

Notes on Asian Ochthebiinae (Insecta: Coleoptera: Hydraenidae)

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Abstract

Protochthebius PERKINS, 1997 is revised and two new species, *Protochthebius jendeki* sp.n. (from India: Meghalaya) and *P. schillhammeri* sp.n. (from Laos), are described. A separate species group is established for *O.* (s.str.) *kosiensis* CHAMPION, 1920.

Key words: Hydraenidae, Ochthebiinae, *Ochthebius*, *Protochthebius*, taxonomy, new species, new subgenus, Asia, Laos, India, Meghalaya.

Zusammenfassung

Protochthebius PERKINS, 1997 wird revidiert und zwei neue Arten, *Protochthebius jendeki* sp.n. (aus Indien: Meghalaya) und *P. schillhammeri* sp.n. (aus Laos), werden beschrieben. Für *Ochthebius* (s.str.) *kosiensis* CHAMPION, 1920, wird eine eigene Artengruppe errichtet.

Introduction

Most species of Ochthebiinae can be rather easily assigned to established species groups, subgenera or genera. However, it was so far not possible to place a small number of Asian species (*Ochthebius kosiensis* CHAMPION, 1920, *O. jagthanae* CHAMPION, 1921, and two undescribed species housed in the Natural History Museum, Vienna) in any of the recognized species groups.

A closer examination of these four species revealed that three species (*O. jagthanae* and the two undescribed ones) must be placed in *Protochthebius* PERKINS, 1997. The fourth species (*O. kosiensis*) can be regarded as a member of *Ochthebius* s.str., but its characters do not allow inclusion in any of the known species groups.

Acknowledgements and Acronyms

The material used for this study is deposited in the following institutions (in the text abbreviations are used to refer to collections):

BML The Natural History Museum, London [formerly: British Museum (Natural History)]
NMW Naturhistorisches Museum, Wien

My sincere thanks are due to M.J.D. Brendell (BML) and R.T. Thompson (BML) for the loan of material and for reading the manuscript. I am indebted to W. Zelenka for the habitus illustrations and to M. "Theophilus" Hansen for some very useful suggestions.

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Ochthebius* (s.str.) *kosiensis* CHAMPIONOchthebius kosiensis* CHAMPION, 1920: 169. - KNISCH 1924. - d'ORCHYMONT 1928.**Type locality:** West Almora, Uttar Pradesh, northwestern India.

Type material: **Lectotype:** ♂, by present designation (BML): "Type H.T. \ W.Almora, Kumaon, India. H.G.C. \ G.C.Champion. 1920-69 \ *Ochthebius kosiensis* Ch \ SYNTYPE \ Aedeagus drawn by 4 P.D.Perkins 199 \ LECTOTYPE *Ochthebius kosiensis* CHMP. des.M.A.Jäch 1997". The lectotype is glued on to the right hand side of the card and marked by an arrow; the aedeagus is glued to the same card, near the posterior end of the specimen. **Paralectotypes:** According to the original description there should be 8 syntypes of *O. kosiensis*. However, I could find only 3 syntypes in the BML during my visit in January, 1997. One of the paralectotypes (a female) is glued to the left side of the same card as the lectotype; a referring label ("Paralectotype *O. kosiensis* CHMP. vid. Jäch 1997") has been attached to the pin. The second paralectotype (also a female) is mounted on a separate pin to which I have also attached a referring label. Nothing is known about the whereabouts of the remaining 5 syntypes.

Description: 1.6 - 1.8 mm long. Coloration dark brown to almost black; appendages paler brown.

Dorsal surface of head rugosely punctate, rather densely covered by short setae. Labrum somewhat deflexed, oblique; anterior margin moderately deeply excised; excision semi-circular, filled by a hyaline membrane. Last segment of labial palpi short, ca. 0.5 times as long as penultimate one. Fronto-clypeal suture arched. Lateral margin of frons sub-parallel, somewhat produced laterad, conspicuously thickened; disc of frons gibbous; ocelli well developed, placed close to eyes; occipital ridges well developed. Eyes well developed and protruding, separated by 5 times eye diameter (dorsal view). Antennae¹: segment 2 short, subglobose, its apex obliquely truncate; segment 3 very short, petiolate; segment 4 (cupule) very small; segment 5 longer than segment 6.

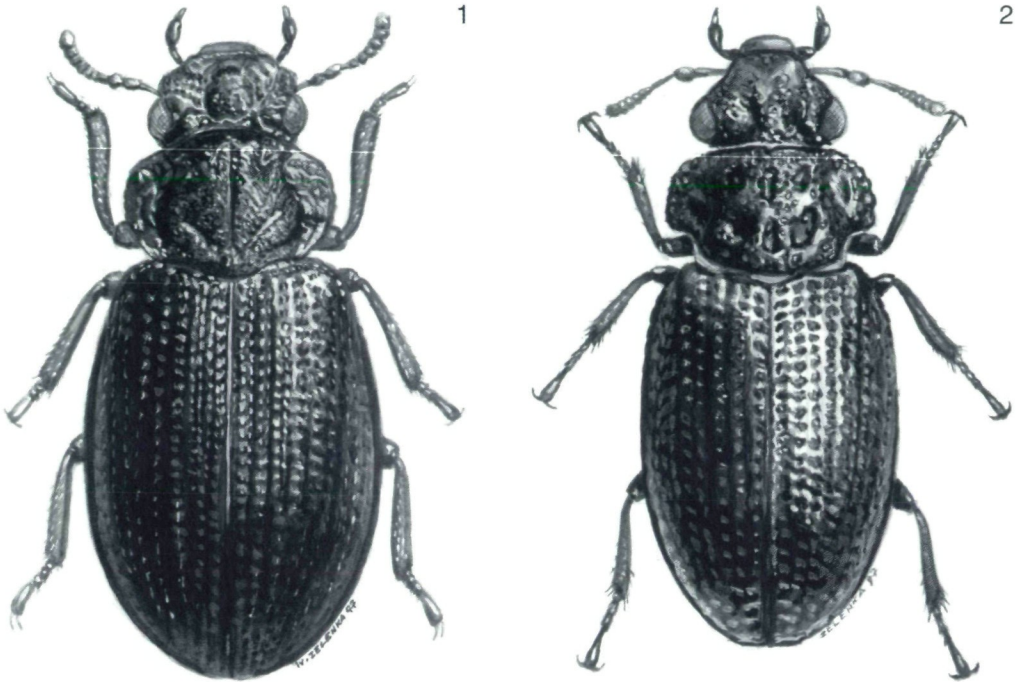
Pronotum ca. 1.4 times as wide as long; lateral margin widely explanate and slightly deflexed, abruptly excised near basal 0.4; lateral half of lateral margin very densely and rugosely punctate, mesial half more or less smooth and glabrous. Pronotal disc densely and rugosely punctate and very strongly convex (in cross section); median groove deeply impressed; anterior discal fovea moderately large, deeply impressed; posterior discal fovea elongate, oblique, deeply impressed. Postocular tooth very small, inconspicuous. Pronotal membrane rather well developed, bordering anterior margin, posterior margin and lateral excision.

Elytra large and oval, wider than pronotum, strongly convex in cross section; with 10 distinct rows of punctures; all rows straight; scutellary stria absent; punctures very deeply impressed, moderately large, somewhat transverse, rather densely arranged, setiferous; intervals more or less flat or slightly convex, glabrous. Lateral margins moderately widely explanate.

Hypomera with antennal grooves comparatively short, deep and moderately wide. Mesosternum weakly gibbous between mesocoxae. Metasternal disc glabrous, flat, postero-laterally bordered by an oblique ridge. Epipleura² relatively wide, reaching elytral apex.

¹ Since I have examined only 3 specimens (all of which are syntypes), I have refrained from dissecting (and illustrating) the antenna.

² Due to the poor condition of the syntypes, I was unable to thoroughly examine the pubescence of the 6th ventrite and the epipleura.



Figs. 1 - 2: Habitus of (1) *Ochthebius* (s.str.) *kosiensis* and (2) *Protochthebius schillhammeri*.

Ventrites I - V (and probably ventrite VI²) pubescent; ventrite VII glabrous. Apical margin of last abdominal tergite of female with a fringe of stiff, short bristles.

Legs rather short; tarsi about 0.5 times as long as width of frons between eyes.

Aedeagus (Fig. 3): Main piece long, slender, curved baso-ventrally (lateral view); with a group of short, subapical setae; phallobase asymmetrical; distal lobe moderately long, slender, slightly curved; parameres long, symmetrical, enlarged apically, with some short setae.

Distribution: Known only from the type locality.

Discussion: CHAMPION (1920) did not formally assign *Ochthebius kosiensis* to any subgenus. But he described this species as "very like the S. European *O. montanus*", which is a member of the subgenus *Asiobates* THOMSON, 1859. Eventually, KNISCH (1924) and d'ORCHYMONT (1928) placed *O. kosiensis* in *Asiobates*.

Indeed, *O. kosiensis* has an *Asiobates*-like habitus (Fig. 1). It superficially resembles a number of species of the *O. bicolon* species group (e.g. *O. amplicollis* CHAMPION, 1925, *O. haberfelneri* REITTER, 1890, *O. heydeni* KUWERT, 1887, *O. laticollis* PANKOW, 1986, *O. lenkoranus* REITTER, 1885, *O. montanus* FRIVALDSKY, 1881, *O. monychus* d'ORCHYMONT, 1941, *O. subopacus* REITTER, 1885, *O. thraciae* JÄCH, 1990), especially by the shape and punctuation of the pronotum and by the oval elytra. Furthermore, in some of these species the labrum is more or less strongly deflexed (e.g. *O. amplicollis*, *O. haberfelneri*, *O. heydeni*) and the lateral margins of the frons are thickened (e.g. *O.*

subopacus, *O. heydeni*, *O. laticollis*). However, *O. kosiensis* can be distinguished from all these species by the lateral margins of the frons being subparallel, by the ocelli being nearer the eyes, by the mesosternum being provided with an intercoxal gibbosity, by the metasternum being ridged and by the epipleura reaching the elytral apex. And, above all, the aedeagus of *O. kosiensis* is definitely not *Asiobates*-like, which is the main reason for excluding this species from *Asiobates*.

The lateral position of the ocelli, the wide epipleura, and the body contours are somewhat reminiscent of the genus *Enicocerus* STEPHENS, 1829. However, the aedeagal morphology and some significant antennal characters of *Enicocerus* (segments 5 - 7 elongate, segment 8 larger than segment 9) are entirely different from *O. kosiensis*.

The deflexed labrum, the lateral expansion of the frons, the position of the ocelli, the shape of the antennae (segment 2 short, subglobose; segment 3 very short, petiolate; segment 4 (cupule) very small) and the highly arched pronotal disc superficially resemble the genus *Micragasma* SAHLBERG, 1900. However, *Micragasma* is easily distinguished by the conspicuously granulate head and pronotum, by the very widely explanate pronotal lateral margin, by the mesosternum being not gibbous, by the metasternal disc being not glabrous and not ridged laterally, and by the abbreviated epipleura.

Due to the morphology of the aedeagus, I place *Ochthebius kosiensis* in the subgenus *Ochthebius* s.str. However, due to a number of deviating characters, most of which are very unusual for *Ochthebius* s.str. (e.g. lateral margin of frons subparallel and conspicuously thickened; pronotal lateral margin abruptly excised near basal 0.4; pronotal disc strongly convex; mesosternum gibbous between mesocoxae; metasternal disc laterally bordered by ridges; epipleura reaching elytral apex) I propose to establish a separate species group (*Ochthebius kosiensis* group).

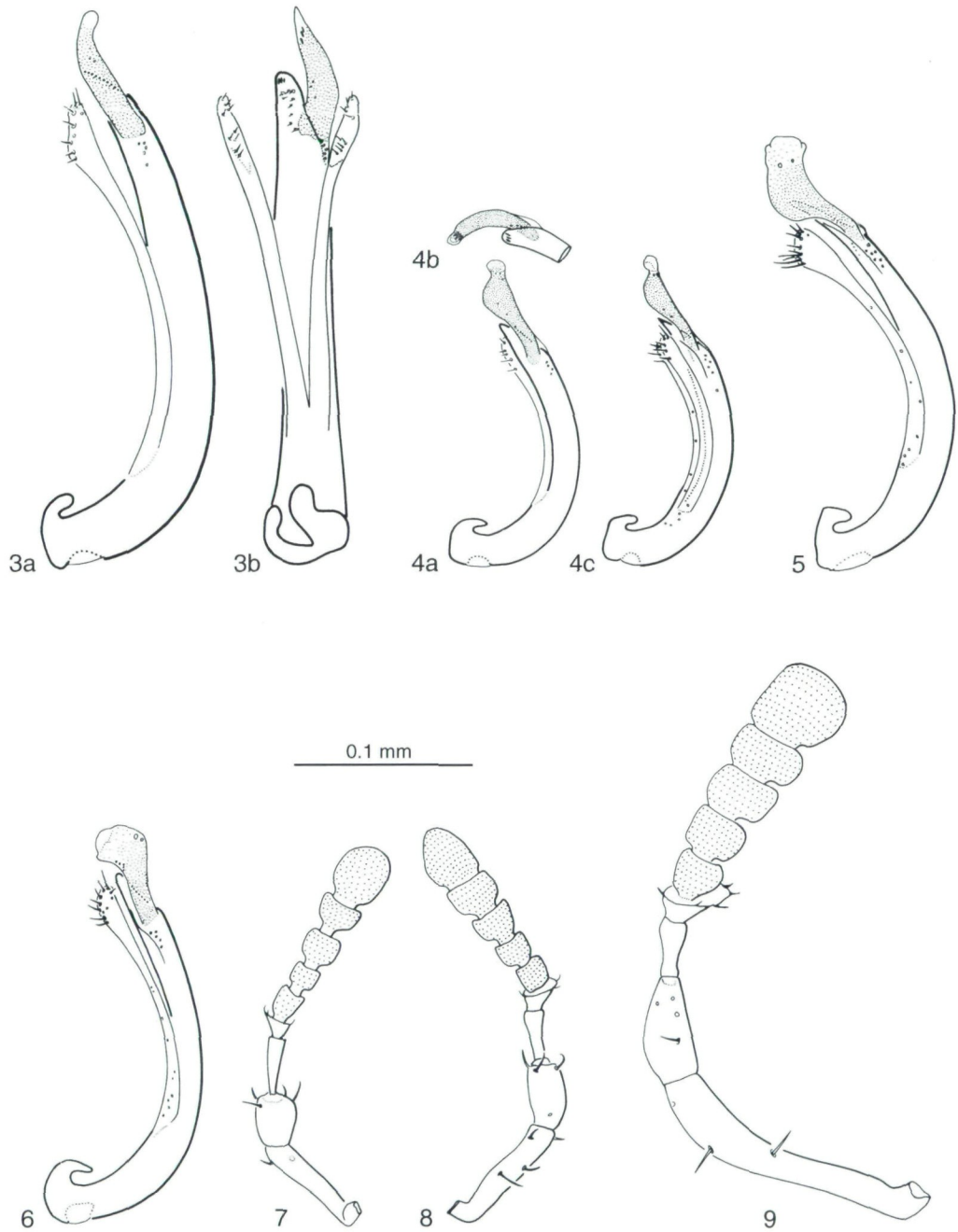
***Protochthebius* PERKINS³**

Type species: *Protochthebius satoi* PERKINS, 1997.

Diagnosis: *Protochthebius* is characterized by the combination of the following characters: 1) Labrum transverse, not excised anteriorly; 2) antennae: segment 1 distinctly shorter than club, segment 3 long and thin, not markedly petiolate, cupule small, club segments more or less symmetrical, not very tightly arranged; 3) ocelli present; 4) lateral margin of pronotum widely explanate, more or less abruptly constricted near basal 0.40 or 0.45; 5) pronotal groove and foveae well impressed; 6) hypomera without glabrous antennal grooves, without "secondary external ridge" (sensu BEUTEL & JÄCH 1995) and without excavation for reception of eyes; 7) metasternum postero-medially impressed, without glabrous area; 8) ventrites I - V pubescent; 9) aedeagus simple, phallobase asymmetrical, main piece without subapical setae, with a characteristic ridge near the base of the distal lobe, parameres well developed, inserted near basal 0.3, slightly enlarged and setiferous apically.

Distribution: So far known only from Nepal, North India (Uttar Pradesh, Meghalaya) and Laos.

³ This manuscript had been submitted and accepted for publication shortly before the description of *Protochthebius* was published by PERKINS (1997). Thus only limited modifications were possible.



Figs. 3 - 9: (3 - 6) Aedeagus of (3) *Ochthebius* (s.str.) *kosiensis*, (a) lateral view, (b) ventral view, (4) *Protochthebius jagthanae*, (a) holotype, lateral view, (b) same, apex, ventral view, (c) paralectotype of *Ochthebius minutus*, lateral view, (5) *Protochthebius jendeki*, holotype, (6) *P. schillhammeri*, holotype. (7 - 9) Antenna of (7) *P. jagthanae*, (8) *P. jendeki*, (9) *O.* (s.str.) *tudmirensis* JÄCH.

Discussion: The antennae (especially the shape and the relative length of the segments) are rather diverse within Ochthebiinae, and they possess some phylogenetic importance for separating genera, subgenera and species groups. The antennae of *Protochthebius* (Figs. 7, 8) are remarkable in the following characters: 1) segment 1 distinctly shorter than antennal club, 2) segment 3 long and thin, not markedly petiolate, 3) club segments more or less symmetrical, not very tightly arranged. In *Ochthebius* and other closely related genera, the antennal club is usually as long as segment 1 or very slightly longer. In *Protochthebius* and probably in *Aulacochthebius*, of which I have examined only one species (see Fig. 19), the club is distinctly longer than segment 1. In many species of *Ochthebius*, the segments of the antennal club (especially segments 6 - 8) are distinctly asymmetrical; this asymmetry is for instance very apparent in *O. (Asiobates) minimus* FABRICIUS (Fig. 13) and *O. (s.str.) nanus* STEPHENS (Fig. 10), it is less obvious for instance in *O. (s.str.) serpentinus* JÄCH (Fig. 11) and *Calobius quadricollis* MULSANT (Fig. 15) and it is nearly imperceptible in *Protochthebius*.

At least some of the characters of *Protochthebius* listed above seem to be plesiomorphic (e.g. antennal segment 3 long and thin, not markedly petiolate; antennal club segments more or less symmetrical, not very tightly arranged). Possible autapomorphies for *Protochthebius* might include the impressed metasternum and the small ridge near the base of the distal lobe. The deflexed labrum (probably an apomorphy) is also found in a number of species of *Ochthebius*. The wide clypeus and the stout femora and tibiae of *P. jagthanae* must be regarded as clinal characters within the new genus.

Protochthebius jagthanae (CHAMPION)

Ochthebius jagthanae CHAMPION, 1921: 178. - KNISCH 1924. - d'ORCHYMONT 1928. - JÄCH 1989.

Ochthebius minimus CHAMPION, 1925a: 173 [junior secondary homonym - name preoccupied by *Ochthebius minimus* (FABRICIUS, 1792), described as *Helophorus minimus*]. - CHAMPION 1925b. - d'ORCHYMONT 1928. - JÄCH 1989.

Ochthebius minutus JÄCH, 1989: 17 [replacement name for *O. minimus* CHAMPION].

Protochthebius jagthanae: PERKINS 1997.

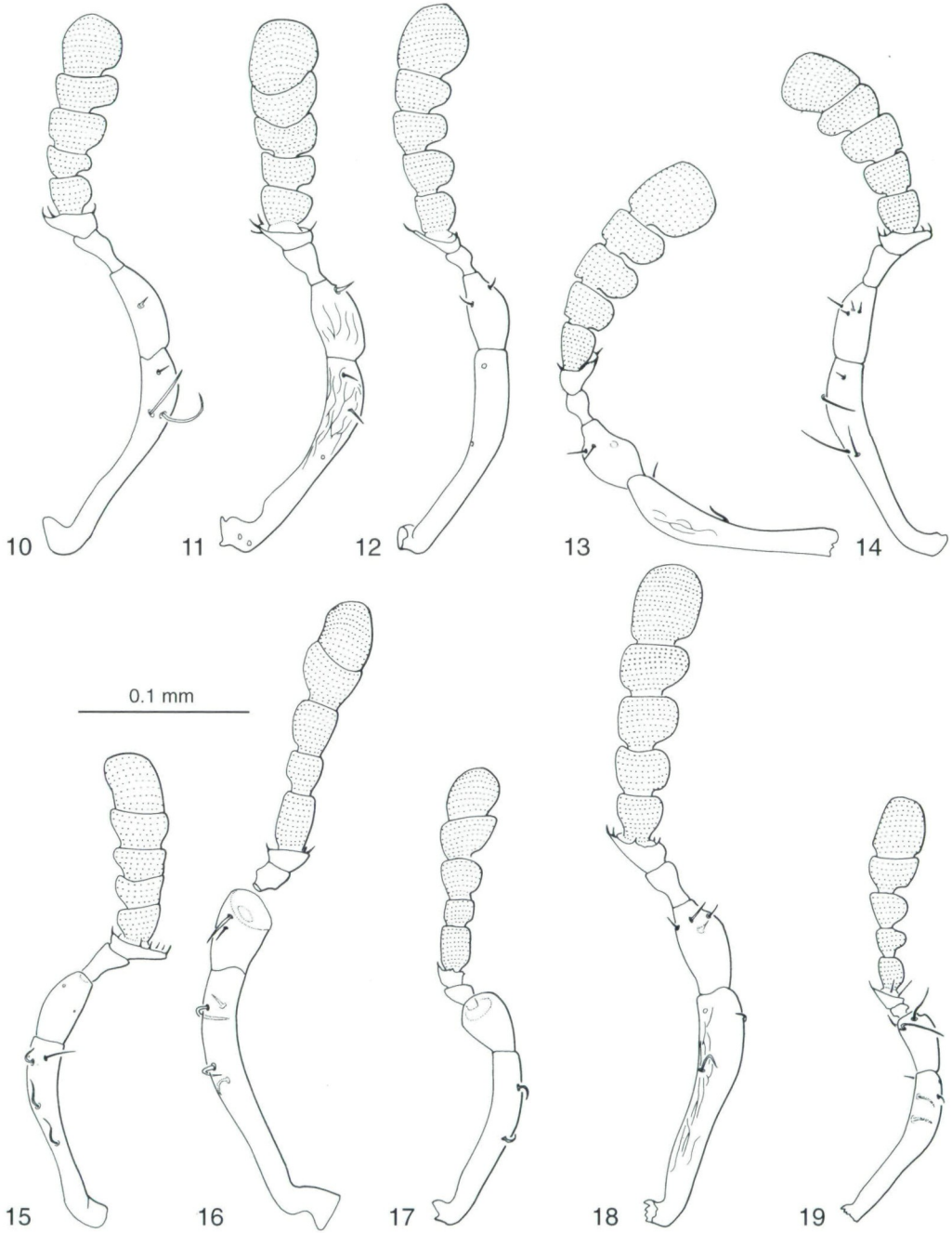
Type locality: Jagthana, Kumaon, Uttar Pradesh, northwestern India.

Type material: **Holotype:** ♂, by monotypy (BML): "Type H.T. \ Jagthana, Kumaon India H.G.C. \ 1921 - 141. \ Ochthebius jagthanae Champ. \ E.M.M. 1921. det.G.C.C. \ Aedeagus drawn by 4 P.D.Perkins 199 \ HOLOTYPE Ochthebius jagthanae CHMP. vid. Jäch 1997".

Synonymy: I have seen 64 syntypes of *Ochthebius minimus* CHAMPION, possibly all that ever existed (type locality: "Bodiar, Haldwani District", Kumaon, Uttar Pradesh, northwestern India). Since the name *Ochthebius minimus* CHAMPION, 1925 is preoccupied by *O. minimus* (FABRICIUS, 1792), the name has been replaced by *O. minutus* (JÄCH 1989). The lectotype ♂ (by present designation): "Type H.T. \ Haldwani Dist., Kumaon, India. H.G.Champion. \ Ochthebius minimus Type. Ch. \ Ochthebius minimus, Ch. det.G.C.C. \ H.G. Champion Coll. B.M. 1953-156 \ L E C T O T Y P U S Ochthebius minimus CHAMPION des. M.A. Jäch 1997 \ Ochthebius jagthanae CHAMP. det. M.A. Jäch 1997" and 61 paralectotypes are deposited in the BML; two paralectotypes are kept in the NMW (with permission of M.J.D. Brendell). These specimens agree in every detail with the holotype of *P. jagthanae*. The synonymy was first indicated by CHAMPION (1925b).

Description: 1.0 - 1.1 mm long. Coloration dark brown, lateral margin of pronotum and appendages paler brown.

Labrum impunctate and glabrous, remainder of dorsal surface of head very densely and rugosely punctate. Labrum transverse, somewhat deflexed; anterior margin entire. Terminal segment of maxillary palpi long and thin, ca. 0.8 times as long as penultimate



Figs. 10 - 19: Antenna of (10) *Ochthebius* (s.str.) *nanus*, (11) *O.* (s.str.) *serpentinus* JÄCH, (12) *O.* (*Asiobates*) *minimus*, (13) *O.* (*Asiobates*) *striatus* CASTELNAU, (14) *O.* (*Cobalius*) *subinteger* MULSANT & REY, (15) *Calobius quadricollis*, (16) *Enicocerus colveranus* FERRO, (17) *E. gibbosus* GERMAR, (18) *E. hasegawai* NAKANE & MATSUI, (19) *Aulacochthebius exaratus* MULSANT.

segment. Clypeus distinctly wider than labrum. Fronto-clypeal suture deeply impressed, slightly arched. Lateral margins of frons convergent; interocular foveae well impressed; ocelli well developed. Eyes moderately large, protruding, separated by ca. 5 times eye diameter (dorsal view). Antennae as in Fig. 7.

Pronotum ca. 1.5 times as wide as long, densely and rugosely punctate; lateral margin widely explanate and slightly deflexed, abruptly excised near basal 0.45. Pronotal disc strongly convex (in cross section); median groove deeply impressed near anterior and posterior 0.3, but only superficially impressed near posterior 0.4, effaced before anterior and posterior pronotal margin; anterior discal fovea rather small, round, deeply impressed; posterior discal fovea elongate, oblique, deeply impressed. Pronotal membrane inconspicuous, very narrowly bordering anterior and posterior margin including hind angles.

Elytra elongate, strongly convex in cross section, distinctly acuminate apically; with 10 distinct rows of punctures; all rows straight; scutellary stria absent; punctures distinctly impressed, small, very densely arranged, setiferous; interstices glabrous. Lateral margin narrowly explanate.

Hypomera more or less horizontal, slightly concave, without glabrous antennal grooves and without "secondary external ridge" (sensu BEUTEL & JÄCH 1995). Metasternum slightly longer than mesosternum, entirely pubescent, distinctly impressed postero-medially. Epipleura rather narrow, progressively tapering towards apex; microreticulate, pubescence confined to anterior 0.1.

Ventrites I - V pubescent; ventrites VI and VII glabrous.

Legs rather short, femora and tibiae stout; tarsi about 0.6 times as long as width of frons between eyes.

Aedeagus (Fig. 4): Main piece short, slender, curved ventrally (lateral view); phallobase asymmetrical; distal lobe elongate, distinctly produced ventrally; parameres symmetrical, slightly shorter than main piece, barely enlarged apically, with some short setae.

Distribution: Known only from Kumaon, Uttar Pradesh, northwestern India.

Ecology: According to CHAMPION (1925a: 173), numerous examples were found in a calcareous "Nala".

Protochthebius jendeki sp.n.

Type locality: Moss-covered boulders in fast flowing river (ca. 3 - 5 m wide), flowing through secondary forest, 1100 m a.s.l., 25°29.6'N, 90°19.5' E, Nokrek National Park, western Garo Hills, Meghalaya, NE India.

Type material: **Holotype:** ♂ (NMW): "NE-INDIA: Meghalaya W Garo Hills Nokrek NP; ca. 1100 m \ 25°29.6'N, 90°19.5' E 9.-17.5.1996 leg. Jendek & Sausa". **Paratypes** (NMW): 4 exs., same locality data as holotype.

Differential diagnosis: The following characters distinguish *Protochthebius jendeki* from *P. jagthanae*: 1) larger body size (1.15 - 1.30 mm long); 2) darker coloration (black, lateral margin and appendages not paler); 3) clypeus only slightly wider than labrum; 4) interocular foveae larger and more deeply impressed; 5) terminal segment of

labial palpi shorter (ca. 0.6 times as long as preterminal segment); 6) antennae: segment 2 more elongate, segment 3 shorter than segment 2; 7) eyes separated by ca. 4 times eye diameter; 8) lateral constriction of pronotum less abrupt; 9) hyaline membrane of pronotum more extensive, covering lateral excision; 10) elytra subparallel, apically widely rounded; 11) elytral punctures larger, more deeply impressed, more widely spaced; 12) femora and tibiae longer and more slender; 13) metasternum distinctly longer than mesosternum; 14) epipleura distinctly wider, almost reaching apex; 15) last tergite of female with short, but very stout spines; 16) aedeagus (Fig. 5): larger, ventral side of distal lobe more extensively produced.

Distribution: So far known only from the type locality.

Ecology: The specimens were washed from moss-covered boulders in the middle of the stream.

Etymology: Named for Edo Jendek (Bratislava), who collected the type material.

Protochthebius schillhammeri sp.n.

Type locality: Stream, ca. 1 - 2 m wide, to a great extent shaded by primary vegetation, geology: cristalline and schist; on the western slope of pass between Luang Nam Tha and Muang Sing, ca. 950 m a.s.l., Luang Nam Tha Province, northern Laos.

Holotype: ♂ (NMW): "LAOS: Luang Nam Tha 20km SE Muang Sing 12./13.6.1996, 950m leg. Schillhammer (25)".

Differential diagnosis: *Protochthebius schillhammeri* is more closely related to *P. jendeki* than to *P. jagthanae*. The following characters distinguish *P. schillhammeri* from *P. jendeki*: 1) surface of clypeus, frons and pronotum glabrous between punctures, not microreticulate; 2) clypeus anteriorly not wider than labrum; 3) lateral margin of pronotum constricted more abruptly near basal 0.4; 4) pronotal excision only narrowly margined by hyaline membrane; 5) elytral intervals more smooth; 6) elytra slightly shorter (ca. 1.4 times longer than wide in *P. schillhammeri*, ca. 1.6 times longer than wide in *P. jendeki*); 7) elytral margin narrower, almost imperceptible in dorsal view; 8) epipleura more narrow; 9) aedeagus (Fig. 6): shape of the distal lobe.

Distribution: So far known only from the type locality.

Ecology: The holotype was washed from gravel at the stream's bank.

Etymology: Named for Harald Schillhammer (Vienna) who took the risk to collect beetles in a country rather "off the beaten track".

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