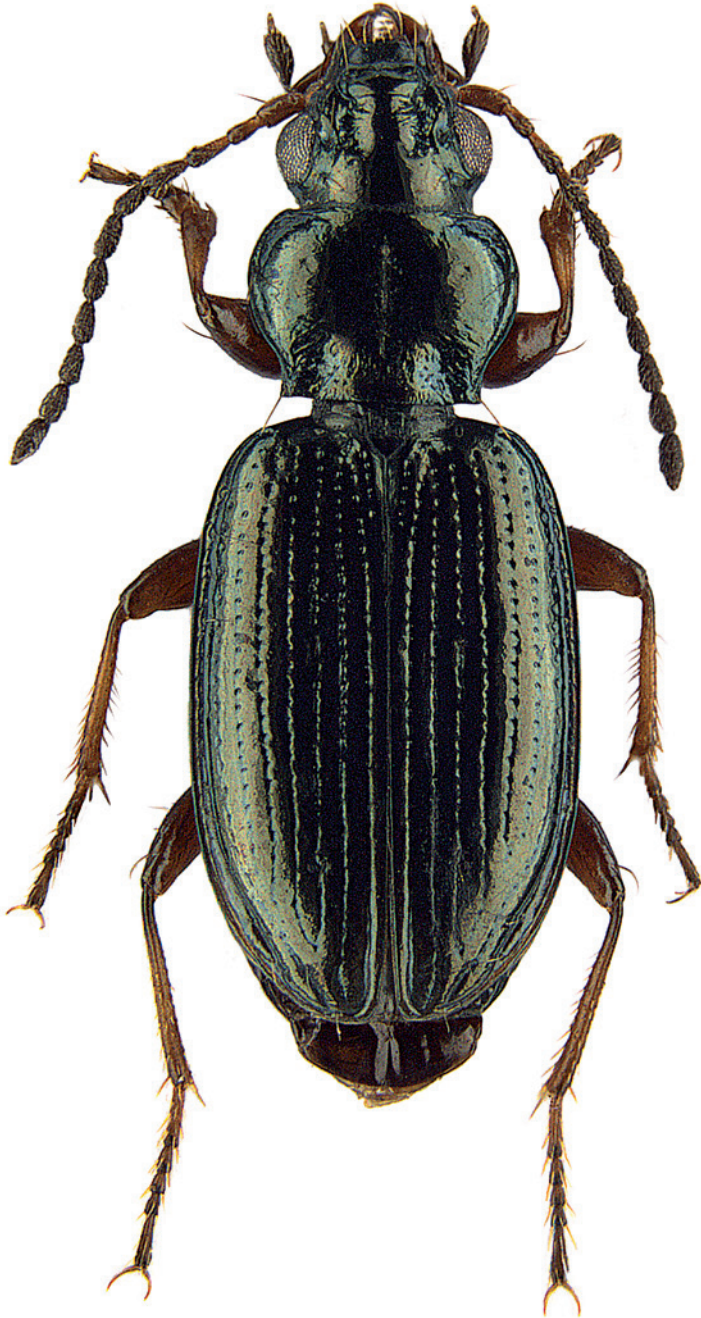


Fig. 2: *Bembidion (Ocydromus) salweenum* sp. n., holotype.

River on the banks of which it was found for the first time.

Diagnosis and Recognition. A typical representative of the *Bembidion saxatile* species group of the subgenus *Ocydromus* s. str., with several deep punctures on frons at the level of the hind half of the eyes, with a relatively small and moderately sclerotized central sclerite of the endophallus, with a long and well sclerotized flagellum, and with a pack of well sclerotized scales partially covering the apical portion of the ostial flag in the aedeagus. It differs from all High Asian species of that group by the smaller body size (3.4–4.2 mm), and from *B. saxatile* and his subspecies by the unicoloured blackish brown body with metallic dorsal surface of head, pronotum and elytra. In addition to the smaller body size, the new species differs from the likewise unicoloured East Tibetan species *B. (Ocydromus) merum* Jedlička, 1933 by the smaller eyes, slender and more complanate elytra with more pronounced shoulders, by the larger central sclerite of the endophallus which is situated more medially, and by the smaller flagellum of the endophallus.

Description. Body length: 3.4–4.2 mm.

Colour: Dorsal surface of body blackish brown with distinct metallic reflections, elytra without maculae; palpi (without penultimate segment of the maxillary palpus), antennal base, and legs testaceous; penultimate segment of the maxillary palpus dark brown, antennae darkened from the apical half of the second or third joint.

Microsculpture on dorsal surface: Discs of head and pronotum with very slightly engraved micromeshes, only visible under magnification > 100 x (discs appearing polished under magnification of 50 x); labrum, clypeus, base of head, and lateral margin of pronotum with isodiametric sculpticells which are well visible under magnification of 40 x. Surface of elytra with moderately transverse meshes, very slightly impressed in males (hardly visible under magnification of 40 x), somewhat more distinct in females.

Head: Smaller than pronotum ($HW/PW = 0.79-0.82$), with eyes relatively small, moderately protruded; temporae rather long, $1/4-1/3$ of eyes diameter, markedly wrinkled to the neck. Antennae moderately elongate, the tip of the ninth antennal joint extended to the pronotal base. Clypeus and frons convex between the broad and deep frontal furrows; frons with several punctures

at the level of the hind half of the eyes; the punctures are deeper and more closely together near the frontal furrows; disc sometimes smooth.

Pronotum: Transverse ($PW/PL = 1.36-1.42$), distinctly narrower than elytra ($EW/PW = 1.41-1.49$), subcordate, with sides distinctly narrowed towards base ($PW/PWB = 1.33-1.38$), the anterior margin slightly smaller or same as broad as the posterior margin ($PWA/PWB = 0.94-1.00$). Sides evenly rounded in apical $2/3$ and concavely rounded in basal third. Anterior angles rounded, very slightly protruded, anterior margin slightly concave, not bordered. Hind angles large and rectangular, not or very slightly protruded laterally, with laterobasal carina short and bent, sometimes wrinkled. Posterior margin not bordered, straight or very slightly convex. Disc moderately convex, smooth, without punctures. Median line deep in middle, absent near anterior and near posterior margin. Frontal transverse impressions shallow. Basal transverse impression moderately broad and deep, laterobasal foveae large and deep; both these impressions coarsely punctuate or transversely wrinkled throughout.

Elytra: Markedly depressed on disc; in dorsal view rather short ($EL/EW = 1.42-1.44$), subovate with shoulders relatively broad, with maximum width between the middle and the end of the second third; praeapical sinuation indistinct or lacking. Parascutellar seta and two discal setae present; the latter situated on third interval near third stria. Parascutellar stria approximately $1/5$ as long as elytra. Striae I-VII deeply punctuate-striate, but striae II-VII shallower impressed near apex; seventh stria not shallower impressed than sixth stria. Apical stria short, deep, connected with the fifth or seventh stria. Intervals moderately convex on elytral disc.

Male genitalia: Aedeagal median lobe as in Fig. 5, in lateral view moderately slender, slightly bent, slightly convex on ventral side in median lobe middle, with apex short. Central sclerite of internal sac rather large, moderately sclerotized, somewhat irregularly shaped, situated near the median lobe middle; ventral sclerite normal; flagellum moderately long, well sclerotized, its apical tip reaches the level of the broader portion of the ostial flag on dorsal side of the median lobe; ostial flag very long, almost same as long as the flagellum, well sclerotized throughout, with an additional patch of markedly sclerotized scales as in *B. saxatile*.

Distribution. Upper portions of the Salween and Yangtze rivers on the Eastern Tibet-Qinghai Plateau.

Habitat. A riparian species of the alpine zone. On the banks of the river Salween *B. salweenum* sp. n. was found together with *B. (Bembidionetolitzkyi) nivicola* Andrewes, 1923, *B. (Bembidionetolitzkyi) persephone* Andrewes, 1926, *B. (Peryphus) dauricum* Motschulsky, 1844, and *B. (Plataphus) hastii* ssp. *elatum*, Andrewes, 1924 (Fig. 7).

***Bembidion (Ocydromus) saxatile himalotibeticum* ssp. n.**

Figs. 3, 6.

Type material. Holotype male, with label data “S TIBET 15.VII.2010 / YamTso lake shore near / Nagartse, near Sanding / Monastery, 4420 m” in ZSM.

Paratypes: 21 males, 13 females with same label data as holotype in CSCHM, OSAC, ZSM; 2 males, 3 females „NEPAL, Annapurna / Region, Umg. Muktinath / 3200 m NN, 03.X.1992 / leg. A. Weigel“ in CWG, NME; 1 male „NEPAL, Annapurna / Region, Umg. Muktinath / 3800 m NN, 30.IX.1992 / leg. J. Weipert“ in CWP; 1 female „NEPAL, Annapurna / Region, Jomsom / 2700 m NN, 01.X.1992 / leg. J. Weipert“ in CWP; 2 males, 3 females „NEPAL, Annapurna Region / Umg. Marpha, Schwemm- / ebene, 2600 m NN / 02.X.1992 / leg. A. Weigel“ in CWG, NME; 216 specimens (males and females) „NEPAL-HIMAL. 22.10.92 / Kali-Gandaki-Fluß bei / Jomsom 2700 m / Schmidt“ in CMGG, CSCHM, CTOL, CWR, SMTD; 17 specimens (males and females) „Kali Gandaki-Tal / bei Tukche, 10.6. / 2600 m“, „NEPAL-HIMALAYA / Annapurna Mts. / 1993 lg. Schmidt“ in CSCHM, SMTD; 2 males „TIBET, Xigaze Shan / Paß bei Xigaze / V.1997, ca. 5000 m / leg. C. Reuter“ in CHTZ; 66 specimens (males and females) „Tibet, Shigatse 3900 mNN / N29°15'43,6; / E88°52'09,3; Tsangpoufer / 31.VII.1998; leg. O. Jäger“ in CIBIK, CSCHM, SMTD; 30 males, 21 females „TIBET South Centr. 18.VII.2007 / 50 km NNE Lhasa, SW of / Chak La Pass 4100–4550 m / Chakla river vall. lg. Schmidt“, „30°03'36,6N 91°16'51,7E / to / 30°06'10,1N 91°16'38,4E“ in CSCHM, OSAC; 1 male, 1 female „CHINA S Tibet, E of Mila / pass, near Songduo / 4000–4400 m / 11+16.VII.09 lg. Tian Mingyi“ in CSCHM, SCAU; 1 male, 2 females „CHINA S Tibet 4400 mNN / Gamula ca. 5 km N Lhasa / 12.VII.2009 lg. Tian Mingyi“ in CSCHM, SCAU; 1 male, 2 females „S TIBET 2.VII.2010 4250 m / upp. Chüsül Vall. Baypama / Tsu side vall. / 29°29'33N 90°43'09E“ in CSCHM; 3 males, 1 female „S TIBET,

Kyi Chu river / betw. Lhasa and airport / ca. 3650 m, 22.IX.2010 / leg. J. Schmidt“ in CSCHM; 8 males, 7 females „S TIBET 22.IX.2010 / Thömpachang County / Thünchu Vall., 3840 m / 29°20'49N 90°18'06E“ in CSCHM; NMBB; 7 males, 7 females „SC Tibet 26.VI.2011 / Yarlung Zhangbo near / Xüsül, 3600 m lg. Schmidt“ in CSCHM, ZSM.

Etymology. The name of the new subspecies is an arbitrary combination of the names of the two main portions of the Himalayan Tibetan Orogen (noun in apposition). In these portions of the mountain system the distributional area of the new subspecies is located.

Diagnosis and Recognition. The new taxon differs from all other subspecies of *B. saxatile* (s. l.) by the more complanate and lighter brown elytra with humeral and apical spots faint or lacking (Fig. 3). In addition, the new taxon differs from the Middle Asiatic subspecies *B. saxatile flavipalpe* Netolitzky, 1930 and *B. saxatile morsum* Netolitzky, 1930 by the darkened penultimate maxillary palpus. The elytral spots are much less defined than in the latter subspecies as well as in the European subspecies *B. saxatile saxatile* (incl. *B. saxatile devillei* Netolitzky, 1930 from the southwestern Alps), and in most specimens of the East Asian subspecies *B. saxatile fuscomaculatum* Motschulsky, 1844. In contrast to the Caucasian subspecies *B. saxatile caesareum* Netolitzky, 1914 and *B. saxatile kuruschicum* Netolitzky, 1930 (as well as some individuals of *B. saxatile saxatile* and *B. saxatile fuscomaculatum* with darkened legs) the femora of *B. saxatile himalotibeticum* ssp. n. are always completely testaceous. Finally, the new subspecies differs from *B. saxatile kuruschicum* and the high altitude form of *B. saxatile morsum* by the more parallel-sided elytra with more marked humeri.

Description. Body length: 4.8–5.1 mm.

Colour: Head and pronotum blackish brown with slight metallic reflections; elytra brown or yellowish brown with humeral maculae and apical maculae each large but very faint and indistinct, the apical maculae often completely lacking; in some specimens elytra unicoloured yellowish brown. Palpi, antennal base, and legs testaceous; penultimate segment of the maxillary palpus dark brown. Antennae darkened from the apical half of the fourth joint; sometimes the apical third or fourth of the third joint also contrasted.

Microsculpture on dorsal surface: Discs of head including clypeus, and pronotum with very slightly engraved

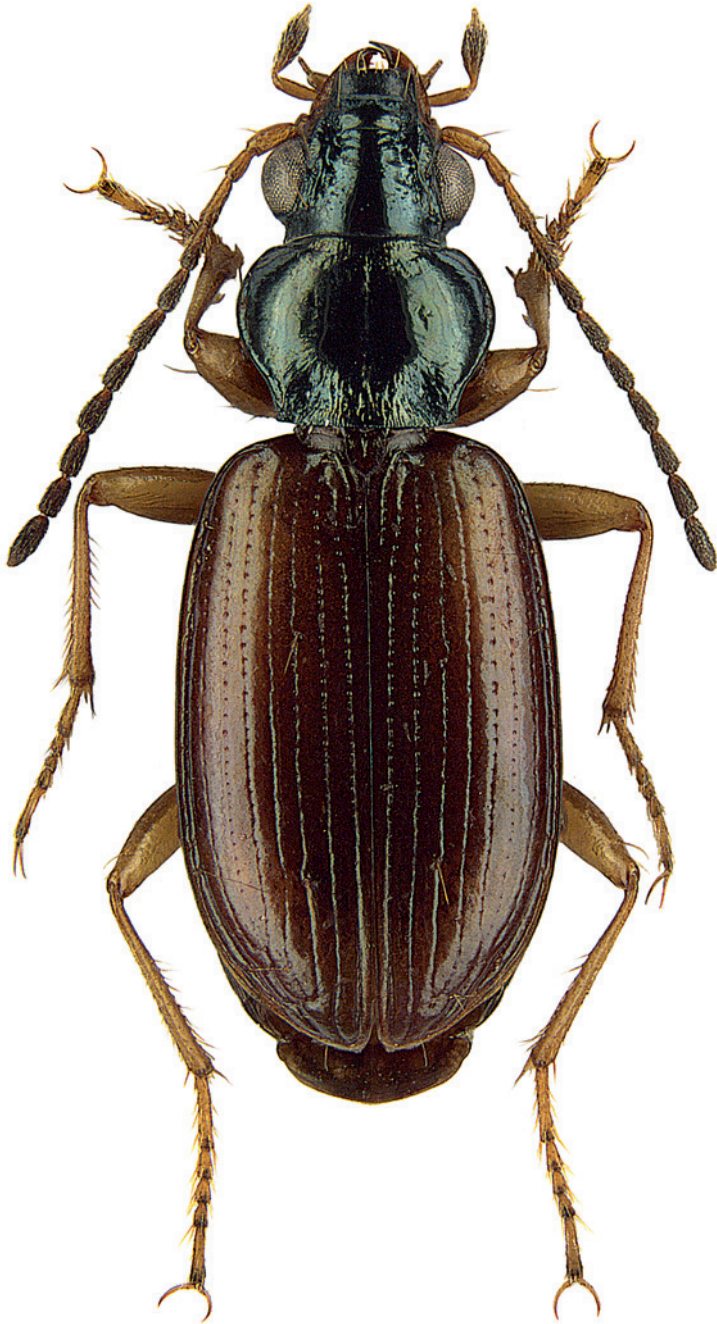


Fig. 3: *Bembidion (Ocydromus) saxatile himalotibeticum* ssp. n., holotype.



Fig. 4-6: Medianlobe of aedeagus, left lateral view. 4 - *Bembidion (Ocydromus) loebli* sp. n., paratype; 5 - *B. (Ocydromus) salweenum* sp. n., paratype; 6 - *B. (Ocydromus) saxatile himalotibeticum* ssp. n., paratype from Chakla Pass.

micromeshes, only visible under magnification $> 100 \times$ (discs appearing polished under magnification of $50 \times$); labrum, base of head, and lateral margin of pronotum with isodiametric sculpticells which are well visible under magnification of $40 \times$. Surface of elytra with moderately transverse meshes, very slightly impressed in males (hardly visible under magnification of $40 \times$), somewhat more distinct in females.

Head: As in *B. saxatile fuscomaculatum*; proportion HW/PW = 0.83-0.85.

Pronotum: As in *B. saxatile fuscomaculatum*; proportions: PW/PL = 1.29-1.33, EW/PW = 1.50-1.55, PW/PWB = 1.36-1.44, PWA/PWB = 0.94-1.03).

Elytra: More or less markedly depressed on disc; in dorsal view elongate-oval (EL/EW = 1.47-1.51) with shoulders moderately developed, and with maximum width at the end of the second third. In all other characters as in *B. saxatile fuscomaculatum*.

Male genitalia: As in *B. saxatile fuscomaculatum*.

Distribution. Based on current data *B. saxatile himalotibeticum* ssp.n. seems widely distributed in the central parts of the Transhimalaya (Gangdise Shan) and the Tibetan Himalaya in South Tibet. In Nepal the new subspecies occurs on the northern face of the Greater Himalaya in the upper portions of the Himalayan transverse valley of the Kali Gandaki (Thak Khola).

Habitat. In Tibet and in the upper Kali Gandaki Valley of Nepal the new subspecies was found on brackish lake shores as well as on open shores of slow running rivers and brooks, particularly on standing water in the flooding zone, at an altitude of approx. 2600 mNN (high montane zone in the Greater Himalaya) to 4600 mNN (sub-alpine zone in South Tibet; the elevation data from C. Reuter: 5000 mNN, for a locality near Xigaze, was not confirmed by subsequent investigations). It was only found on places with very high insolation, and it lacks on shady shores and on fast streaming portions of rivers and brooks. Along rivers *B. saxatile himalotibeticum* ssp.n.



Fig. 7: Upper Salween near Naqu, 4450 mNN; the river shores are habitat of *Bembidion (Ocydromus) salweenum* sp. n.



Fig. 8: Yam Tso near Nagartse, 4420 mNN; the shores of the brackish lake are habitat of *Bembidion (Ocydromus) saxatile himalotibeticum* ssp. n.

seems to prefer rather cohesive soils with distinct content of loam or clay, while it avoids shores solely consist of sand and gravel (field observations of the author). In contrast, along the shores of the brackish lake Yam Tso it was even found in coarse gravel. Taking all these facts together suggests that *B. saxatile himalotibeticum* ssp.n. is adapted to increased osmotic levels of soil water.

Acknowledgements

I thank Johannes Reibnitz (Staatliches Museum für Naturkunde, Stuttgart) for producing the habitus photographs (Figs. 1–3). The study was supported by the German Research Council (DFG grant SCHM 3005/2–1).

Literature

- ANDREWES, H. E. (1935): The Fauna of British India including Ceylon and Burma. Vol. II, Harpalinae I. – Taylor & Francis, London: 323 pp + V plates.
- MADDISON, D. (2012): Phylogeny of *Bembidion* and related ground beetles (Coleoptera: Carabidae: Trechinae: Bembidiini: Bembidiina). – *Molecular Phylogenetics and Evolution* **63**: 533–576.
- NETOLITZKY, F. (1942): Bestimmungstabellen europäischer Käfer (9. Stück). II. Fam. Carabidae. Subfam. Bembidiinae. 66. Gattung: *Bembidion* Latr. Bestimmungstabelle der *Bembidion*-Arten des paläarktischen Gebietes. (Mit Hinweisen auf holarktische, äthiopische und orientalische Arten). – *Koleopterologische Rundschau* **28**: 29–68.
- (1943a): Bestimmungstabellen europäischer Käfer (9. Stück). II. Fam. Carabidae. Subfam. Bembidiinae. 66. Gattung: *Bembidion* Latr. Bestimmungstabelle der *Bembidion*-Arten des paläarktischen Gebietes. (Mit Hinweisen auf holarktische, äthiopische und orientalische Arten). – *Koleopterologische Rundschau* **29**: 1–70.
- (1943b): Bestimmungstabellen europäischer Käfer (9. Stück). II. Fam. Carabidae. Subfam. Bembidiinae. 66. Gattung: *Bembidion* Latr. Bestimmungstabelle der *Bembidion*-Arten des paläarktischen Gebietes. (Mit Hinweisen auf holarktische, äthiopische und orientalische Arten). – *Koleopterologische Rundschau* **28** [1942]: 69–142.
- RÉBL, K. & L. TOLEDANO (2014): Notes on the *Bembidion* Latreille, 1802 subgenus *Ocydromus* Clairville, 1806 sensu stricto of the *saxatile* Gyllenhal, 1827 species group, with description of *B. (O.) muemo* sp.n. from Iran and Afghanistan (Coleoptera: Carabidae: Bembidiina). – *Giornale Italiano di Entomologia* **13** (59): 597–612.
- SCHMIDT, J. (2004): Revision der *Bembidion*-Untergattung *Bembidionetolitzkya* E. Strand, 1929 des Himalaya (Coleoptera, Carabidae, Bembidiini). – *Veröffentlichungen Naturkundemuseum Erfurt* **23**: 151–176.
- TOLEDANO, L. (2000): Systematic notes on the palaearctic Bembidiini with particular reference to the fauna of China (Coleoptera Carabidae). – *Memorie della Società Entomologica Italiana* **78** (1): 5–70.
- (2008): Systematic notes on the Palaearctic *Bembidion* Latreille, 1802 (Coleoptera, Carabidae) with particular reference to the fauna of China. – *Memorie del Museo Civico di Storia Naturale di Verona (II serie), Sezione della vita*, **18**: 5–46.
- TOLEDANO, L. & J. SCHMIDT (2008): Review of the species of *Bembidion* subg. *Bembidionetolitzkya* Strand, 1929 from Southwestern China and Tibet with description of 22 new taxa (Coleoptera, Carabidae, Bembidiina). – *Memorie del Museo Civico di Storia Naturale di Verona (II serie), Sezione Scienze della vita* **18**: 47–78.
- TOLEDANO, L. & J. SCHMIDT (2010): Revision of the *Bembidion kara* Andrewes, 1921 species group and notes on the Palaearctic species of *Bembidion* subgenus *Trichoplataphus* Netolitzky, 1914 (Coleoptera, Carabidae, Bembidiini). – In: KLAUSNITZER, B., J. SCHMIDT & T. L. ERWIN (Eds.): Contributions to Biology and Systematics of Beetles dedicated to the Memory of Prof. Dr. Gerd Müller-Motzfeld. – *Entomologische Blätter für Biologie und Systematik der Käfer* **106**: 371–406.
- TOLEDANO, L. & R. SCIACY (1998): Three new subgenera of *Bembidion* new to China, with description of a new species (Coleoptera, Carabidae). – *Bollettino del Museo Civico di Storia Naturale di Venezia* **48** [1997]: 1–18.

Author's address:

Joachim Schmidt
University of Rostock
Institute of Biosciences, General and Systematic Zoology
Universitätsplatz 2
D-18055 Rostock

and:
Lindenstr. 3a
D-18211 Admannshagen
Germany
E-mail: schmidt@agonum.de

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Veröffentlichungen des Naturkundemuseums Erfurt \(in Folge VERNATE\)](#)

Jahr/Year: 2014

Band/Volume: [33](#)

Autor(en)/Author(s): Schmidt Joachim

Artikel/Article: [New species of Bembidion Latreille, 1802, subgenus Ocydromus Clairville, 1806 from India and Tibet \(Insecta: Coleoptera: Carabidae: Bembidiini\) 185-195](#)