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Autor: Huber, Charles / Schmidt, Joachim

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Notes on the *Nebria* subgenus *Epinebriola* K. DANIEL, 1904 with the description of *Barbonebriola* subgen. nov. and 13 new species from the Himalaya-Tibet orogen (Coleoptera, Carabidae, Nebriini)

Charles Huber & Joachim Schmidt

ABSTRACT:

Contrib. Nat. Hist. 36: 1–85

Ten new species of the subgenus *Epinebriola* K. DANIEL, 1904 are described from the Himalaya and South Tibet: *N. (Epinebriola) triseriata* sp. nov. (western Central Nepal: Annapurna Himal), *N. (E.) montisanimae* sp. nov. (western Central Nepal: Manaslu Himal), *N. (E.) rupina* sp. nov. (western Central Nepal: Manaslu Himal), *N. (E.) impunctata* sp. nov. (western Central Nepal: Ganesh Himal), *N. (E.) tuberculata* sp. nov. (Central Nepal: Langtang Himal), *N. (E.) numburica* sp. nov. (eastern Central Nepal: Shorong Himal), *N. (E.) pseudorestias* sp. nov. (East Nepal: Jaljale Himal), *N. (E.) incarinata* sp. nov. (India: Arunachal Pradesh: Sela pass), *N. (E.) delicata* sp. nov. (Tibet: Gangdise Shan south of Lhasa), and *N. (E.) retingensis* sp. nov. (Tibet: Gangdise Shan north of Lhasa). Up to today, *N. delicata* sp. nov. and *N. retingensis* sp. nov. are the only *Epinebriola* species known to occur in the central portion of the Transhimalaya, while *N. businskyorum* LEDOUX & ROUX, 1997 and *N. zayula* ANDREWES, 1936 occur in the eastern Transhimalaya. Additionally, the subgenus *Barbonebriola* subgen. nov. is established on the basis of a derived character of the stipes which is unique within the genus *Nebria* LATREILLE, 1802. Three taxa (*N. barbata* ANDREWES, 1929, *N. ganeshi* LEDOUX, 1984, and *N. restricta* LEDOUX & ROUX, 2005) are transferred from *Epinebriola* to *Barbonebriola* subgen. nov., and three new *Barbonebriola* species are described: *N. (B.) rubostipes* sp. nov. (Farwestern Nepal: Saipal Himal), *N. (B.) tenuisulcata* sp. nov. (Farwestern Nepal: Api Himal), and *N. (B.) kagmara* sp. nov. (West Nepal: Kagmara La). For *N. (E.) zayula* ANDREWES, 1936 the misinterpreted type locality "Kaya La" is discussed, and morphological characters, which have been overlooked or always wrongly noted, are provided. Determination keys for the subgenus *Barbonebriola* subgen. nov. and for the subgenus *Epinebriola* are presented.

Zusammenfassung:

In der Untergattung *Epinebriola* K. DANIEL, 1904 werden zehn neue Arten aus dem Himalaya und Südtibet beschrieben: *N. (Epinebriol) triseriata* sp. nov. (westliches Zentralnepal: Annapurna Himal), *N. (E.) montisanimae* sp. nov. (westliches Zentralnepal: Manaslu Himal), *N. (E.) rupina* sp. nov. (westliches Zentralnepal: Manaslu Himal), *N. (E.) impunctata* sp. nov. (westliches Zentralnepal: Ganesh Himal), *N. (E.) tuberculata* sp. nov. (Zentralnepal: Langtang Himal), *N. (E.) numburica* sp. nov. (östliches Zentralnepal: Shorong Himal), *N. (E.) pseudorestias* sp. nov. (Ostnepal: Jaljale Himal), *N. (E.) incarinata* sp. nov. (Indien: Arunachal Pradesh: Sela pass), *N. (E.) delicata* sp. nov. (Tibet: Gangdise Shan südlich Lhasa) sowie *N. (E.) retingensis* sp. nov. (Tibet: Gangdise Shan nördlich Lhasa). *N. delicata* sp. nov. und *N. retingensis* sp. sind die bislang einzigen *Epinebriola*-Arten des zentralen Transhimalaya, während *N. businskyorum* LEDOUX & ROUX, 1997 und *N. zayula* ANDREWES, 1936 aus dem östlichen Transhimalaya beschrieben wurden. Ausserdem wird die Untergattung *Barbonebriola* subgen. nov. beschrieben, basierend auf einem abgeleiteten Merkmal der Stipites, welches in der Gattung *Nebria* LATREILLE, 1802 einzigartig ist. Drei Arten (*N. barbata* ANDREWES, 1929, *N. ganeshi* LEDOUX, 1984 und *N. restricta* LEDOUX & ROUX, 2005) werden von *Epinebriola* nach *Barbonebriola* subgen. nov. transferiert. Drei neue *Barbonebriola*-Arten werden beschrieben: *N. (B.) rubostipes* sp. nov. (Ferner Westen Nepals: Saipal Himal), *N. (B.) tenuisulcata* sp. nov. (Ferner Westen Nepals: Api Himal) und *N. (B.) kagmara* sp. nov. (Westnepal: Kagmara La). Von *N. (E.) zayula* ANDREWES, 1936 wird die falsch gedeutete Typuslokalität diskutiert; zudem werden Merkmale, die bislang übersehen oder falsch vermerkt worden waren, aufgelistet. Für die Untergattungen *Barbonebriola* subgen. nov. und *Epinebriola* werden neue Bestimmungsschlüssel aufgestellt.

Keywords: *Nebria*, *Epinebriola*, *Barbonebriola*, taxonomy, multivariate ratio analysis, new subgenus, new species, Himalaya, Nepal, India, China.

Introduction

Species of the subgenus *Epinebriola* K. DANIEL, 1904 of the genus *Nebria* LATREILLE, 1802, in the sense of previous authors, are restricted to the mountainous area of the Hindu Kush, the Greater Himalaya and South Tibet. 23 *Epinebriola* taxa are known so far (Ledoux & Roux 2005), most of them endemic to certain portions of the northwestern Himalaya (Afghanistan, Pakistan, Northwest India). In the central and eastern portions of the Himalaya-Tibet orogen seven species are known from East and eastern Central Nepal, Sikkim and Southeast Tibet (Andrewes 1932, 1936, Ledoux & Roux 2005, Huber & Schmidt 2007, 2012).

Based on these data there seems to exist a distributional gap of nearly 800 km between the *Epinebriola* species from the eastern Central Nepal Himalaya to the western species in Uttarakhand in India. Unknown species are expected to occur within this gap (Ledoux & Roux 2005). Recently Huber & Schmidt (2007) described *N. molendai* and *N. christinae* from the Rolwaling valley in eastern Central Nepal slightly narrowing this wide gap in the *Epinebriola* distribution.

Particularly *Epinebriola*-like specimens collected in the central and eastern portions of the Himalaya and Tibet are rare in institutional and private collections because the species' habitat lie exclusively at very high altitudes (seldom below 4000 m a.s.l.) which are difficult to access and which are influenced by unexpectable heavy snowfalls until May or June. Moreover, in these parts of the orogen snow usually melts late in the year, often not before start of the monsoon season when fieldwork becomes uncomfortable due to strong precipitations, common landslides, and difficult pathways. However, for the present paper we could build on the material of more than 60 expeditions to almost all regions of Nepal Himalaya carried out by Jochen Martens (Mainz) and Wolfgang Schawaller (Stuttgart), the team of the Naturkundemuseum Erfurt headed by Matthias Hartmann, and Joachim Schmidt. During these expeditions numerous specimens of *Epinebriola*-like species were collected of which several of them were identified by us as new to science. In addition, a careful investigation of this material and of specimens of previously described species lead us to the opinion that some of them belong to a new subgenus which is described the present paper.

Material and Methods

The edeagi and gonocoxae were dissected and dehydrated in alcohol and xylene, and finally embedded in Fluka DPX Mountant on transparent glue boards.

For abbreviations of morphological characters see Tab. 1.

For a morphometric analysis of the *orestias* species complex we measured ten characters of 74 specimens of the three *Epinebriola* taxa *N. orestias* ANDREWES, 1932, *N. tangjelaensis* SHILENKOV, 1998, and *N. pseudorestias* sp. nov. (Tab. 1). The measurements were taken using a Leica MZ 16 stereo-microscope with an ocular micrometer. Measurements of males and females could be pooled, since their values were entirely overlapping in range.

We applied multivariate ratio analysis (MRA) of Baur & Leuenberger (2011) to our data of the *orestias* species complex. For further information on the appli-

Tab 1: Characters measured in the *orestias* species complex (*N. orestias*, *N. tangjelaensis*, *N. pseud-orestias* sp. nov.) from Eastern Nepal and Sikkim for the use in the morphometric analysis.

abbreviation	character	definition	conversion factor
ant.w	antennomere 1 width	maximal width of antennomere 1	0,074
ant.l	antennomere 1 length	length of antennomere 1	0,074
ely.w	elytra width	maximal width of elytra	0,074
ely.l	elytron length	length of elytron from basal margin to apex	0,074
fro.w	frons width	width of frons between the eyes	0,074
hea.w	head width	maximal width of the head (over eyes)	0,074
pra.w	pronotum anterior width	width between the anterior angles of the pronotum	0,074
prm.w	pronotum maximal width	maximal width of the pronotum	0,074
prm.l	pronotum median length	median length of the pronotum	0,074
prp.w	pronotum posterior width	width between the posterior angles of the pronotum	0,074

cation of MRA, in particular the shape PCA (principal component analysis of shape) and the linear discriminant analysis (LDA) ratio extractor, we refer to the recent studies of the *Nebria* (*Patrobonebria*) *paropamisos* species complex (Huber & al. 2013) as well as the *N. (P.) desgodinsi* species complex (Huber & Baur 2016).

The photographs were partly taken using a 5-megapixel Leica DFC425 digital camera through a stereomicroscope (Leica MZ16). The pictures are composites processed using the Imagic ims Client software and then retouched using Adobe Photoshop version 10.0.1. Some habitus photographs were taken using a Canon EOS 5DS R digital camera with a motorised focussing drive Cognisys Stackshot 3X, processed with Zerene Stacker version 1.04 software. Other specimens were examined and photographed with a Leica M205-C stereomicroscope and Leica DFC450 digital camera using a motorised focussing drive, light base Leica TL5000 Ergo, diffused light with Leica hood LED5000 HDI, subsequently processed with Leica LAS application software, and enhanced with CorelDRAW Graphics Suite X5.

For SEM micrographs the right maxillae of specimens of two species with a different stipes anatomy (*N. rubostipes* sp. nov. and *N. impunctata* sp. nov.) were dissected out. The maxillae were dehydrated in a graded alcohol series. After being air-dried for several hours and mounted on bronze stubs, they were gold coated by an ion sputter and photographed under a Scanning Electron Microscope Philips XL 30 FEG at the Microscopy Imaging Centre MIC of the Institut of Anatomy of the University of Bern.

Abbreviations and material depository:

BMNH	The Natural History Museum, London, United Kingdom
cSCHM	coll. Joachim Schmidt, Admannshagen, Germany
ETHZ	Eidgenössische Technische Hochschule Zürich, Switzerland
NMBE	Naturhistorische Museum der Burgergemeinde Bern, Switzerland
NME	Naturkundemuseum Erfurt, Germany
SMNS	Staatliches Museum für Naturkunde Stuttgart, Germany
ZSM	Zoologische Staatssammlung München, Germany

Examined material of previously described *Epinebriola* species

(in alphabetical order)

Nebria barbata ANDREWES, 1929

Holotype ♂: Type [red bordered, round label] // India, Kashmir, 1923, F.J. Mitchell [printed] // *Nebria barbata* Andr. Type [handwritten] H.E. Andrewes det. [printed] // Brit. Mus. 1923-492 (BMNH).

Additional non-type material examined: 1♂ 1♀, Inde, Cachemire, Lac de Godasar, Névé 3000 m, 21. 8. 1981, leg. & det. G. Ledoux (ETHZ); 10 specimens India Kashmir, Lac de Gangabal, Glacier Harmukh, 3800 m, 26.7.1981, leg. Ledoux, *N. (Epinebriola) barbata* Andr. det. Ledoux 1981 (SMNS); 13 specimens Pakistan (Gilgit-Agency), Umg. Rama/Nanga Parbat [handwritten] // 3200–3600 m, 8.–11.7.1986, leg. Heinz, *N. (Epinebriola) barbata* Andr. G. Ledoux det. 1990 (SMNS); 11 specimens Pakistan (Distr. Chilas), Babusar-Pass (Nordseite), 3700–3900 m, 3./4.7.2001, Heinz leg. (SMNS).

Nebria chitralensis SHILENKOV & HEINZ, 1998

Holotype ♂: Holotypus [red label] // Pakistan (Chitral) Madaglasht, 2500–3700 m, 5.–7.7.1982, Erber & Heinz leg. [handwritten] // *N. (Epinebriola) chitralensis* n. sp. Heinz det. 1988 Typus . [handwritten] (SMNS).

Paratypes: 2♂ 6♀, same data as holotype (SMNS).

Nebria christinae HUBER & SCHMIDT, 2007

Holotype ♂: Holotype [red label] Rolwaling valley, Na to Yarlung Ri Base Camp, 4200–4900 m 23.5.2000, leg. J. Schmidt (NMBE).

Paratypes: 11 specimens same data as holotype (NMBE, cSCHM).

Nebria ganeshi LEDOUX, 1984

Paratypes: 1♂ 2♀, Paratype [red label, printed] // Inde, Himachal Pradesh,

Col de Rohtang [handwritten] // 4000 m, 20.VIII.1980, leg. G. Ledoux [handwritten] // *Nebria ganeshi* G. Ledoux [handwritten], Brit. Mus. 1984-164 (BMNH); 1♂ 2♀, same data (ETHZ); 2♂ 5♀, Indien (Himachal Pradesh), Pir Panjal-Range: Rohtang-Pass, 4000 m, 20.8.1980, leg. G. Ledoux, *Nebria ganeshi* n. sp., det. Ledoux 1984 (SMNS).

Nebria kabakovi SHILENKOV, 1982

Paratypes: 1♂ 1♀, Paratype [red label, printed] // Afghanistan, 6.8.1974, Ledoux leg. [handwritten] // Salang-Pass (Nordseite), 2900 m [handwritten] // *N. (Himalayonebria) kouchii* G. Ledoux (SMNS).

Remark: *N. kouchii* Ledoux, 1985 is a junior synonym of *N. kakakovi* Shilenkov, 1982 (Ledoux & Roux 2005).

Nebria laevistriata LEDOUX & ROUX, 1998

Paratype ♂: Paratype [red label, printed] // Yunnan, 10.–13.7.1996, 28°06' N 98°52' E, 3700 m // Hengduan mts. – part Meili // Vít Kubáň leg. // *N. (Patrobostriata [sic!]) laevistriata* n. sp., G. Ledoux, P. Roux 1998 [partly handwritten] (cSCHM ex coll. Wrase Berlin).

Remark: *N. laevistriata* was described as a species of the subgenus *Patrobonebria* Bänninger, 1923.

Nebria martensi HUBER & SCHMIDT, 2012

Holotype ♂: Nepal, Sankhua Wasabha, W-slope Lumba Sumba pass, 4830, 4.7.2011, leg. S. Tamang, 27°44'24" N 87°37'55" E (NMBE)

Paratypes: 7 specimens, same data as holotype (cSCHM); 1♂, Nepal, Sankhua Sabha distr., Kangla Khola E Thudam, 4100–4200 m, dwarf *Rhododendron*, rock debris, 24–25 May 1988, leg. Martens & Schawaller, Nepal-Expeditionen Jochen Martens (cSCHM)

Additional non-type material examined: 1 ♀ E-Nepal, Jaljale Himal, Jaljale Pokhari, 4200–4250 m, 27°27'53" N 87°27'31" E, 4.VI.2010, leg. S. Tamang (cSCHM); 1 ♂ ditto, below Paanch Pokhari, 4000–4100 m, 27°29'25" N 87°27'47" E, leg. S. Tamang (cSCHM).

Nebria masrina ANDREWES, 1924

Holotype ♀: Holotype [red bordered, round label] // Type [red label] // Baltal (Cachemire)][printed] // G. Babault Août 1914][printed] // H.E. Andrewes coll. B.M. 1945-97 [printed] // Figured Specimen [printed] // *Nebria masrina* Andr. Type [handwritten] H.E. Andrewes det. [printed] // *Nebria masrina* Andr. Holotype [handwritten], N.G. Stork det. 1981 [printed] (BMNH).

Nebria meurguesae LEDOUX, 1985

Paratypes: 2 ♀, Paratype [red label, printed // Afghan. Kunar (Kouchtous), vallée de l'Ourlah [handwritten] // 2700–3250 m Névé, 21.8.1976, G. Ledoux [handwritten] // *N. (Himalayonebria) meurguesae* Ledoux [handwritten] (SMNS).

Nebria molendai HUBER & SCHMIDT, 2007

Holotype ♂: Nepal, Rolwaling valley, Na to Omai Tsho lake, 4100–4500 m, 22.5.2000, leg. Schmidt (NMBE).

Paratypes: 32 specimens same data as holotype (NMBE, cSCHM).

Nebria nouristanensis LEDOUX, 1985

Paratype ♀: Paratype [red label, printed] // Afghan. Kunar Hte. Vallée de l'Agôk Khwar [handwritten] // 3900 m Névé, 23.8.1976, leg. G. Ledoux [handwritten] // *N. (Himalayonebria) nouristanensis* G. Ledoux [handwritten] (SMNS).

Nebria orestias ANDREWES, 1932

Holotype ♂: Type [white round label, red border] // Type [red label] // Sikkim, Jalep, Août 1901 // Ex coll. R. Oberthür // H.E. Andrewes coll. B.M. 1945-97 [printed] // *Nebria orestias* Andr. Type [handwritten] H.E. Andrewes det. [printed] // *Nebria orestias* Andr. Holotype [handwritten], N.G. Stork det. 1981 [printed] (BMNH).

Nebria (Epinebriola) oxyptera oxyptera K. DANIEL, 1904

6♂ 1♀, Schahidulla, Chotan mer. [China, Xinjiang, westernmost Kunlun Shan], *N. (Epinebriola) oxyptera* det. Bänninger, 3. 1928 (ETHZ).

Nebria (Epinebriola) oxyptera alzonai DEUVE & LEDOUX, 1989

2 ♂, China, Xinjiang, ca. 140 km SSW Yecheng, W Kunlun Shan, 50 km S Akmeqit, 2500 m, 1993, leg. Jaroslav Turna, det. Sciaky 1996 (NMBE).

Nebria pindarica ANDREWES, 1925

Holotype ♀: Holotype [white round label, red border] // Pindar V., Almora U.P., 8–11'000 ft. July 1920 H.G.C[hampion] [printed] // *Nebria pindarica* Andr. Type [handwritten] H.E. Andrewes det. [printed] // Brit. Mus. 1920-129 // 3609 // *Nebria pindarica* Andr. Holotype [handwritten], N.G. Stork det. 1981 [printed] (BMNH).

Additional non-type material examined: 11 specimens Indien (U.P.) Ghangaria, Chamoli distr., 3000–3300 m, 19./20.7.1989, Heinz leg. (SMNS).

Nebria rasa ANDREWES, 1936

Holotype ♀: Holotype [White round label, red bordered] // Type [White round label, red bordered] // [White label] INDIA: Sikkim, Ratong Chu. 10'000 ft. 12.v.1934. H.G.Champion // [White label] *Nebria rasa* Andr. Type H.E. Andrewes det. // [White label] *Nebria rasa* Andr. Holotype N.G. Stork det. 1981 (BMNH).

Nebria rotundicollis rotundicollis HEINZ & LEDOUX, 1989

Holotype ♂: Holotypus [red label] // Pakistan (Gilgit-Agency), Umg. Rama/Nanga Parbat [handwritten] // 3200–3600 m, 8.–11.7.1986, leg. Heinz [handwritten] // *N. (Epinebriola) nouristanensis rotundicollis* G. Ledoux det. 1987 [handwritten] (SMNS).

Paratypes: 12 specimens same data as holotype (SMNS).

Nebria rotundicollis tenuis HEINZ & LEDOUX, 1989

Holotype ♂: Holotypus [red label] // Pakistan (Gilgit-Agency), Umg. Naltar 3000–3700 m, 30.6.–4.8.1986, leg. Heinz [handwritten] // *N. (Epinebriola) nouristanensis tenuis* G. Ledoux det. 1987 [handwritten] (SMNS).

Paratypes: 11 specimens same data as holotype (SMNS).

Nebria schawalleri SHILENKOV, 1998

Holotype ♀: Nepal, Taplejung distr., ascent to Tangje La NW Walungchung Gola, 4400–4600 m, alpine steppe, 23.V.1988, leg. Martens & Schawaller (SMNS).

Additional non-type material examined: 14 specimens, Nepal, Mechi province, Taplejung distr., 500 m NE Ghunsa, 27°39'48" N, 87°56'36" E, 3500–3600 m, stone debris/mix. forest, 10. V. 2003, leg. A. Weigel (NME, cSCHM); 16 specimens Nepal, Mechi province, Taplejung distr., 13 km NE Ghunsa, Ghunsa Khola between Kambachen and Lhonak, 27°45'50" N, 87°59'49" E, 4200–4800 m, waterfall, alpine mats, stone debris, 14. V. 2003, leg. E. Grill (NME, cSCHM); 5 specimens Nepal, Mechi province, Taplejung distr., 5 km S Ghunsa, Camp nr. Sele La, 27° 37'05" N, 87°56'29" E, 4200 m, alpine mats & stone debris, 16. V. 2003, leg. A. Weigel (NME).

Nebria tangjelaensis SHILENKOV, 1998

Holotype ♂: Nepal, Taplejung distr., ascent to Tangje La NW Walungchung Gola, 4800–5000 m, alpine steppe, 23.V.1988, leg. Martens & Schawaller (SMNS).

Paratypes: 6 specimens same data as holotype (but at an altitude of 4400–4600 m) (SMNS).

Additional non-type material examined: 2 specimens Nepal, Sankhua Wasabha, W-slope Lumba Sumba pass, 4830 m, 4.VII.2011, leg. S. Tamang, 27°44'24"N, 87°37'55"E (NMBE, cSCHM); 48 specimens Nepal, Sankhua Wasabha, E-slope Lumba Sumba pass, 4750 m, 5.VII.2011, leg. S. Tamang, 27°43'24"N, 87°39'20"E (NMBE, cSCHM).

Nebria zayula ANDREWES, 1936

Holotype ♂: Holotype [round white label, red margined] // S.E. Tibet, Zayul, Atakang, 1933 [printed], 14'000 ft., 15. vii. Kang La [handwritten] // F. Kingdon Ward & R.J.H. Kaulback. B.M. 1934-41 [printed] // *Nebria zayula* Andr., Type [handwritten], H.E. Andrewes det. [printed] // *Nebria zayula* Andr., Holotype [handwritten], N.G. Stork det. 1981 [printed] (BMNH).

***Epinebriola* species not examined:**

Nebria (Epinebriola) businskyorum LEDOUX & ROUX, 1997

Nebria (Epinebriola) poplii LEDOUX, 1984

Nebria (Epinebriola) praelonga LEDOUX, 1985

Nebria (Epinebriola) restricta LEDOUX & ROUX, 2005

Taxonomy

Species groups in the subgenus *Epinebriola* K. DANIEL, 1904

Epinebriola was established by K. Daniel (1904) as a monospecific subgenus of the genus *Nebria* when he described *N. oxyptera*. Up to now the subgenus *Epinebriola* was erroneously applied to the brothers Karl and Josef Daniel (Löbl & Smetana 2003, Ledoux & Roux 2005), but Karl Daniel is definitely the sole author (see Daniel 1904, p. 79).

Ledoux & Roux (2005) redefined the subgenus *Epinebriola* and split out all taxa, which are gradually described, into four species groups:

- *masrina* species group: *N. chitralensis* SHILENKOV & HEINZ, 1988, *N. kabakovi*, SHILENKOV, 1982, *N. masrina masrina* ANDREWES, 1924, *N. masrina calceata* LEDOUX & ROUX, 2005, *N. meurguesae* LEDOUX, 1985, *N. nouristanensis* LEDOUX, 1985, *N. oxyptera oxyptera* K. DANIEL, 1904, *N. oxyptera alzonai* DEUVE & LEDOUX, 1989, *N. rotundicollis rotundicollis*

- HEINZ & LEDOUX, 1989, *N. rotundicollis tenuis* HEINZ & LEDOUX, 1989, *N. poplii* LEDOUX 1984, *N. praelonga* LEDOUX, 1985;
- *ganeshi* species group: *N. barbata* ANDREWES, 1929, *N. ganeshi* LEDOUX, 1984, *N. restricta* LEDOUX & ROUX, 2005;
 - *pindarica* species group: *N. pindarica* ANDREWES, 1925, *N. businkyorum* LEDOUX & ROUX, 1997, *N. laevistriata* LEDOUX & ROUX, 1998;
 - *zayula* species group: *N. orestias* ANDREWES, 1932, *N. rasa* ANDREWES, 1936, *N. schawalleri* SHILENKOV, 1998, *N. tangjelaensis* SHILENKOV, 1998, *N. zayula* ANDREWES, 1936.

Some characters used in the redefinition of the subgenus *Epinebriola* by Ledoux & Roux (2005) are obviously inconstant. The penultimate palpomere of the labial palpus, for instance, is occasionally bisetose instead of trisetose, or the endophallus is variably formed. For these two characters a certain proximity to the subgenera *Patrobonebria* BÄNNINGER, 1923 and *Eunebria* JEANNEL, 1937 respectively is given. Therefore we evaluate the subgenus *Epinebriola* to be paraphyletic as Ledoux & Roux (2005, p. 618) already did.

***Barbonebriola* subgen. nov.**

Type species: *N. barbata* ANDREWES, 1929, p. 130, by present designation.

= *ganeshi* species group sensu Ledoux & Roux (2005)

Remarks to the *ganeshi* species group sensu Ledoux & Roux (2005)

Up to now the *ganeshi* species group consists, in accordance with Ledoux & Roux (2005), of the three taxa *N. ganeshi*, *N. barbata* and *N. restricta*.

The examination of a considerable amount of specimens of the *ganeshi* species group (with the exception of *N. restricta*) just as of three new species which are described below revealed an exclusive morphologic character common to all members of this group: The stipes as the second maxillomere is developed to a latero-external berry-like swelling bearing the setae on distinct tubercles (Fig. 1). All other *Epinebriola* species outside of the *ganeshi* species group are characterized by the presence of a "normal" flattened stipes which represents the plesiomorphic state (Fig. 2).

Ledoux & Roux (2005) established the *ganeshi* species group probably due to reasons of distribution and/or habitus resemblance, but without giving

Fig. 1: Right maxilla of *N. (Barbonebriola) rubostipes* sp. nov. A: ventral. B: dorsal.

bpm: basal palpomere;
ca: cardo; ga: galea;
la: lacinia; mp: maxillar
palpus; st: stipes.
Scale bar = 1 mm.

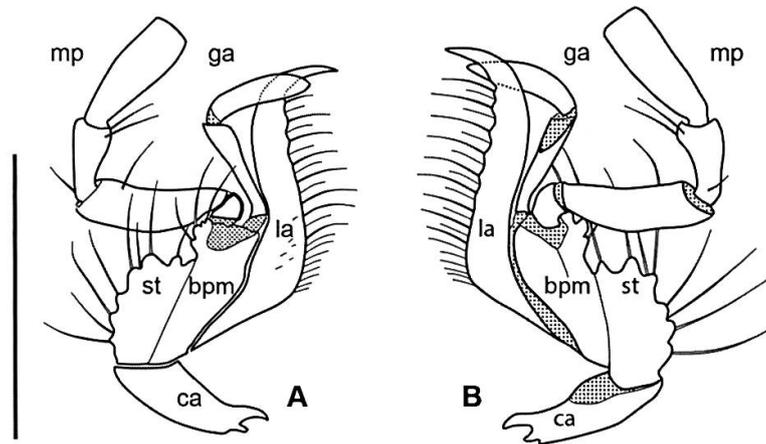
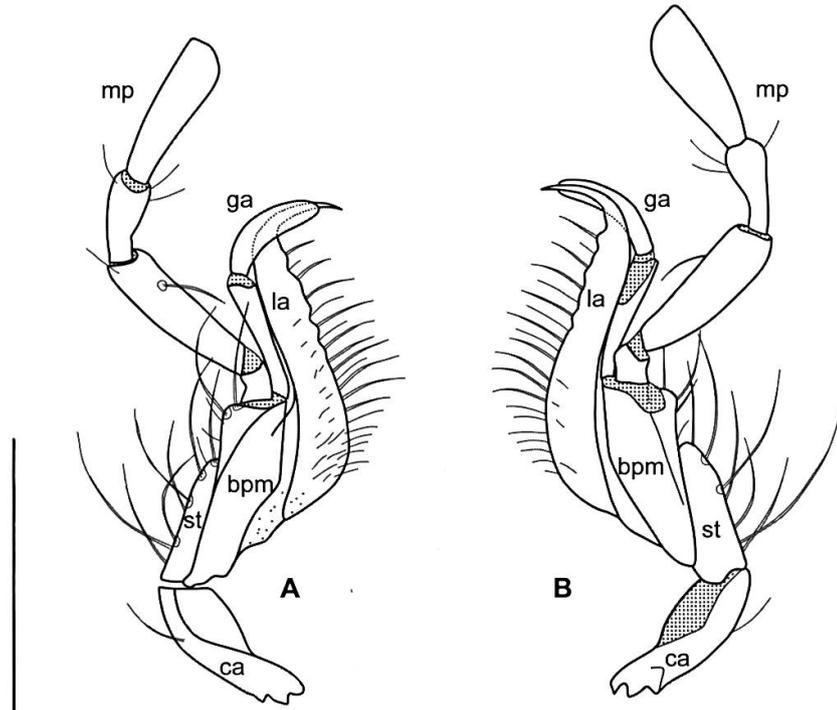


Fig. 2: Right maxilla of *N. (Epinebriola) impunctata* sp. nov. A: ventral. B: dorsal.

bpm: basal palpomere;
ca: cardo; ga: galea;
la: lacinia; mp: maxillar
palpus; st: stipes.
Scale bar = 1 mm.



any precise morphological characters. Specimens of *N. barbata* (from Barbusa La near Chilas, Pakistan) and of *N. ganeshi* (from the type locality Rohtang La, Himachal Pradesh, India) have a conspicuous berry-like bulge on the stipes (Fig. 1, 3) as well as the new species *N. rubostipes* sp. nov., *N. tenuisulcata* sp. nov. and *N. kagmara* sp. nov. Such a chaetiphorous lateral bulge of the maxillary stipes has neither been noted or described so far nor used in the species identification within the subgenus *Epinebriola*, not even within the genus *Nebria*. Obviously this maxillary character has consistently been overlooked.

Under a scanning electron microscope SEM, the long setae of the berry-like stipes turned out to be truncate and open-pored (Fig. 3) in contrast to the setae of a "normal" stipes, of which the tips are long and fine (Fig. 4). The pore of the truncate seta tip may be filled with rests of a probable (dried) receptor lymph (Fig. 3B). Furthermore, the cuticle of the berry-like stipes is

laced with (gland?) pores (Fig. 3), whereas in the "normal" stipes the cuticle is free of pores (Fig. 4); the function of the stipal pores is unknown. Campaniform sensilla as mechanoreceptors, which respond to stress and strain within the cuticle (Gewecke 1995), are on both types of stipes.

The bow of truncate setae on the laterally bulging stipes in *N. rubostipes* sp. nov. may be part of a contact-chemosensitive system of food control, in contrast to *N. impunctata* sp. nov. with tapered setae on a "normal" stipes, where food control happens mechanosensitively. The pores on the cuticle of the stipes in *N. rubostipes* sp. nov. (Fig. 3A) point to a gland system, which is absent in *N. impunctata* sp. nov.

The lateral berry-like bulge of the stipes may enclose structures of a chemosensitive food control system and of a gland system in contrast to the flattened "normal" mechanosensitive stipes. The open-pored stipal setae (Fig. 3B) point to such a chemosensitive system. Contact-chemosensitive sensilla are well analyzed in spiders (Drewes & Bernard 1976, Harris & Mill 1977, Vallet et al. 1998, Foelix 2015). They differ from common mechanosensitive setae by the open-pored tip, and they serve to test the chemical quality of substrates and thus the edibility of prey ("taste by touch"). Whereas in spiders the chemosensitive sensilla are located mainly on the forelegs and in a small number also on mouthparts, in Coleoptera chemosensitive setae on mouthparts are definitely plausible.

The analysis of the inner anatomy of the berry-like bulging stipes and of the supposed neurophysiological structures of a chemosensitive food control system and of a gland system was not the objective of the present paper. Our hypothesis may encourage to such an investigation. However, the berry-like bulge, hiding an evolutionarily complex system, is the only macroscopic character and is common to only a few related species within the genus *Nebria*.

We interpret this unique (and so far overlooked) berry-like stipes, observed in the two known *Epinebriola* species *N. barbata* and *N. ganeshi* (and ?*N. restricta*) as in three new species (described below), to be apomorphic, a character which is part of a so far unknown contact chemosensitive food control system within the genus *Nebria*. Due to the neurophysiological complexity which manifests phenologically in that conspicuous berry-like bulge, we state a serious evolutionary weightiness for this stipes character. We interpret this well defined species group to be monophylic, and therefore we propose the name *Barbonebriola* on subgeneric level for this species group. The fact of paraphyly in the subgenus *Epinebriola* allows to isolate the *ganeshi* species group without violating a possible monophyly in the remaining subgenus.

Gonocoxae (or coxostyli) of female genitalia of *Nebria* species are single or with two gonocoxites. The gonocoxae are rotated 90° in repose. In the

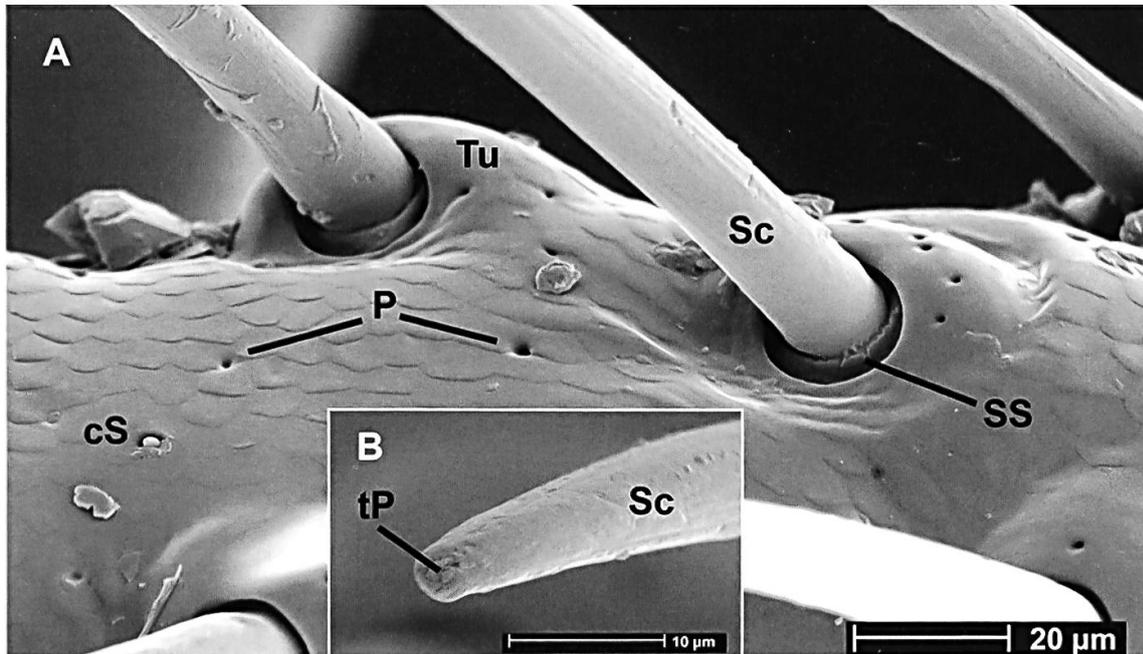


Fig. 3: SEM micrograph of the stipes of the right maxilla of *N. (Barbonebriola) rubostipes* sp. nov. **A:** Detail of the right maxillary stipes (lateral part, ventral view). **B:** Truncate tip with a terminal pore (tP) of a chemosensitive seta. cS = campaniform sensillum; P = pores; Sc = chemosensitive seta; SS = membrane of seta socket; Tu = bulging chaetiphorous tubercle.

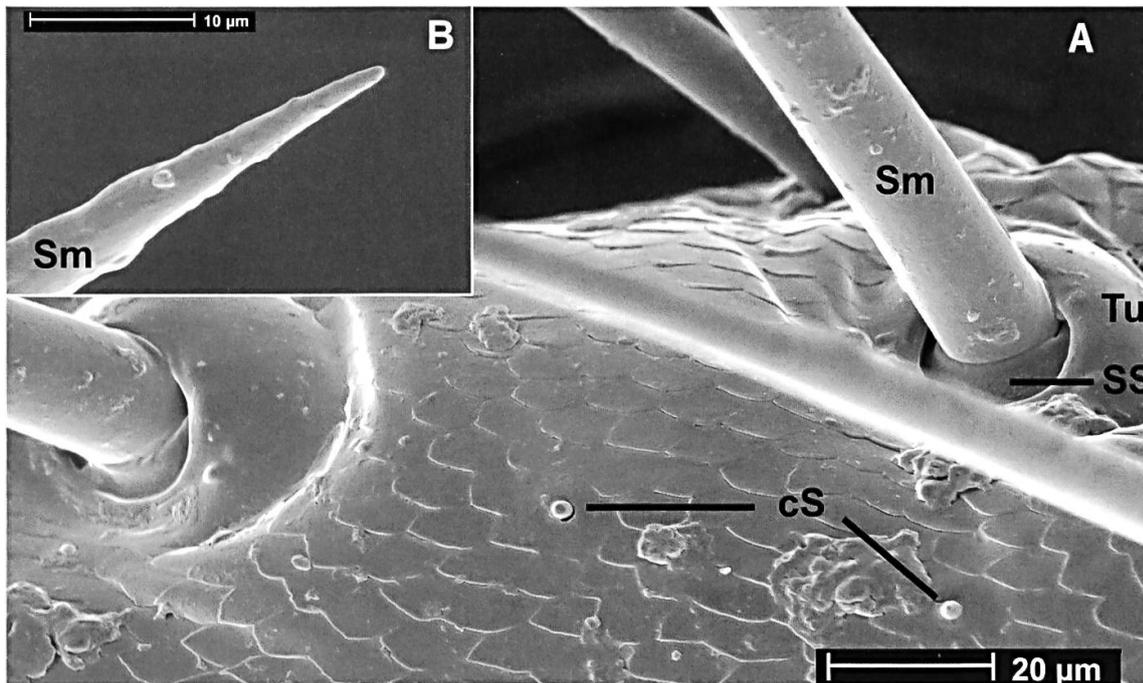


Fig. 4: SEM micrograph of the stipes of the right maxilla of *N. (Epinebriola) impunctata* sp. nov. **A:** Detail of the right maxillary stipes (lateral part, ventral view). **B:** Finely acuminate tip of a mechanosensitive seta. cS = campaniform sensillum; Sm = mechanosensitive seta; SS = membrane of seta socket; Tu = sunken chaetiphorous tubercle.

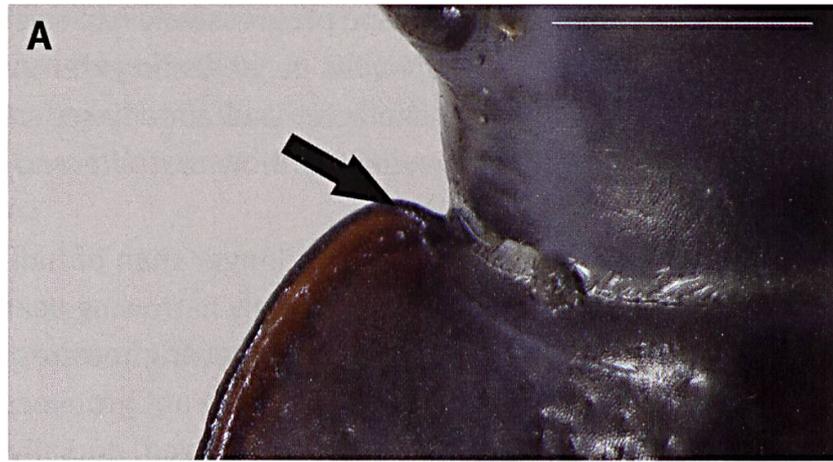


Fig. 5: Head of *Nebria (Barbonebriola) ganeshi* LEDOUX, 1984 with the bulging stipes easily visible in dorsal view (arrow). Scale bar = 0.5 mm:

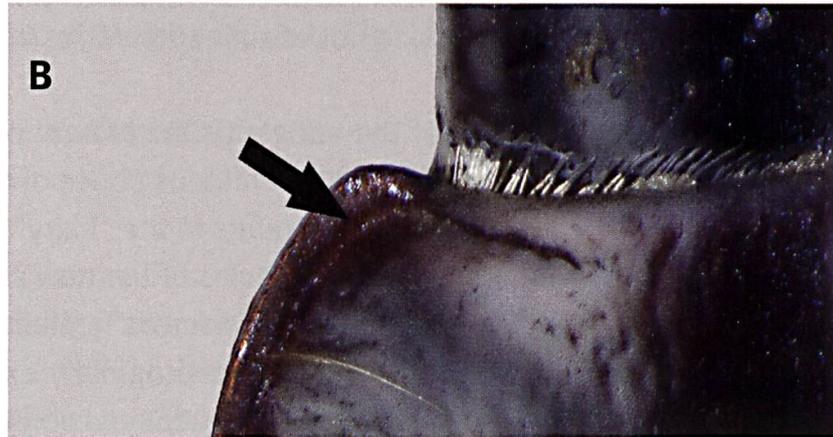
subgenera *Epinebriola* and *Barbonebriola* sp. nov. the female gonocoxae are bipartite with a subcylindrical lightly sclerotized proximal gonocoxite 1 (or stylo-mere 1), and a highly sclerotized distal gonocoxite 2 (or gonostylus or stylo-mere 2). Gonocoxite 1 and 2 are continuously sclerotized ventrally giving the impression of unjointed or fused segments, whereas dorsally a membranous area points to a possible articulation between the gonocoxites (Fig. 10G). Up to now gonocoxae characters have been disregarded and unvalued in palearctic species of the genus *Nebria*. The present examination of the gonocoxae of female *Epinebriola* specimens shows an astonishingly wide variability in shape and length of the distal gonocoxite 2 (see Fig. 10), whereas in *Barbonebriola* subgen. nov. all species are characterized by a distinct uniformity in shape and length of the gonocoxite 2 (Fig. 9). The shape of the gonocoxite 2 seems to be a stable character in the *Barbonebriola* species group, and its uniformity within *Barbonebriola* confirms the monophyly of this new subgenus.

Remark: Ledoux & Roux (2005) mentioned an unisetose apex of the gonocoxite 2 in most ("presque toujours") *Nebria* species. In the present analysis all examined gonocoxite 2 bear two closely adjoining preapical setae.

Fig. 6: Left anterior angle of the pronotum.
A: *Nebria (Barbonebriola) barbata* ANDREWES, 1929: the anterior margination of the pronotum merges with apex of the anterior angle (arrow).



B: *Nebria (Epinebriola) montisanimae* sp. nov.: the anterior margination of the pronotum merges with a ridge at the anterior angle (arrow); the ridge continues along the lateral groove to the lateral seta.
 Scale bar = 0.5 mm.



Barbonebriola subgen. nov. includes the species of the former *ganeshi* group sensu Ledoux & Roux (2005) and is defined by the following characters:

- Stipes of maxilla laterally berry-like bulging, with 6–10 tubercles bearing each a seta (not examined in *N. restricta*).
- Penultimate labial palpomere trisetose.
- Head without lightened spots on the vertex.
- Anterior margination of the pronotum merged with the apex of the anterior angle (Fig. 6A) (not examined in *N. restricta*).
- Midlateral seta of the pronotum inserted in the lateral groove, never on the lateral edge, though disturbing the lateral outline of the pronotum. (Midlateral seta absent in *N. tenuisulcata* sp. nov.)
- Basolateral seta of the pronotum absent.
- Scutellar seta absent.
- Elytra with humeral carina.
- Intervals 3, 5 and 7 of the elytra asetose.
- Hindwings atrophied to a short strap-like vestige.
- 3rd abdominal sternum with a row of 1–8 medial setae (not examined in *N. restricta*).
- Edeagus of simple, coarse outline, less structured. Base wide. Mid-shaft

thick, regularly rounded and progressively narrowed to the apex.

- Mid-shaft of the endophallus densely and extensively covered with long setae (Fig. 8D). This character was already reported by Ledoux (1984) for *N. ganeshi*. Not examined in *N. restricta* and *N. tenuisulcata* (only female holotype known).
- Gonocoxa: Gonocoxite 2 long, longer than of half length of gonocoxite 1, relatively slender at base, slightly narrowing near base, parallel or sub-parallel sided in median part, narrowing towards apex. Apex rounded, slightly arcuate dorsally, but dorsally not grooved. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area. (Gonocoxa not examined in *N. restricta*).

Diagnosis: The species of the subgenus *Barbonebriola* sp. nov. are recognizable by the laterally bulging and tuberculous stipes of the maxilla (Fig. 4, 5).

Etymology: The subgeneric epithet refers to the "hairy" outlook of the mouth-parts (stipes and submentum) of all species of the new subgenus (*barba*, latin = beard). The gender of the genus-group name is feminine.

Remark: Andrewes (1929) did not etymologically explain the name of *N. barbata*. Due to the "hairy" stipes and its easy visibility in dorsal view, the name *barbata* may refer to this beard-like appearance of the head's side. Obviously the peculiar "hairy" stipes character was observed by Andrewes and even eponymously conserved in the species name *barbata*, but he did not make a corresponding note.

Monophyly: The monophyly of the *Barbonebriola* species group seems clear and is suggested by two characters: the consistent and exclusive bulging maxillary stipes (supposedly apomorphic), and the consistent shape of the distal gonocoxites 2 of the gonocoxae in females (see below).

Catalogue of species of *Barbonebriola* subgen. nov.:

Nebria (Barbonebriola) barbata ANDREWES, 1929 (transferred from subgenus *Epinebriola*)

Nebria (Barbonebriola) ganeshi LEDOUX, 1984 (transferred from subgenus *Epinebriola*)

Nebria (Barbonebriola) kagmara sp. nov.

? *Nebria (Barbonebriola) restricta* LEDOUX & ROUX, 2005 (transferred from subgenus *Epinebriola*; uncertain assignment)

Nebria (Barbonebriola) rubostipes sp. nov.

Nebria (Barbonebriola) tenuisulcata sp. nov.

Distribution: The distributional area of the species of *Barbonebriola* subgen. nov. covers an area from Kashmir to Western Nepal Himalaya (Fig. 14). The large distributional gaps in the Western Himalaya of India may be an artefact due to insufficient exploration and thus, other *Barbonebriola* species may be expected in this area.

Descriptions of new species of the subgenus *Barbonebriola* subgen. nov.

Nebria (Barbonebriola) rubostipes sp. nov. (Fig. 7)

Holotype ♂: Nepal, Prov. Karnali, Distr. Humla, 16 km W Simikot, 2 km NW Sankha La, 4250–4950 m, 29°56'39" N, 81°39'02" E, 29.VI.2001, leg. E. Grill (NME).

Paratypes: 2 ♂ 4 ♀, same data as holotype; 1 ♀, Nepal, Prov. Karnali, 8.5 km SE Chala vor Sankha La Pass, 4400–4700 m, 29°57,1' N, 81°39,3' E, 28.VI.2001, leg. J. Weipert; 7 ♂ 6 ♀, Nepal, Prov. Karnali, Distr. Humla, 16 km W Simikot, 3 km NW Sankha La, 4300–4800 m, 29°57'18" N, 81°39'30" E, stone debris and alpine mats, 29.–30.VI.2001, leg. A. Kopetz; 7 ♂ 1 ♀, Nepal, Prov. Karnali, Distr. Humla, 16 km W Simikot, 3 km NW Sankha La, 4700–4800 m, 29°56' N, 81°39' E, 30.VI.2001, leg. E. Grill; 14 ♂ 15 ♀, Nepal, Prov. Karnali, Distr. Humla, 16 km W Simikot, 3 km NW Sankha La, 4700–4800 m, 29°56' N, 81°39'02" E, 30.VI.2001, leg. A. Weigel; 63 ♂ 35 ♀, Nepal, Prov. Seti, Distr. Bajura, 20 km W Simikot, 500 m W Sankha La, 4800 m, 29°57' N, 81°37' E, snowfields, 2.VII.2001, leg. E. Grill; 20 ♂ 18 ♀, Nepal, Prov. Karnali, Distr. Humla, 20 km W Simikot, 500 m W Sankha La, 4800 m, 29°57' N, 81°37' E, snow fields, 2.VII.2001, leg. A. Kopetz; 9 ♂ 9 ♀, Nepal, Prov. Seti, Distr. Bajura, 15 km W Simikot, Dudh Lekh/Dudh Tal, 4650–4800 m, 29°56'09" N, 81°40'32" E, stone debris, glacier lakeside, 1.VII.2001, leg. A. Kopetz; 5 ♂ 4 ♀, Nepal, Prov. Seti, Distr. Bajura, 15 km W Simikot, Dudh Lekh/Dudh Tal, 4700 m, 29°56' N, 81°40' E, snow fields and glacier lakeside, 1.VII.2001, leg. E. Grill; 2 ♂ 1 ♀, Nepal, Prov. Seti, Distr. Bajura, 15 km W Simikot, Dudh Lekh/Dudh Tal, 5200 m, 29°56' N, 81°40' E, stone debris and alpine mats, 1.VII.2001, leg. U. Bößneck; 13 ♂ 8 ♀, Nepal, Prov. Seti, Distr. Bajura, 15 km W Simikot, Dudh Lekh/Dudh Tal, 4600–4900 m, 29°56' N, 81°40' E, stone debris on glacier lakeside, 2.VII.2001, leg. A. Weigel (all paratypes NME, NMBE, cSCHM).

Body length 9–11 mm. Colour brown, head dark brown to almost black, mandibulae and appendages of head piceous. Antennae brown. Femora dark brown, trochanters, tibiae, knees and tarsi lightened brown.



Fig. 7: *Nebria* (*Barbonabriola*) *rubostipes* sp. nov. Holotype. Scale bar = 5 mm.

Head with a shallow transverse impression behind the prominent eyes. Labrum long, with anterior margin faintly convex, bearing six setae; anterior margin in the area of the four median setae bulging. The angles of the labrum strongly rounded. Apical margin of clypeus faintly concave. Supraorbital impression longitudinally wrinkled. One supraorbital seta. Frons distinctly transversally wrinkled. Vertex faintly punctate. Antennae long and slender extending to

Fig. 8: Edeagi of species of *Barbonebriola* subgen. nov.

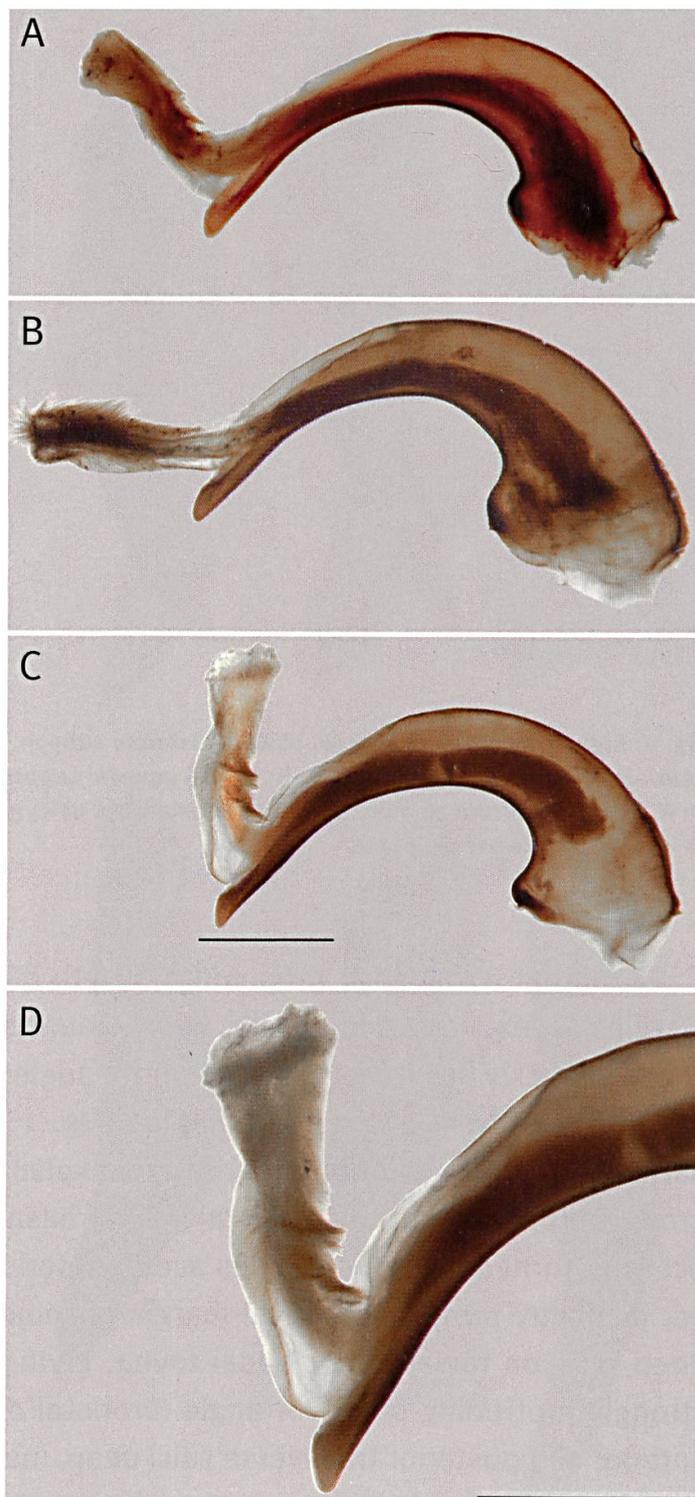
A: *Nebria (Barbonebriola) rubostipes* sp. nov.

B: *N. (B.) kagmara* sp. nov.

C: *N. (B.) barbata* ANDREWES, 1929.

D: Everted endophallus of *N. (B.) barbata* ANDREWES, 1929 with the mid-shaft densely and extensively covered with long setae.

Scale bars = 0.5 mm.



the middle of the elytra. Antennal scape elongate, subcylindrical-ovoid, basally narrowed, as long as the eye's diameter, with one dorsal seta. 2nd antennomere with one seta ventroapically. Maxillary stipes basolaterally with a berry-like bulge with 9–10 tubercles bearing each a robust seta (Fig. 1, 3). Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 18–22 setae. Microreticulation of the head isodiametric.

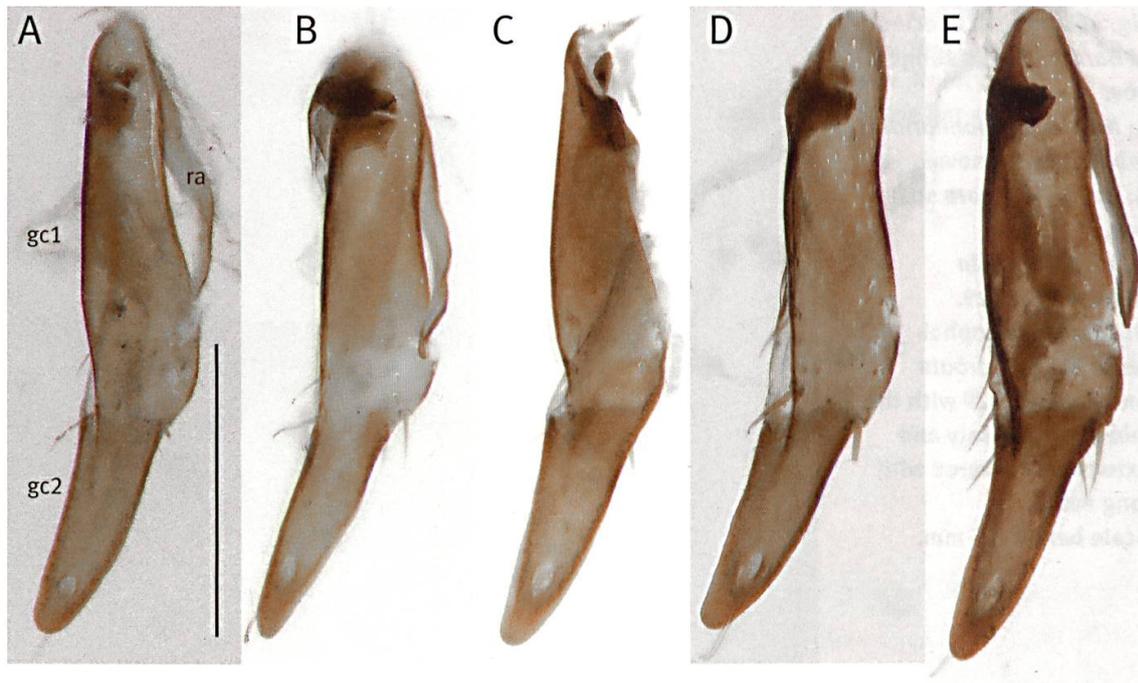


Fig. 9: Right gonocoxae of species of *Barbonebriola* subgen. nov. in ventral view. A: *Nebria* (*Barbonebriola*) *barbata* ANDREWES, 1929; B: *N. (B.) ganeshi* LEDOUX, 1984; C: *N. (B.) rubostipes* sp. nov.; D: *N. (B.) tenuisulcata* sp. nov.; E: *N. (B.) kagmara* sp. nov.; gc1 = gonocoxite 1, gc2 = gonocoxite 2, ra = ramus. Scale bar = 0.5 mm.

Pronotum transverse, ratio width/length of the pronotum = 1.39. Lateral margin convex, narrowed basally, widely rounded to the anterior angles, evenly and convexly narrowed to the posterior angle; somewhat more strongly narrowed just in front of the basal angles (Fig. 15C). Posterior angles distinctly narrower than the anterior ones. Lateral explanation wide with a conspicuous groove, broadened basally. Lateral margin basally blade-like, obliquely or vertically upturned. Posterior angles acute. Anterior angles wide, broadly rounded, distinctly protruding. Basal margin bisinuate, near the posterior angle a deep incision towards the basal fovea, giving the impression of an acute, strongly protruding posterior angle. Pronotal disc convex. Basal fovea deep, anterior and posterior transverse sulci deep, median line shallow. Basal fovea, anterior and posterior transverse sulci sparsely and faintly punctate, the lateral groove basally even transversally wrinkled. Apical margination of the pronotum restricted to lateral one-third, merges with the apex of the anterior angle. Base of the pronotum not margined. One midlateral seta in the apical half of the pronotum. Basolateral seta absent. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process elongate, flattened or with a longitudinal bulge, faintly margined laterally and unmargined at apex.

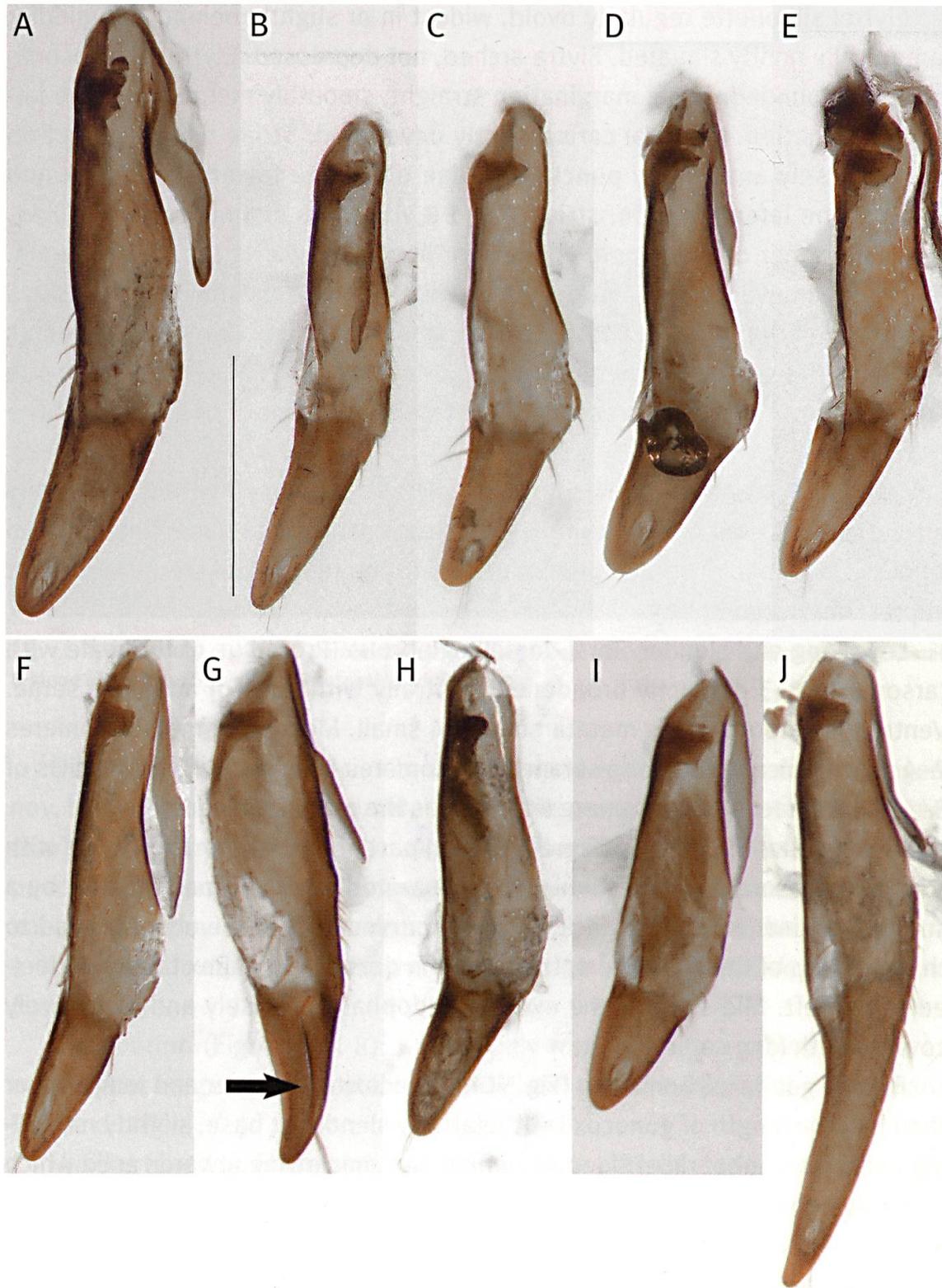


Fig. 10: Right gonocoxae of *Epinebriola* species, in ventral view. A: *Nebria (Epinebriola) triseriata* sp. nov.; B: *N. (E.) rupina* sp. nov.; C: *N. (E.) montisanimae* sp. nov.; D: *N. (E.) impunctata* sp. nov.; E: *N. (E.) tuberculata* sp. nov.; F: *N. (E.) numburica* sp. nov.; G: *N. (E.) numburica* sp. nov. in lateral view with the distale gonocoxite 2 dorsally grooved (arrow); H: *N. (E.) christinae* HUBER & SCHMIDT, 2007; I: *N. (E.) pseudorestias* sp. nov.; J: *N. (E.) retingensis* sp. nov.; Scale bar = 0.5 mm.

Elytral silhouette regularly ovoid, widest in or slightly behind the middle; subapically faintly sinuated. Elytra arched, not depressed. Elytral apex acuminate, but rounded. Basal margination straight, smoothly merged with the lateral margination. Humeral carina faintly developed. Striae deep, distinct on disc, coarsely and tightly punctate. Striae obliterate towards the apex and towards the lateral margin, striae 7 and 8 visible as distinct rows of pores. Intervals rather convex, more convex on disc and towards the basal margin. Apical carina evanescent. Intervals 3, 5 and 7 asetose. Scutellar seta absent. Microreticulation oblong. Mesepisterna smooth. Metepisterna 1.6 times as long as wide, smooth or faintly wrinkled. Metacoxa with 2(–3) basal and one apical setae. Hindwings present as a strap-like vestige of one fourth of the elytral length.

Sternum 2 laterally rough, coarsely punctate. Sternum 3 with a row of 2–6 medial setae. Sterna 4–6 each with 3–5 posterior paramedial setae; Anal sternum with 2–3 paramedial setae in the male and in the female. All sterna with faint impressions laterally.

Legs long and slender. Tarsi dorsally glabrous. Protarsus of the male with tarsomeres 1–3 distinctly broadened, ventrally with pads of adhesive setae. Ventroapical tooth of the metatarsomere 4 small. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 3–4 short setae. Metatarsomere 5 as long as the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 8A): Basal part of the median lobe wide, with triangular basolateral lobes which are separated from the median lobe by a suture-like line. Mid-shaft thick, regularly curved, progressively narrowed to the apex. Tip of the apex short, triangular in dorsal view. Apex faintly deflected to the left. Mid-shaft of the everted endophallus densely and extensively covered with long setae.

Female genitalia: Gonocoxa (Fig. 9C): Gonocoxite 2 slender and long, longer than half the length of gonocoxite 1, relatively slender at base, slightly narrowing near base, subparallel sided in median part, narrowing towards apex which is faintly deflected. Apex rounded, distinctly arcuate dorsally, but dorsally not grooved. Ventral preapical insertion furrow short-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: $hea.w/fro.w = 1.43 \pm 0.024$ (1.40–1.48); $prm.w/hea.w = 1.29 \pm 0.022$ (1.25–1.32); $prm.w/prp.w = 1.74 \pm 0.035$ (1.68–1.79); $pra.w/prp.w = 1.23 \pm 0.032$ (1.19–1.31); $ely.w/prm.w = 1.60 \pm 0.060$ (1.51–1.72); $prm.w/prm.l = 1.39 \pm 0.034$ (1.33–1.45); $ely.l/ely.w = 1.57 \pm 0.028$ (1.52–1.61).

Etymology: The specific epithet (noun in apposition; *rubus*, latin = black-berry) refers to the berry-like lateral bulge of the maxillary stipes.



Fig. 11: Type locality of *Nebria (Barbonebriola) rubostipes* sp. nov.: Far Western Nepal, Saipal Himal: E-slope of the pass Sankha La. Photo: Henryk Baumbach.

Diagnosis: The new species is characterized within *Barbonebriola* subgen. nov. by the presence of a midlateral seta of the pronotum (absent in *N. tenuisulcata* sp. nov.), by the strongly and densely punctate striae of the elytra (faintly punctate or impunctate in *N. kagmara* sp. nov.), by the long and subcylindrical basal antennomere (short and ovoid in *N. ganeshi*), and by the ovoid elytra (elliptic to subovoid elytra with the lateral margin subparallel in *N. barbata* and *N. restricta*).

Distribution (Fig. 16, Nr. 8): Known only from the type locality Sankha La pass on the eastern slopes of the Saipal Himal on the border of the Humla and Bajura districts.

Habitat (Fig. 11): Flat alpine mats with flowers, mix of stone debris and little remains of snowfields.

***Nebria (Barbonebriola) tenuisulcata* sp. nov.** (Fig. 12)

Holotype ♀: Nepal, Mahakali/Darchula, 12 km N Ghusa, high valley SSW Api, 4100 m, 29°56'28" N, 80°54'24" E, stone debris, 8.VI.2005, leg. A. Weigel (NME).

Body length 11 mm. Colour dark brown. Mandibulae and appendages of head piceous. Antennae brown, basal antennomeres not darkened. Legs brown, femur darkened.

Head behind the eyes with a shallow, faintly punctate transverse impression. Eyes prominent. Labrum long, with anterior margin faintly convex, bearing six setae; anterior margin in the area of the four median setae bulging. Angles of the labrum rounded. Apical margin of clypeus faintly concave. Head supraorbitally longitudinally wrinkled. Frons distinctly transversally wrinkled. 1–2 supraorbital seta. Antennae long and slender extending to one third of the elytra. Antennal scape elongate, subcylindrical-ovoid, basally narrowed, as long as the eye's diameter, with one dorsal seta. 2nd antennomere with one seta ventroapically. Maxillary stipes laterally with a berry-like bulge with 8–9 tubercles bearing each a robust seta. Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 18 setae. Microreticulation of the head isodiametric.

Pronotum narrow, ratio width/length of the pronotum = 1.29. Lateral margin convex, narrowed basally, rounded to the anterior angles, evenly and rectilinearly narrowed to the posterior angle (Fig. 15D). Anterior angles slender and protruding, acutely rounded. Posterior angles distinctly narrower than the anterior ones. Lateral explanation narrow with a shallow groove, broadened basally. Lateral channel narrow. Lateral margin basally blade-like, obliquely upturned. Posterior angles acute. Anterior angles acutely rounded, distinctly protruding. Basal margin bisinuate, with a deep incision towards the basal fovea, giving the impression of a strongly protruding posterior angle. Pronotal disc convex, shallow. Basal fovea deep, anterior and posterior transverse sulci shallow, median line shallow. Basal fovea, anterior and posterior transverse sulci and the narrow lateral groove sparsely and faintly punctate. Apical margination of the pronotum restricted to lateral one-thirds, merges with the apex of the anterior angle. Base of the pronotum not margined. Basolateral and midlateral setae absent. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum scarcely punctate. Prosternal process elongate, with a faint longitudinal bulge, margined laterally and unmargined at apex.

Elytral silhouette convex, ovoid-elongate, narrowed basally, widest behind the middle; subapically faintly sinuated. Elytral apex acuminate, but rounded. Basal margination straight, smoothly merged with the lateral margination. Humeral carina faintly developed. Striae moderately deepened, distinct on disc, coarsely and tightly punctate. Striae obliterate towards the lateral margin and towards the apex. Apical carina absent. Intervals flat; intervals 3, 5 and 7 asetose. Scutellar seta absent. Microreticulation oblong. Mesepisterna punctate. Metepisterna 1.6 times as long as wide, punctate. Metacoxa with two basal and one apical setae.

Sternum 2 laterally smooth and finely punctate. Sternum 3 with a row of four medial setae. Sterna 4–6 each with 4–7 posterior paramedial setae. Anal

Fig. 12: *Nebria (Barbonebriola) tenuisulcata* sp. nov. Holotype. Scale bar = 5 mm.



sternum with two paramedial setae in the female. All sterna with faint impressions laterally.

Legs long and slender. Tarsi dorsally glabrous. Ventroapical tooth of the metatarsomere 4 small. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of four short setae. Metatarsomere 5 as long as the metatarsomeres 3+4.



Fig. 13: Type locality of *Nebria (Barbonebriola) tenuisulcata* sp. nov.: Far Western Nepal, Api Himal: High valley N Ghusa, 4100 m a.s.l. Photo: Andreas Weigel.

Female genitalia: Gonocoxa (Fig. 9D): Gonocoxite 2 slender and long, longer than half the length of gonocoxite 1, slender at base, slightly narrowing near base, parallel or subparallel sided in median part, narrowing towards apex which is faintly deflected. Apex rounded, distinctly arcuate dorsally, but dorsally not grooved. Ventral preapical insertion furrow short-oval, with two nemati-forme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Male unknown.

Body ratios: $\text{hea.w}/\text{fro.w} = 1.43$; $\text{prm.w}/\text{hea.w} = 1.25$; $\text{prm.w}/\text{prp.w} = 1.61$; $\text{pra.w}/\text{prp.w} = 1.18$; $\text{ely.w}/\text{prm.w} = 1.74$; $\text{prm.w}/\text{prm.l} = 1.35$; $\text{ely.l}/\text{ely.w} = 1.57$.

Etymology: The specific epithet refers to the narrow lateral groove of the pronotum (*tenuis*, latin = thin, fine; *sulcatus*, latin = grooved).

Diagnosis: *N. tenuisulcata* sp. nov. is separable from all *Barbonebriola* species by the slender pronotum, by the absence of both lateral and basolateral setae of the pronotum and by the narrow lateral groove of the pronotum.

Distribution (Fig. 16, Nr. 9): Known only from the type locality on the southern slopes of the Api Himal in Farwestern Nepal.

Habitat (Fig. 13): Stone debris with small vegetation and little rivulets.

Nebria (Barbonebriola) kagmara sp. nov. (Fig. 14)

Holotype ♂: Nepal, Prov. Karnali, Distr. Dolpo, Kagmara La, westside, High Camp, 4300 m, 29. 6. 2009, leg. Santos Tamang (NME).

Paratypes: 35 ♂ 33 ♀, same data as holotype (NME, NMBE, cSCHM); 22 ♂ 9 ♀, Nepal, Prov. Karnali, Distr. Dolpo, Kagmara La, eastside, High Camp, 4400 m, 1. 7. 2009, leg. Santos Tamang; (NME); 91 ♂ 61 ♀, Nepal, Prov. Karnali, Distr. Dolpo, Kagmara Lekh, below Kagmara La, 4400 m, 1. 7. 2009, leg. Santos Tamang; (NME, NMBE, cSCHM).

Body length 9–11 mm. Colour dark brown. Head black, pronotum often lighter than the head. Mandibulae and appendages of head piceous. Antennae brown. Femora dark brown, trochanters, tibiae, knees and tarsi lightened brown.

Head with a shallow transverse impression behind the prominent eyes. Labrum long, with anterior margin faintly convex, bearing six setae; anterior margin in the area of the four median setae bulging. Apical margin of clypeus concave. Shallow supraorbital impression longitudinally wrinkled. One supra-orbital seta. Frons distinctly transversally wrinkled. Vertex faintly punctate near the transverse impression. Antennae extending to one-third of the elytra. Antennal scape elongate, subcylindrical-ovoid, basally narrowed, as long as the eye's diameter, with one dorsal seta. 2nd antennomere with one ventroapical seta. Maxillary stipes laterally with a berry-like bulge with 9–10 tubercles bearing each a robust seta. Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 20–26 setae. Microreticulation of the head isodiametric.

Pronotum subcordate, transverse, ratio width/length of the pronotum 1.39–1.48. Lateral margin convex, narrowed basally, widely rounded to the anterior angles, evenly and convexly narrowed to the posterior angle; somewhat more strongly narrowed just in front of the posterior angles (Fig. 15E). Largest width at apical fourth. Posterior angles distinctly narrower than the anterior ones. Lateral channel narrow and moderately deep. Lateral margin only just in front of the posterior angle moderately blade-like, obliquely or vertically upturned. Posterior angles acute and moderately protruding. Anterior angles moderately protruding. Basal margin straight without incision towards the basal fovea. Pronotal disc moderately convex. Basal fovea shallow, anterior and posterior transverse sulci shallow, median line shallow. Basal fovea, anterior and posterior transverse sulci sparsely and faintly punctate, lateral groove impunctate. Apical margination of the pronotum restricted to lateral one-third, merges with the apex of the anterior angle. Base of the pronotum not margined. One midlateral seta (rarely asymmetrically bisetose), which is inserted in the lateral channel, at apical fourth of the pronotum. Basolateral



Fig. 14: *Nebria (Barbonebriola) kagmara* sp. nov. Paratype.
Scale bar = 5 mm.

seta absent. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process elongate, flattened or with a longitudinal bulge, margined laterally and unmargined at apex.

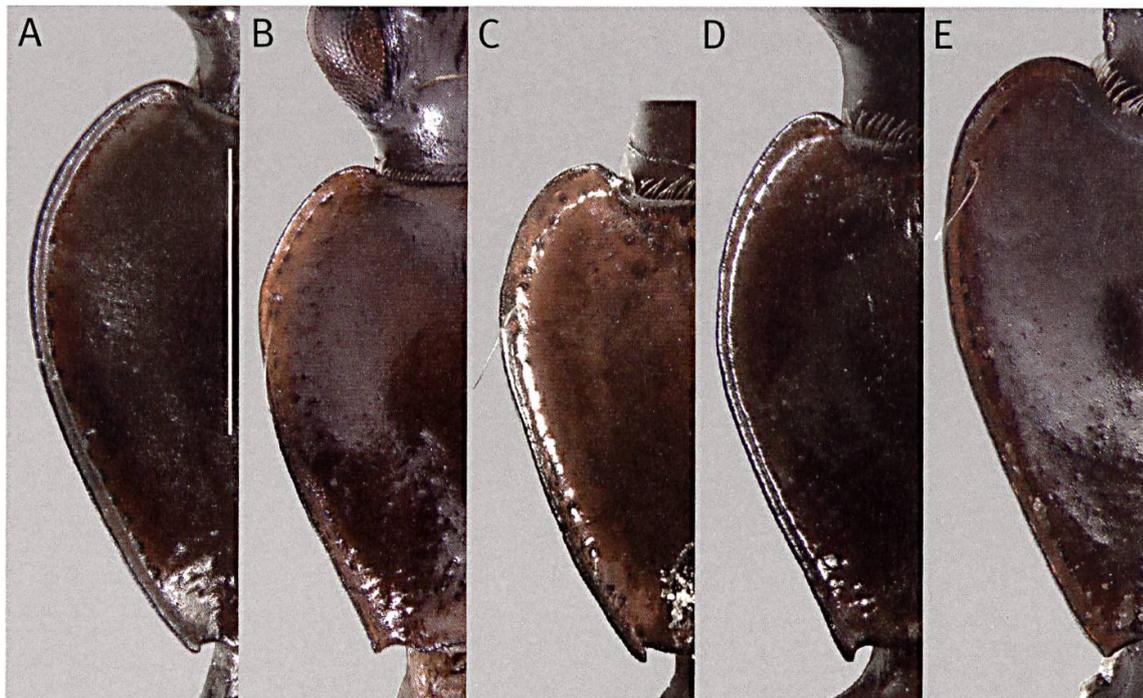


Fig. 15: Left part of the pronotum of species of *Barbonebriola* subgen. nov. A: *Nebria (Barbonebriola) barbata* ANDREWES, 1929; B: *N. (B.) ganeshi* LEDOUX, 1984; C: *N. (B.) rubostipes* sp. nov.; D: *N. (B.) tenuisulcata* sp. nov.; E: *N. (B.) kagmara* sp. nov. Scale bar = 1 mm.

Elytral silhouette convex, ovoid-elongate, lateral margin rectilinear, widest behind the middle; subapically faintly sinuate. Elytral apex acuminate, but rounded. Basal margination straight, smoothly merged with the lateral margination. Humeral carina faintly developed. Striae deep, distinct on disc, weakly punctate. Punctuation of the striae distinct only on disc, obliterated basally and apically. Striae obliterate towards the apex and towards the lateral margin, striae 7 and 8 visible as a row of pores. Intervals convex, more convex on disc and towards the basal margin. Apical carina evanescent. Intervals 3, 5 and 7 asetose. Scutellar seta absent. Microreticulation oblong. Mesepisterna smooth. Metepisterna 1.7 times as long as wide, smooth or coarsely punctate. Metacoxa generally with two (1–4) basal and one apical setae. Hindwings present as a strap-like vestige of one fifth to one sixth of the elytral length.

Sternum 2 laterally smooth, faintly punctate. Sternum 3 with a row of 2–8 medial setae. Sterna 4–6 each with 3–7 posterior paramedial setae. Anal sternum with 2–3 paramedial setae in the male and 2–4 in the female. All sterna with faint impressions laterally.

Legs long and slender. Tarsi dorsally glabrous. Protarsus of the male with tarsomeres 1–3 distinctly broadened, ventrally with pads of adhesive setae. Ventroapical tooth of the metatarsomere 4 small. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 3–5 short setae. Metatarsomere 5 as long as the metatarsomeres 3+4.

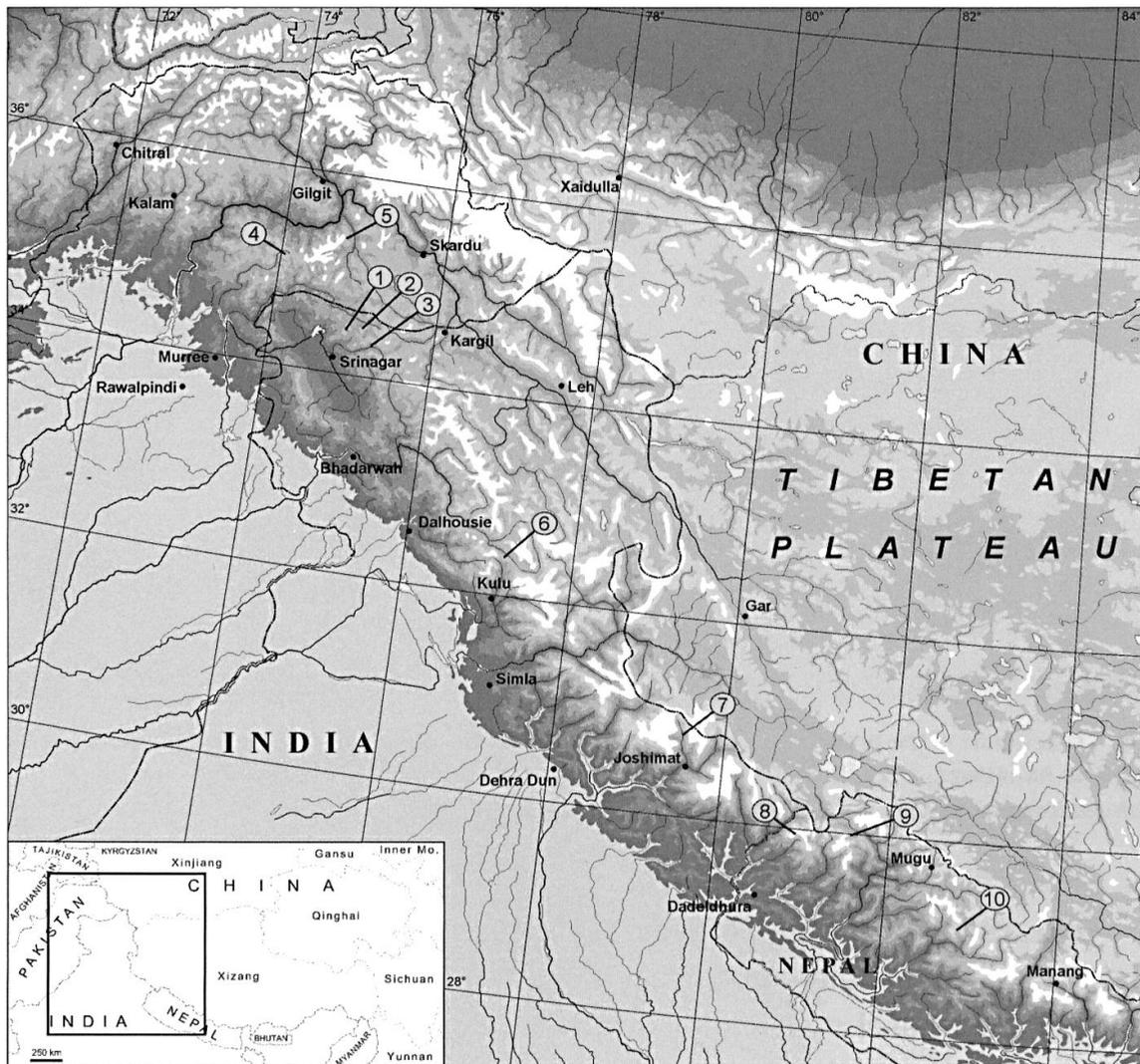


Fig. 16: Locations with occurrences of *Nebria* (*Barbonebriola* sp. nov.) species.

- 1: Lac de Gangabal, Kashmir Himalaya of India (*N. barbata* ANDREWES, 1929).
- 2: Lac de Gadsar, Kashmir Himalaya of India (*N. barbata* ANDREWES, 1929).
- 3: Sonamarg, Kashmir Himalaya of India (*N. barbata* ANDREWES, 1929).
- 4: Babussar Pass, Kashmir Himalaya of Pakistan (*N. barbata* ANDREWES, 1929).
- 5: Rama Lake, Kashmir Himalaya of Pakistan (*N. barbata* ANDREWES, 1929).
- 6: Rohtang Pass, Himachal Pradesh, India (*N. ganeshi* LEDOUX, 1984).
- 7: Badrinath, Uttarakhand, India (*N. restricta* LEDOUX & ROUX, 2005).
- 8: South slope of Api Himal, Ghusa, Nepal (*N. tenuisulcata* sp. nov.).
- 9: East slope of Saipal Himal, Sankha La, Nepal (*N. rubostipes* sp. nov.).
- 10: South slope of Kanjiroba Himal, Kagmara La, Nepal (*N. kagmara* sp. nov.).

Male genitalia: Edeagus (Fig. 8B): Basal part of the median lobe wide, with short basolateral membranous lobes. Mid-shaft thick, regularly curved, progressively narrowed to apex. Tip of the apex short, acute, triangular in dorsal view. Apex faintly deflected to the left. Mid-shaft of the everted endophallus densely and extensively covered with long setae.

Female genitalia: Gonocoxa (Fig. 9E): Gonocoxite 2 slender and long, longer than half the length of gonocoxite 1, distinctly narrowing near base, paral-



Fig. 17: Type locality of *Nebria (Barbonebriola) kagmara* sp. nov.: West Nepal, Kanjiroba Himal, W-slope of the pass Kagmara La, 4300 m a.s.l.. Photo: Henryk Baumbach.

lateral sided in median part, narrowing towards apex which is faintly deflected. Apex rounded, distinctly arcuate dorsally, but dorsally not grooved. Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: $\text{hea.w}/\text{fro.w} = 1.39 \pm 0.026$ (1.35–1.43); $\text{prm.w}/\text{hea.w} = 1.30 \pm 0.024$ (1.27–1.36); $\text{prm.w}/\text{prp.w} = 1.72 \pm 0.049$ (1.65–1.82); $\text{pra.w}/\text{prp.w} = 1.24 \pm 0.39$ (1.18–1.30); $\text{ely.w}/\text{prm.w} = 1.58 \pm 0.035$ (1.51–1.62); $\text{prm.w}/\text{prm.l} = 1.43 \pm 0.028$ (1.39–1.48); $\text{ely.l}/\text{ely.w} = 1.57 \pm 0.029$ (1.54–1.63).

Etymology: The specific epithet (noun in apposition) refers to the type locality Kagmara La.

Diagnosis: *N. kagmara* is separable from all *Barbonebriola* species by the base of the pronotum which is not incised at the basal grooves, and by the weakly punctate striae of the elytra.

Distribution (Fig. 16, Nr. 10): Known only from the type locality on the southern slope of Kanjiroba Himal, the pass Kagmara La in the Dolpo district (Karnali zone, West Nepal).

N. kagmara sp. nov. is the easternmost species of the subgenus *Barbonebriola* subgen. nov. Obviously the watershed between the Karnali and Kali Gandaki river catchments represents the eastern border of the *Barbonebriola*

distribution. The species immediately east of the Kali Gandaki river on the west slopes of the Annapurna South Himal is a species belonging to the subgenus *Epinebriola* (*N. triseritata* sp. nov., see below).

Habitat (Fig. 17): Alpine plateau with vegetation mats, rivulets and stone debris.

Remarks to some *Epinebriola* species previously described

***Nebria (Epinebriola) rasa* ANDREWES, 1936**

The erroneous redescription of *N. rasa* by Shilenkov (1998) on specimens which turned out to be a new species *N. (Epinebriola) martensi* HUBER & SCHMIDT, 2012, leads to some confusion in the determination keys in use, and makes it necessary to amend some steps in those keys. We refer to the redescription of *N. rasa* by Huber & Schmidt (2012) which is based on the analysis of the *rasa* holotype specimen.

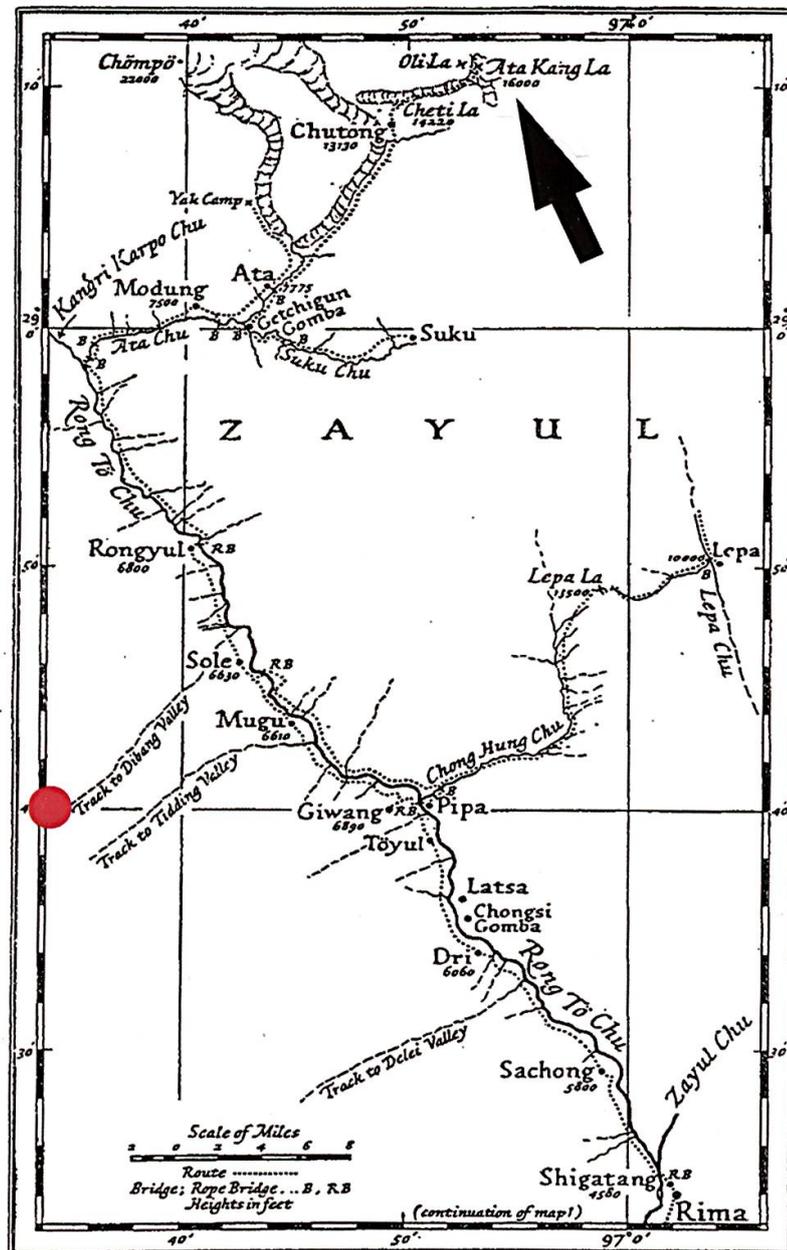
Distribution: Known only from the type locality in Sikkim (Fig 41, Nr. 20). Specimens reported from Jaljale Himal in Eastern Nepal by Shilenkov (1998) and by Ledoux & Roux (2005) refer to *N. martensi*.

***Nebria (Epinebriola) orestias* ANDREWES, 1932**

N. orestias was known only from the type locality Jelep pass (Eastern Sikkim) from the India-China border, until Shilenkov (1998) reported the species from the Jaljale Himal (Tangje La, Meropapa La, Pomri La) in Eastern Nepal at a distance of more than hundred kilometres from the type locality of *N. orestias*. The examination of the specimens from Jaljale Himal and of a large amount of recently collected specimens in the same massif (Lumba Sumba pass) reveals significant differences to the holotype specimen of *N. orestias* from Eastern Sikkim. The specimens from Jaljale Himal (and neighbouring localities) are therefore described as a new species *N. pseudorestias* sp. nov. (see below).

Distribution (Fig. 41, Nr. 21): Based on current data, the distribution of *N. orestias* seems to be restricted to the type locality Jelep pass in Eastern Sikkim on the easternmost slope of the Dongkya Mountain group, which forms the border between Sikkim and Tibet.

Fig. 18: Copy of Kaulback's map (Kaulback 1934, p. 87) showing the more northerly part of Kingdon Ward's and Ronald Kaulback's expedition route in 1933 to the Ata Kang La (= type locality of *Nebria (Epinebriola) zayula* ANDREWES, 1936; black arrow). Red dot = approximate position of the misinterpreted type locality Kaya La (= Kawy La) in Andrewes (1936).



MAP 2, SHOWING THE MORE NORTHERLY PART OF MR. KAULBACK'S ROUTE.

(By kind permission of the Royal Geographical Society)

Nebria (Epinebriola) zayula ANDREWES, 1936

Remarks on the type locality: When describing the species Andrewes (1936) noted the type locality "Kawy La", a locality obviously unknown to him, and which he interpreted as follows: "The locality is apparently the Kaya Pass of the Indian Ordnance Survey map, connecting the valley of the Dibang and Zayul rivers."

It was obviously a reading error by Andrewes: On the original label of the type specimen "Kang La" is legibly handwritten, but neither "Kawy La" nor

Tab. 2: Relevant characters of the *Nebria (Epinebriola) zayula* type specimen which are not or wrongly mentioned in Andrewes (1936) and in Ledoux & Roux (2005).

Characters in the <i>N. zayula</i> male holotype specimen	Andrewes (1936)	Ledoux & Roux (2005)
Head: supraorbitally bisetose	Not mentioned	Not mentioned
Submentum: 16 setae (9+7)	More than a dozen setae	A dozen setae (14 setae mentioned in the key)
Sterna 4–6: 4–5 setae	3–4 setae	3–4 setae
Anal sternum: 4–5 setae each side in male	Not mentioned	1 seta each side in male (2 setae mentioned in the key)
Metacoxae: 3–5 setae	3 setae	3 setae

"Kaya La". Due to the reading error, Andrewes made an interpretation error: The misinterpreted locality (Kaya La) at the India-China border indeed crosses the Mishmi Mountains westwards to the Dibang river valley, but the correct type locality Kang La (= Ata Kang La, Fig. 18) crosses in a linear distance of approx. 50 km the Kangri Garpo Mountains northwards, connecting the Valley of the Kangrigarpo Qu and the valley of Rawok Lake and Mang Lake (Kaulback 1934, Nakamura 2001). Kaulback (1934), member of the expedition in 1933 and one of the two beetle collectors, noted in his travel report "... on **July the 15th** [1933]... I went with Kingdon Ward to the top of the **Ata Kang La** ...", providing a travelling map (Fig. 18) and thus confirming the collecting date noted on the label of the holotype specimen. Obviously Andrewes had no knowledge of Kaulback's map which was published two years before Andrewes described the species.

Distribution: *N. zayula* is known only from the type locality, but the type locality lies east of the deeply incised Kangrigarpo Qu river valley (= Rong To Chu in Fig. 18) and not west of it as supposed so far.

Description of additional morphological characters in *N. zayula* (Tab. 2): We examined several relevant characters of the holotype specimen of *N. zayula* which had been overlooked and/or wrongly noted by Andrewes (1936) as well as by Ledoux & Roux (2005). The head supraorbitally bisetose – true in *N. zayula*, but overlooked so far – is rare in the subgenus *Epinebriola*, only present in *N. rasa* and *N. schawalleri*, and asymmetrically present in *N. molendai* and *N. martensi*. *N. zayula* is even the only *Epinebriola* species with a row of 4–5 setae on each side of the male anal sternum (not mentioned in Andrewes 1936, wrongly noted in Ledoux & Roux 2005). For other characters see Tab. 2.

Descriptions of new species of the subgenus *Epinebriola* K. DANIEL, 1904

***Nebria (Epinebriola) triseriata* sp. nov.** (Fig. 19)

Holotype ♂: Nepal, Dhaulagiri Zone, Myagdi Distr., Annapurna South Himal, W-Slope, 28° 28,30' N, 83° 44,55' E, 4500 m, 22. 5. 2001, leg. G. Hirthe & J. Schmidt (cSCHM).

Paratypes: 17 ♂ 13 ♀, same data as holotype (NMBE, cSCHM).

Body length 11–12 mm. Colour black. Pronotum dark brown, somewhat lighter than the head. Mandibulae, appendages of head and antennae brown. Legs black, tarsi brown.

Head with a shallow transverse impression behind the prominent eyes. Mandibulae long. Anterior margin of the labrum distinctly convex and bulging, bearing six setae. Apical margin of clypeus straight. Longitudinally wrinkled near the supraorbital seta, transversally wrinkled on the forehead. Eyes prominent. One supraorbital seta, rarely asymmetrically two setae. Vertex impunctate. Antennae long and slender extending to the middle of the elytra. Antennal scape elongate, subcylindrical, basally narrowed, as long as the eye's diameter, with one dorsal seta. 2nd antennomere with one seta ventroapically. Maxillary stipes flat, laterally with robust setae. Penultimate labial palpomere trisetose. Mentum with a bifid medial tooth. Submentum with a row of 12–14 setae. Microreticulation of the head isodiametric.

Pronotum transverse, ratio width/length of the pronotum = 1.36. Lateral margin convex, narrowed basally, widely rounded to the anterior angles, evenly and convexly narrowed to the posterior angle, faintly concave just in front of the basal angles (Fig. 31A). Posterior angles distinctly narrower than the anterior ones. Lateral explanation narrow, impunctate, basally opened out into the deep basal groove. Lateral margin basally blade-like, obliquely upturned. Anterior angles wide, rounded, not protruding. Posterior angles obtuse-angled. Basal margin straight, not sinuate (or only faintly sinuate). Pronotal disc convex. Basal fovea deep, anterior and posterior transverse sulci distinct, median line shallow. Basal fovea, anterior and posterior transverse sulci sparsely punctate. Apical margination of the pronotum restricted to lateral one-fourths, merges with a distinct ridge at the anterior angle; the ridge continues along the lateral groove to the hindmost lateral seta. Base of the pronotum not margined. Basolateral seta present. 2–3 midlateral setae in the apical half of the pronotum, rarely unisetose; midlateral setae inserted at the inside of the slightly upturned margin. Microreticulation of the pronotum isodiametric,

impunctate on disc. Proepisternum smooth. Prosternal process triangular, flattened, margined laterally and unmargined at apex, bulging at apex.

Elytral outline moderately convex, ovoid-elongate, drop-like, narrowed basally, widest in the apical half of the elytra; lateral margin near the mesofemur straight or faintly concavely sinuate; subapically faintly sinuate. Elytral apex rounded. Basal margination straight, joined at an obtuse angle with the lateral margination. Humeral carina faintly developed. Striae distinct on disc, faintly punctate. Striae obliterate towards the apex. Intervals rather convex, more convex on disc and towards the basal margin. Interval 3 with 4–8 setae, intervals 5 and 7 with 0–3 setae. 1 scutellar seta present, rarely bilaterally with two setae. Microreticulation oblong. Mesepisterna smooth. Metepisterna smooth, twice as long as wide. Metacoxa with 2(–3) basal and one apical setae.

Sternum 2 laterally smooth. Sternum 3 medially asetose, rarely with one seta. Sterna 4–6 each with 3–6 posterior paramedial setae. Anal sternum with 1–2 paramedial setae in the male and 2–6 in the female. All sterna with faint impressions laterally.

Legs long and slender. All tarsi dorsally glabrous. Protarsus of the male with tarsomeres 1–3 distinctly broadened, ventrally with pads of adhesive setae. Ventroapical tooth of metatarsomere 4 long, longer than half of the dorsal metatarsomere length, bearing long setae. All tarsomeres 5 ventrally with two rows of 3–5 short setae. Metatarsomere 5 longer than the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20A): Basal part of the median lobe wide, with distinct basolateral membranous lobes. Mid-shaft slender, one third from the tip on the ventral side faintly bent. Tip of the apex short. Apex faintly deflected to the left. Mid-shaft of the everted endophallus densely and extensively covered with small spines.

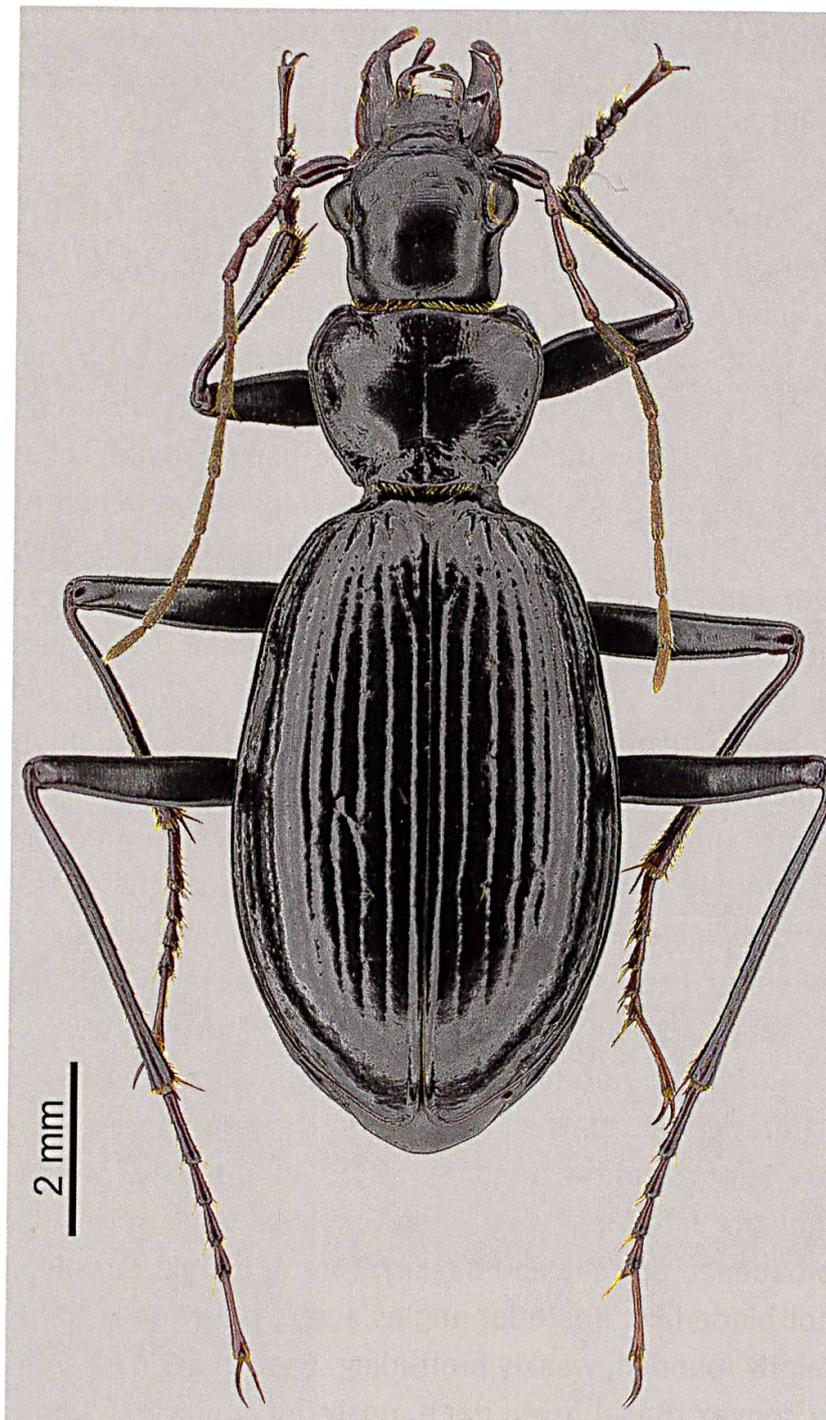
Female genitalia: Gonocoxa (Fig. 10A): Large, gonocoxite 1 long. Gonocoxite 2 elongate-triangular, longer than half of length of the proximal gonocoxite, broad at base, apex broadly rounded, dorsally arcuate, dorsally distinctly grooved. Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: hea.w/fro.w = 1.43 ± 0.023 (1.38–1.47); prm.w/hea.w = 1.26 ± 0.043 (1.15–1.30); prm.w/prp.w = 1.68 ± 0.028 (1.63–1.72); pra.w/prp.w = 1.17 ± 0.043 (1.09–1.24); ely.w/prm.w = 1.60 ± 0.043 (1.53–1.69); prm.w/prm.l = 1.34 ± 0.045 (1.24–1.40); ely.l/ely.w = 1.62 ± 0.040 (1.55–1.70).

Etymology: The specific epithet refers to the three (the 3rd, 5th and 7th) oligo-setose intervals of the elytra.

Diagnosis: *N. triseriata* sp. nov. and *N. martensi* are the only *Epinebriola* species with the 5th and 7th intervals of the elytra setose. *N. triseriata* differs

Fig. 19: *Nebria (Epinebriola) triseriata* sp. nov. Male paratype.



from *N. martensi* by the trisetose penultimate labial palpus (bisetose in *N. martensi*), by the presence of a scutellar seta, which generally is absent in *N. martensi*, by the distinct striae of the elytra (shallow in *N. martensi*), and by the mid-shaft of the endophallus densely covered with setae (asetose in *N. martensi*).

Distribution (Fig. 41): Known only from the type locality on western slope of the Annapurna South Himal, western Central Nepal Himalaya.

Habitat: All specimens were collected alongside a melt water stream in the high alpine zone.

***Nebria (Epinebriola) rupina* sp. nov.** (Fig. 21)

Holotype ♂: Nepal, Manaslu Himal, Rumche Tal to Rupina La pass, 4200 mNN, 24. 6. 2001, leg. S. Tamang (cSCHM).

Paratypes: 14 ♂ 7 ♀, same data as holotype (NMBE, cSCHM); 1 ♂ Nepal, Manaslu Himal, Dudh Pokhari, 4300–4400 m, 30. 6. 2001, leg. S. Tamang, H. S. Galel & S. Gurung (cSCHM); 1 ♂ Nepal, Gorkha Dist., zw. Tabruk und Rupina La, 4400–4500 m, 9. Aug. 1983, leg. Martens & Schawaller (SMNS).

Body length 9–10 mm. Colour dark brown, appendages of head and antennae brown. Pronotum brown, lighter than the head. Legs brown.

Head with a shallow transverse impression behind the eyes. Labrum with anterior margin faintly bisinuate, bearing six setae. The angles of the labrum rounded but distinct. Apical margin of clypeus straight. Frons transversally wrinkled, vertex impunctate. Eyes prominent, frons above the eyes longitudinally wrinkled. Antennae long and slender extending to one third of the elytra. Antennal scape elongate, as long as the eye's diameter, basally narrowed, subcylindrical apically, with one dorsal seta. 2nd antennomere with one seta ventroapically. Apical third of the 4th antennomere with a few short setae in addition to the apical collar of long setae; the additional ones sometimes hardly visible. Penultimate labial palpomere trisetose. Ligula long, spiny, with two lateral setae. Mentum with a bifid medial tooth. Submentum with a row of 12 setae. Microreticulation of the head isodiametric.

Pronotum faintly transverse, ratio width/length of the pronotum = 1.30. Lateral margin convex, rounded to the anterior angles, rectilinearly narrowed to the posterior angles (Fig. 31B). The posterior angles just a little narrower than the anterior angles. Lateral explanation narrow with a conspicuous groove, broadened apically and basally. Lateral margin basally obliquely upturned but not blade-like. Posterior angles acute, protruding posteriorly. Anterior angles faintly rounded, weakly protruding. Basal margin bisinuate. Pronotal disc weakly convex. Basal fovea deep, posterior transverse impression distinct, anterior transverse impression and median line shallow. Basal fovea, anterior and posterior transverse sulci and lateral groove impunctate. Apical margination of the pronotum restricted to lateral one-fourths, merges with the anterior angle. Base of the pronotum not margined. Basolateral seta present. One mid-lateral seta in the apical half of the pronotum, inserted in a distinct groove at the inside of the slightly upturned margin. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process flattened and unmargined.

Elytral silhouette slender, ellipsoid, widest behind the middle. Lateral margin subrectilinear at basal third. Shoulder distinct. Elytral apex acutely rounded.

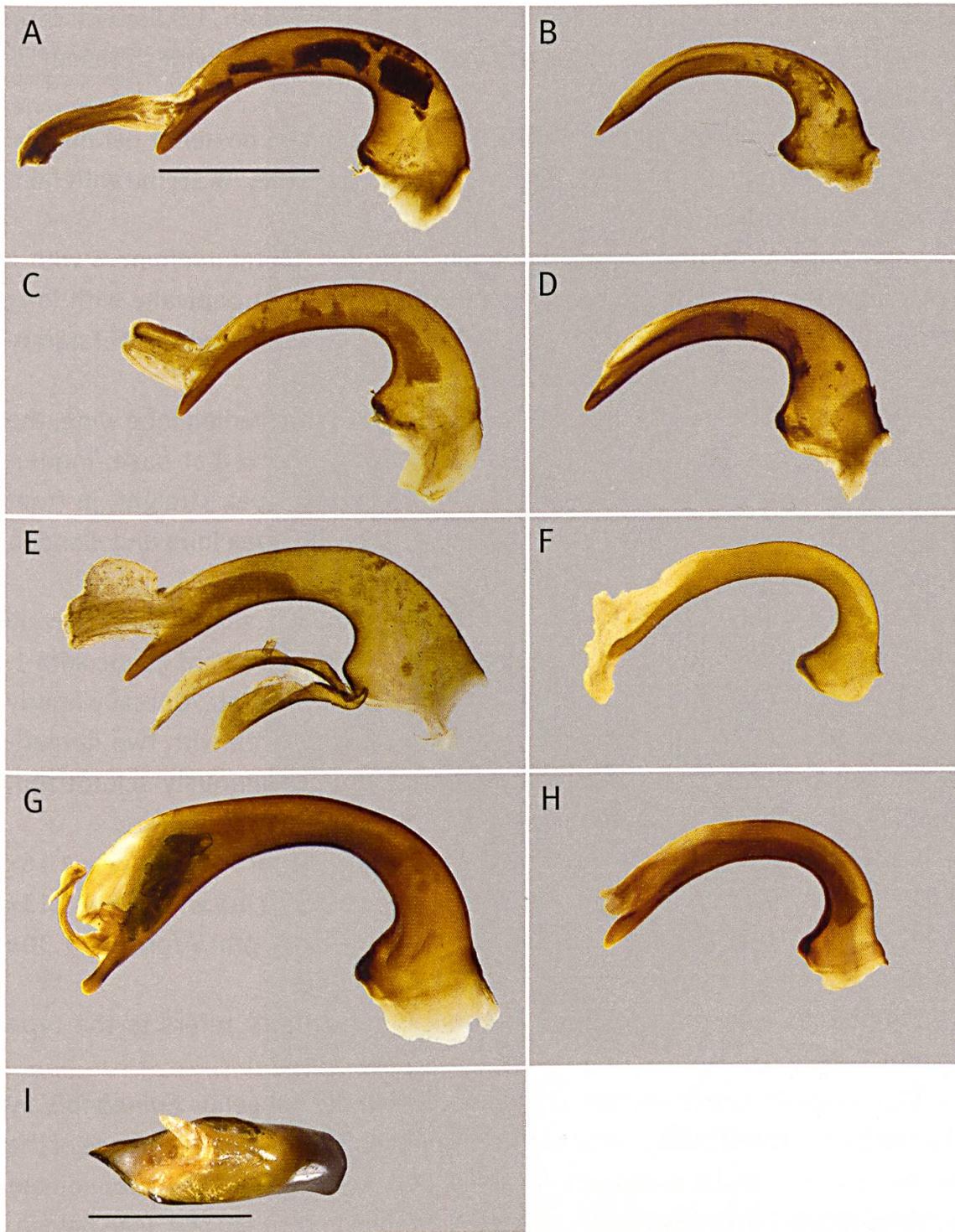


Fig. 20: Male edeagi of new *Nebria* species of the subgenus *Epinebriola* K. DANIEL, 1904. A: *Nebria (Epinebriola) triseriata* sp. nov.; B: *N. (E.) rupina* sp. nov.; C: *N. (E.) montisanimae* sp. nov.; D: *N. (E.) impunctata* sp. nov.; E: *N. (E.) numburica* sp. nov., with parameres; F: *N. (E.) retingensis* sp. nov.; G: *N. (E.) incarinata* sp. nov.; H: *N. (E.) delicata* sp. nov.; I: *N. (E.) incarinata* sp. nov., apex in dorsal view. Scale bars = 1 mm.

Apical carina present. Basal margination straight. Humeral carina present. Striae distinct on disc, weakly punctate. Striae obliterate towards the apex; striae 7 and 8 scarcely visible. Intervals scarcely convex, more convex on disc; interval 3 without setae. Scutellar seta absent. Microreticulation isodiametric

or faintly oblong. Mesepisterna smooth. Metepisterna smooth, 1.8 times as long as wide. Metacoxa with two basal and one apical setae. Hindwings present as a strap-like vestige.

Sternum 3 medially asetose. Sterna 4–6 each with 4–5 posterior paramedial setae. Anal sternum with two paramedial setae in the male. All sterna with faint impressions laterally.

Legs long and slender. All tarsi dorsally glabrous. Metatarsomere 4 with a ventroapical tooth. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 4–5 short setae. Metatarsomere 5 as long as the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20B): Basal part of the median lobe wide, the basolateral lobes small. Mid-shaft slender, strongly curved at base, moderately curved and progressively narrowed to the apex. Apex straight, in front of the tip on the ventral side faintly convex. Tip of the apex long and slender. Apex deflected to the left.

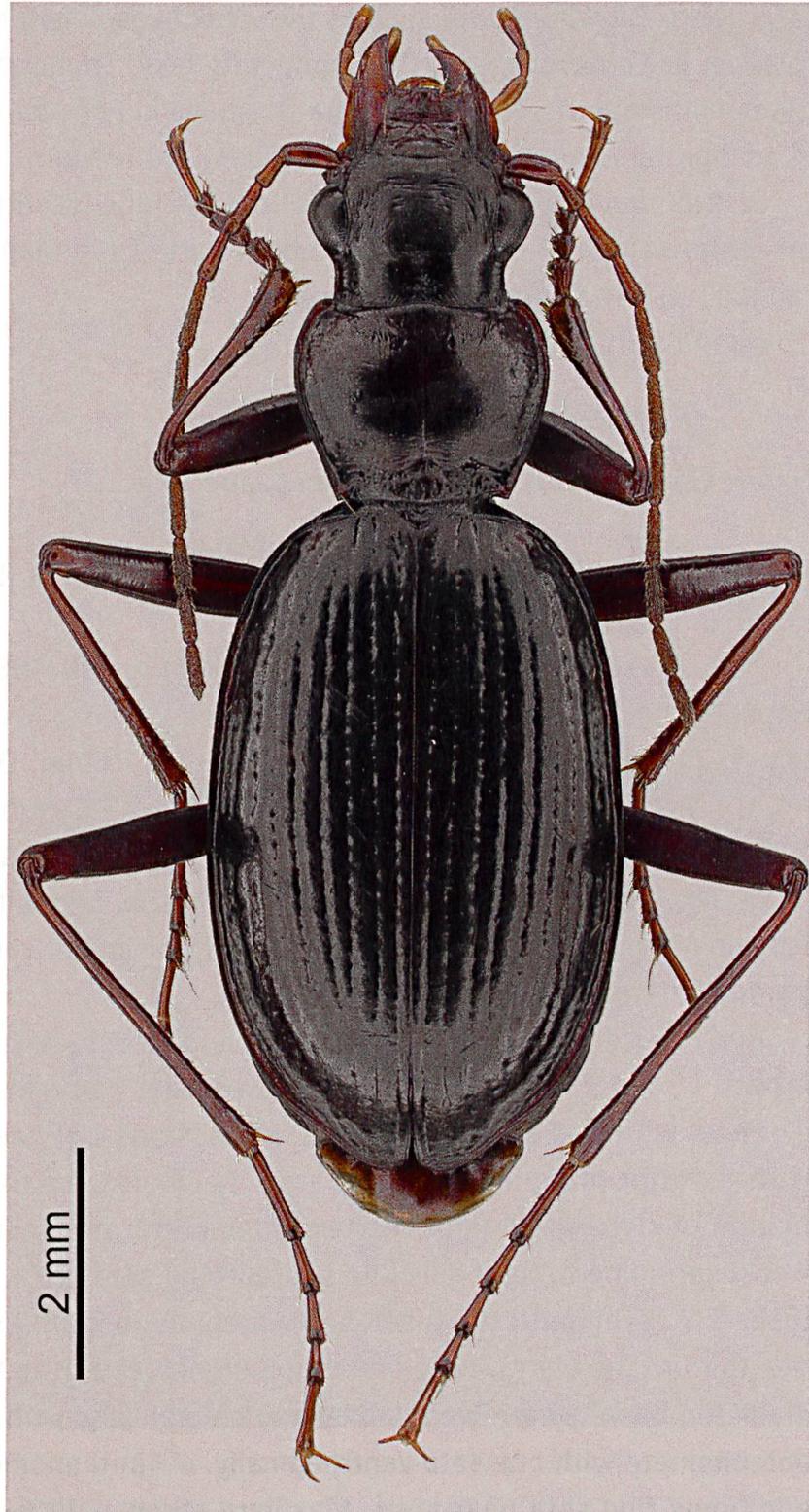
Female genitalia: Gonocoxa (Fig. 10B): Gonocoxite 1 slight and relatively short, gonocoxite 2 elongate-triangular, two-thirds the length of gonocoxite 1, slightly narrowed near base. Apex acuminate, dorsally arcuate, dorsally faintly grooved. Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: hea.w/fro.w = 1.51 ± 0.024 (1.48–1.55); prm.w/hea.w = 1.16 ± 0.018 (1.15–1.19); prm.w/prp.w = 1.53 ± 0.050 (1.45–1.59); pra.w/prp.w = 1.13 ± 0.042 (1.06–1.19); ely.w/prm.w = 1.61 ± 0.046 (1.56–1.70); prm.w/prm.l = 1.30 ± 0.032 (1.25–1.33); ely.l/ely.w = 1.63 ± 0.030 (1.59–1.68).

Etymology: The specific epithet (noun in apposition) refers to the type locality Rupina La.

Diagnosis: *N. rupina* sp. nov. stands out within the subgenus *Epinebriola* by the additional apical pubescence of the 4th antennomere and the presence of the basolateral seta of the pronotum. An apical pubescence of the 4th antennomere is rarely present in the sympatric species *N. montisanimae* sp. nov. (see below), but the basolateral seta of the pronotum is absent. Furthermore, the lateral margin of the pronotum is rounded to the anterior angles in a lesser extent than in than *N. montisanimae* sp. nov., and the apex of the anterior angle of the pronotum is without ridge along the lateral groove (in *N. montisanimae* sp. nov. the apical margination of the pronotum merges with a distinct ridge which continues to the lateral seta). In *N. rupina* sp. nov. the scutellar setae and the setae of the 3rd elytral interval are absent (present in *N. montisanimae* sp. nov.), *N. rupina* sp. nov. is distinctly smaller than *N. montisanimae* sp. nov., and the elytra are elongate-ovoid in contrast to the ovoid elytra in *N. montisanimae* sp. nov.

Fig. 21: Habitus of *Nebria (Epinebriola) rupina* sp. nov. Male paratype.



Remarks: The apical pubescence of the 4th antennomere is rare in the genus *Nebria*. It is restricted to the subgenus *Paranebria* (two species), to most species of the Himalayan subgenus *Patrobonebria*, and to a few isolated species in different subgenera (Ledoux & Roux 2005). It has not been reported for the subgenus *Epinebriola* so far. In *N. rupina* sp. nov. as well as in *N. montisanimae* sp. nov. several characters speak for an assignment to the subgenus *Epinebriola*

(and not to *Patrobonebria*) such as the weak head constriction behind the eyes (distinct in *Patrobonebria*), the impunctate head (punctate in *Patrobonebria*), the penultimate trisetose palpomere (bisetose in *Patrobonebria*), and the three dilated protarsomeres in the male (two in *Patrobonebria*).

Distribution (Fig. 41): Known only from the type locality, the pass Rupina La on eastern slope of Himal Chuli (eastern part of the Manaslu Himal mountain range), western Central Nepal Himalaya.

Habitat: Not noted.

***Nebria (Epinebriola) montisanimae* sp. nov.** (Fig. 22)

Holotype ♂: Nepal, Manaslu Himal, Narte Pokhari, S of Rupina La pass, 4400 m, 26. 6. 2001, leg. S. Tamang (cSCHM).

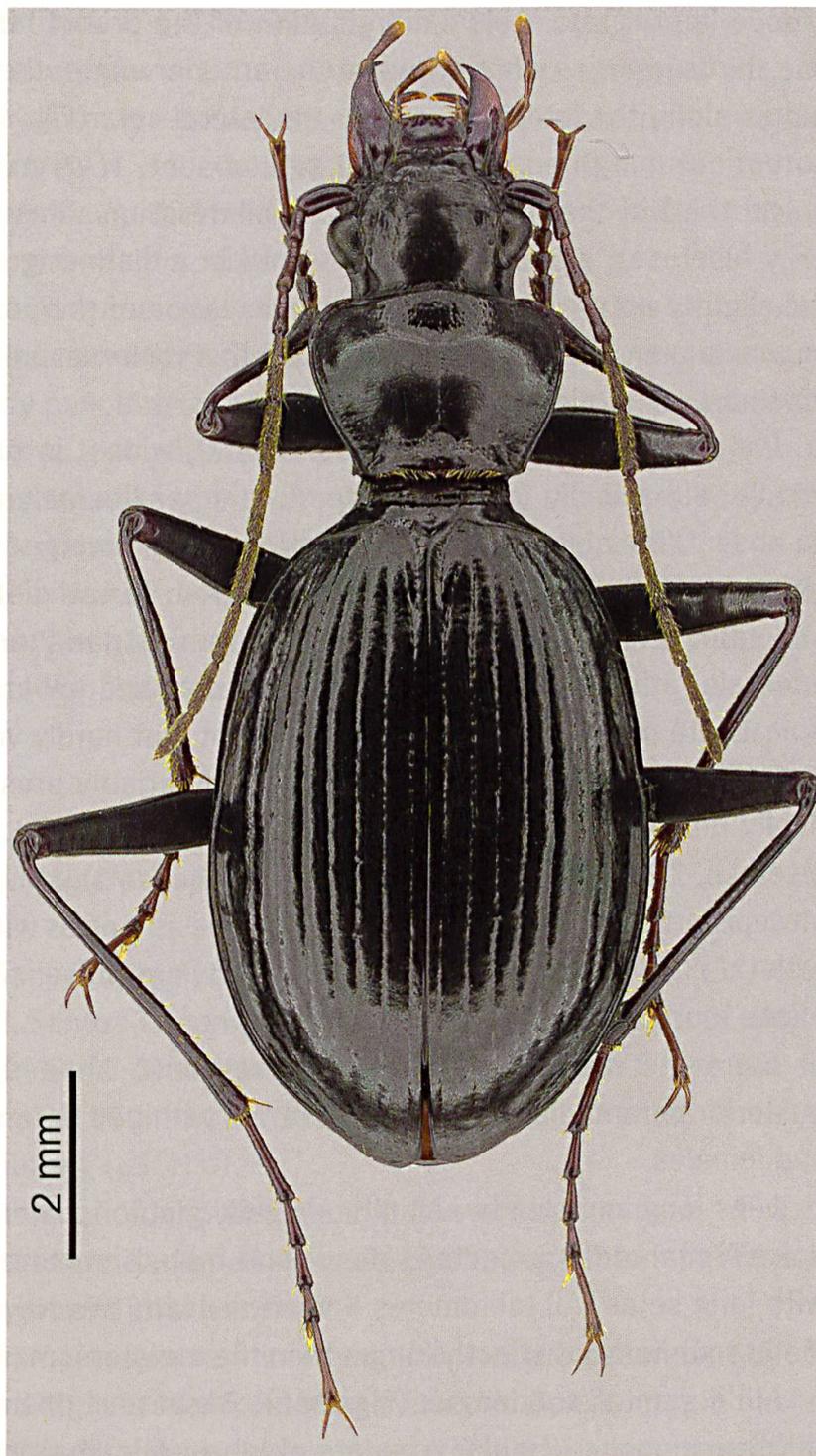
Paratypes: 11 ♂ 7 ♀, same data as holotype (NMBE, cSCHM); 3 ♂ 1 ♀, Nepal, Manaslu Himal, Rumche Tal to Rupina La pass, 4200 mNN, 24. 6. 2001, leg. S. Tamang (cSCHM); 52 ♂ 35 ♀, Manaslu Himal, Dudh Pokhari, 4300–4400 mNN, 30. 6. 2001, leg. S. Tamang, H.S. Galel & S. Gurung. (NMBE, cSCHM); 2 ♀, Nepal, Gorkha Dist., zw. Tabruk und Rupina La, 4100–4400 m, 9. Aug. 1983, leg. Martens & Schawaller (SMNS), Nepal-Expedition Jochen Martens; labeled *Nebria masrina* Andr. det. Shilenkov [misidentification; specimens compared with the *masrina* holotype (BMNH)].

Body length 11–12 mm. Colour black, appendages of head brown. Antennae brown, 1st and 2nd antennomeres darkened. Legs black, knees and tarsi brown.

Head with two shallow oblique impressions between the eyes. Labrum with anterior margin straight or slightly convex, bearing six setae. Apical margin of clypeus straight. Vertex impunctate, transversally wrinkled. Eyes weakly prominent. Generally one supraorbital seta (93% symmetrically unisetose, 7% asymmetrically bisetose). Antennae long and slender extending to one third of the elytra. Antennal scape elongate, a little longer than the eye's diameter, basally narrowed, subcylindrical apically, with one dorsal seta. 2nd antennomere with one seta ventroapically. 4th antennomere occasionally with additional fine seta near apex. Maxillary stipes with 6–7 setae. Ligula long, spiny, with two lateral setae. Penultimate labial palpomere trisetose. Mentum with bifid medial tooth. Submentum with a row of 10–14 setae. Microreticulation of the head isodiametric.

Pronotum faintly transverse, ratio width/length of the pronotum = 1.33. Lateral margin distinctly convex, narrowed basally, widely rounded to the anterior angles, in a straight line or even convexly narrowed to the posterior angles (Fig. 31C). Lateral explanation narrow with a conspicuous groove

Fig. 22: *Nebria (Epinebriola) montisanimae* sp. nov. Male paratype.



also apically, broadened basally. Lateral margin basally blade-like, obliquely or vertically upturned. Posterior angles distinct but not acute. Anterior angles very widely rounded, only weakly protruding. Basal margin weakly bisinuate, without a deep incision towards the basal fovea. Pronotal disc weakly convex. Basal fovea deep, anterior and posterior transverse impressions distinct, median longitudinal impression very weak. Basal fovea, anterior and posterior transverse impressions sparsely and faintly punctate; the narrow lateral

groove impunctate. Apical margination of the pronotum restricted to lateral one-thirds, merges with a ridge at the anterior angle; the ridge distinctly continues along the lateral groove to the lateral seta (Fig. 6B). Base of the pronotum not margined. Basolateral seta absent. 1(–2) midlateral setae in the apical third of the pronotum (87.3% bilateral unisetose, 12.7% asymmetrically bisetose); midlateral seta inserted in a distinct groove at the inside of the slightly upturned margin. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process faintly margined or almost unmargined.

Elytral silhouette broad, convex, ovoid, widest in or slightly behind the middle; subapically faintly sinuate. Elytral apex acutely rounded. Apical carina absent. Basal margination straight, smoothly merged with the lateral margination. Humeral carina faintly developed. Striae distinct on disc, faintly punctate. Striae obliterate towards the apex; striae 7 and 8 scarcely visible. Intervals rather convex, more convex on disc and towards the basal margin. Apical seta of the interval 3 mostly present, but hardly visible. Interval 3 with 3–5 setae adjoining stria 3. Scutellar seta variably present (61.4% symmetrically unisetose, 22.9% asymmetrically bisetose (1/2), 8.4% symmetrically bisetose, 7.2% asymmetrically asetose (0/1 or 0/2). Microreticulation oblong. Mesepisterna smooth. Metepisterna 1.6 times as long as wide, smooth. Metacoxa with (2–)3 basal and one apical setae. Hindwings present as a strap-like vestige of one fourth of the elytral length.

Sternum 3 medially asetose or oligosetose (0–2). Sterna 4–6 each with 4–8 posterior paramedial setae. Anal sternum with 2–3 paramedial setae in males and females.

Legs long and slender. All tarsi dorsally glabrous. Metatarsomere 4 ventroapically markedly projected. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 4–5 short setae. Metatarsomere 5 distinctly longer than the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20C): Basal part of the median lobe wide, with prominent triangular basolateral lobes. Mid-shaft thin, slender, strongly curved at base, moderately curved and progressively narrowed to the apex. One third from the tip on the ventral side faintly bent. Apex deflected to the left. Mid-shaft of the endophallus densely packed with short setae.

Female genitalia: Gonocoxa (Fig. 10C): Gonocoxite 2 elongate-triangular, broad at base, longer than half the length of gonocoxite 1. Apex broadly rounded, dorsally arcuate, dorsally grooved. Ventral preapical insertion furrow short-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: hea.w/fro.w = 1.43 ± 0.022 (1.39–1.47); prm.w/hea.w = 1.33 ± 0.053 (1.24–1.40); prm.w/prp.w = 1.61 ± 0.039 (1.55–1.67); pra.w/prp.w = 1.12 ± 0.032 (1.05–1.16); ely.w/prm.w = 1.64 ± 0.054 (1.56–1.71); prm.w/prm.l = 1.33 ± 0.028 (1.29–1.38); ely.l/ely.w = 1.57 ± 0.031 (1.51–1.61).

Etymology: The specific epithet refers to the Sanskrit name of the Manaslu Mountain (manasa = spirit = *anima* (latin); "Mountain of Spirit").

Diagnosis: Close to *N. impunctata* sp. nov. from the Ganesh Himal. *N. montisanimae* sp. nov. differs from the *N. impunctata* sp. nov. by the more elongate elytra and by the faintly punctate striae (punctation absent in *N. impunctata* sp. nov.). *N. montisanimae* sp. nov. differs from the sympatric *N. rupina* sp. nov. by the absence of the basolateral setae of the pronotum, by the larger body size and by the more rounded elytral outline (slender in *N. rupina* sp. nov.).

Distribution (Fig. 41): Known only from the type locality, the pass Rupina La on eastern slope of Himal Chuli (eastern part of the Manaslu Himal mountain range), western Central Nepal Himalaya.

Habitat: Not noted.

***Nebria (Epinebriola) impunctata* sp. nov.** (Fig. 23)

Holotype ♂: Nepal, Ganesh Himal, Jaisuli Kund env., 4300–4500 m, 13.–16.6.2000, leg. Iman Ghalé, Santos Tamang, Ram, Santa & Santé Gurung (cSCHM).

Paratypes: 4 ♂, 5 ♀, same data (NMBE, cSCHM); 1 ♂, Nepal, Ganesh Himal, Jaisuli Kund base camp, 4100 m, 14.6.2000, leg. Iman Ghalé, Santos Tamang, Ram, Santa & Santé Gurung (cSCHM).

Body length 10–11 mm. Colour black, mandibulae and appendages of head piceous. Basal antennomere darkened. Femura black, trochanters lightened, tibiae and knees dark brown, tarsi brown.

Head with a shallow transverse impression behind the prominent eyes. Labrum with anterior margin straight, bearing six setae. Apical margin of clypeus straight. One supraorbital seta, rarely asymmetrically bisetose. Longitudinal supraorbital furrows in a shallow impression. Vertex impunctate, distinctly transversally wrinkled. Antennae long and slender extending to the middle of the elytra. Antennal scape elongate, a little longer than the eye's diameter, basally narrowed, cylindrical apically, with one dorsal seta. 2nd antennomere with one seta ventroapically. Maxillary stipes normal, laterally with 7–8 long setae (Figs 2, 4). Characters only visible on SEM micrograph: Cuticle of the stipes only with a few cone-shaped campaniform sensilla but without pores, and the stival setae long and finely acuminate). Penultimate labial palpomere

trisetose. Ligula long, spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 11–15 long setae. Microreticulation of the head isodiametric.

Pronotum transverse, distinctly convex, narrowed basally. Ratio length/width of the pronotum = 1.38. Lateral margin straight in basal half, widely rounded to the anterior angles, convexly narrowed to the posterior angle, no concave sinuation in front of the posterior angles (Fig. 31D). Lateral explanation very narrow with a conspicuous groove, broadened basally. Lateral margin basally blade-like, obliquely or vertically upturned. Posterior angles acute, projected posteriorly. Anterior angles wide, rounded, weakly protruding. Basal margin bisinuate, before the posterior angle with a distinct incision towards the basal fovea. Pronotal disc weakly convex. Basal fovea deep, anterior and posterior transverse sulci deep, median line shallow. Basal fovea, anterior and posterior transverse sulci sparsely and faintly punctate or almost impunctate; the narrow lateral groove impunctate. Apical margination of the pronotum restricted to lateral one-fourths, merges with a faint ridge at the anterior angle; the ridge continues along the lateral groove to the lateral seta. Base of the pronotum not margined. Basolateral seta absent. One midlateral seta in the apical half of the pronotum, rarely with two setae; midlateral setae inserted in distinct grooves at the inside of the slightly upturned margin. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process elongate, unmargined, not flattened, rounded apically.

Elytra short, ratio length/width of the elytra = 1.50. Elytral silhouette regularly ovoid, compact, widest in or slightly behind the middle; no subapical sinuation. Elytral apex acutely rounded. Basal margination straight, smoothly merged, or joined at an obtuse angle, with the lateral margination. Humeral carina faintly developed. Striae faint, impunctate. Striae obliterate towards the apex; striae 7 and 8 scarcely visible. Intervals rather convex, more convex on disc and towards the basal margin; interval 3 with 1–4 long setae adjoining stria 3. Scutellar seta present, rarely two setae. Microreticulation oblong. Mesepisterna smooth. Metepisterna 1.6 times as long as wide, smooth. Metacoxa with 2–4 basal and one apical setae. Hindwings present as a strap-like vestige.

Sternum 3 medially asetose. Sterna 4–6 each with 3–5 very long posterior paramedial setae, which extend the sternal length; Anal sternum with 2–4 paramedial setae in males and in females. Sterna 4–5 with a faint longitudinal posterolateral impression of half of the sternit length.

Legs long and slender. All tarsi dorsally glabrous. Protarsus of male with tarsomeres 1–3 distinctly broadened, ventrally with pads of adhesive setae. Ventroapical tooth of the metatarsomere 4 long, markedly projected, longer

Fig. 23: *Nebria*
(*Epinebriola*)
impunctata sp. nov.
Paratype.
Scale bar = 5 mm.



than half of the dorsal tarsomere length. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 4–6 short setae. Metatarsomere 5 distinctly longer than the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20D): Basal part of the median lobe wide, with prominent triangular basolateral lobes. Mid-shaft thin, strongly curved at base, moderately curved and progressively narrowed to the apex. Apex short, triangular, faintly deflected to the left. Mid-shaft of the endophallus densely packed with short setae.

Female genitalia: Gonocoxa (Fig. 10D): Gonocoxite 2 stocky, triangular, only half the length of gonocoxite 1. Apex broadly rounded, dorsally arcuate, dorsally grooved. Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: hea.w/fro.w = 1.43 ± 0.020 (1.40–1.47); prm.w/hea.w = 1.33 ± 0.031 (1.29–1.39); prm.w/prp.w = 1.61 ± 0.048 (1.52–1.69); pra.w/prp.w = 1.14 ± 0.028 (1.09–1.17); ely.w/prm.w = 1.61 ± 0.038 (1.55–1.68); prm.w/prm.l = 1.38 ± 0.031 (1.35–1.43); ely.l/ely.w = 1.50 ± 0.038 (1.44–1.54).

Etymology: The specific epithet refers to impunctate striae of the elytra.

Diagnosis: Close to *N. montisanimae* sp. nov. from the Manaslu Himal. The posterior angles of the pronotum are distinctly and acutely projecting in *N. impunctata* sp. nov. in contrast to *N. montisanimae* sp. nov. with the posterior angles not or only faintly protruding. The elytra are less elongate than in *N. montisanimae* sp. nov.

Distribution (Fig. 41): Known only from the type locality in the Ganesh Himal in western Central Nepal.

Habitat: Not noted.

***Nebria (Epinebriola) tuberculata* sp. nov.** (Fig. 24)

Holotype ♀: Nepal, Helambu, S-slope Ganja La, 4400–4800 m, 5. 8. 1998, leg. C. Berndt (cSCHM).

Body length 12 mm. Colour dark brown, appendages of the head brown. Antennae brown. Legs brown, femur darkened with brown knees. Pronotum brownish lightened, slightly lighter than the black head and the elytra. 1st interval of the elytra brownish lightened.

Head with two shallow oblique impressions between the eyes. Labrum with anterior margin straight, bearing six setae. Apical margin of clypeus straight. Vertex impunctate, transversally wrinkled. Eyes weakly prominent. Antennae long and slender extending to one third of the elytra. Antennal scape elongate, a little longer than the eye's diameter, basally narrowed, sub-cylindrical apically, with one dorsal seta. 2nd antennomere with one seta ventro-apically. Maxillary stipes normal. Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 14 setae. Microreticulation of the head isodiametric.

Pronotum faintly transverse, ratio width/length of the pronotum = 1.26. Lateral margin distinctly convex, narrowed basally, widely rounded to the anterior angles, convexly narrowed to the posterior angles, concavely sinuate

**Fig. 24: *Nebria*
(*Epinebriola*)
tuberculata sp. nov.
Holotype.
Scale bar = 5 mm.**



just in front of the small posterior angle (Fig. 31E). Lateral explanation narrow with a conspicuous groove also apically, broadened basally. Lateral margin basally blade-like, obliquely upturned. Posterior angles acute but very small, slightly protruding as a tubercle (Fig. 25). Anterior angles widely rounded, not protruding. Basal margin bisinuate, with a faint incision between the basal fovea and the small posterior angles. Pronotal disc weakly convex. Basal fovea deep, anterior and posterior transverse impression distinct; median line shallow, faintly transversally wrinkled. Lateral groove, basal fovea, anterior

and posterior transverse sulci impunctate, only the area between the apical margin and the anterior transverse impression faintly punctate. Apical margination of the pronotum restricted to lateral one-fourths, merges with a faint ridge at the anterior angle; the ridge continues along the lateral groove to the lateral seta. Base of the pronotum not margined. Basolateral seta present. 1–2 midlateral setae in the apical half of the pronotum, inserted in distinct grooves at the inside of the slightly upturned margin. Microreticulation of the pronotum isodiametric, impunctate on disc. Proepisternum smooth. Prosternal process laterally margined, apex bulging and unmargined.

Elytral silhouette convex, regularly ovoid-elongate, widest slightly behind the middle. Ratio length/width of the elytra = 1.60. 1.7 times wider than the pronotum. Elytral apex rounded, apical carina absent. Basal margination straight, smoothly merged with the lateral margination. Humeral carina faintly developed. Striae distinct on disc, coarsely and tightly punctate. Striae obliterate towards the apex. Intervals rather convex, more convex on disc. Interval 3 with 7–8 setae adjoining stria 3. Scutellar seta absent. Microreticulation oblong. Mesepisterna smooth. Metepisterna 1.8 times as long as wide, smooth. Metacoxa with 4–5 basal and 1–2 apical setae. Hindwings present as a strap-like vestige.

Sternum 3 with one seta, faintly transversally wrinkled. Sterna 4–6 each with 5–7 posterior paramedial setae. Anal sternum with three paramedial setae in the female.

Legs long and slender. All tarsi dorsally glabrous. Metatarsomere 4 ventroapically markedly projected. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 3–4 short setae. Metatarsomere 5 long, as long or longer than the metatarsomeres 3+4.

Female genitalia: Gonocoxa (Fig. 10E): Gonocoxite 2 elongate-triangular, broad at base, half the length of gonocoxite 1. Apex dorsally arcuate, dorsally distinctly grooved. Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

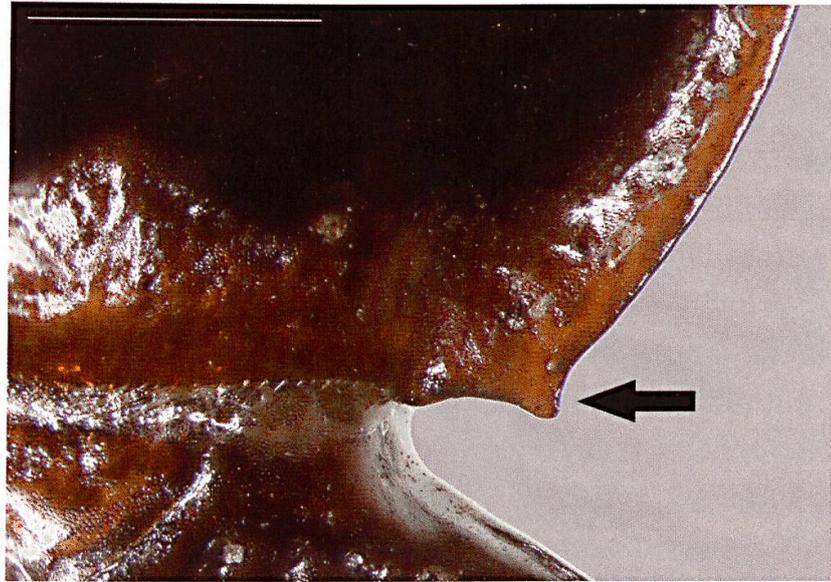
Male unknown.

Body ratios: hea.w/fro.w = 1.43; prm.w/hea.w = 1.34; prm.w/prp.w = 1.54; pra.w/prp.w = 1.07; ely.w/prm.w = 1.74; prm.w/prm.l = 1.27; ely.l/ely.w = 1.59.

Etymology: The name *tuberculata* (*tuberculum*, latin = small protuberance) refers to the acutely protruding tip of the posterior angles of the pronotum.

Diagnosis: *N. tuberculata* sp. nov. is recognizable within the subgenus *Epinebriola* by its plurisetose metacoxa with 4–5 setae, its plurisetose elytral interval 3 with 7–8 setae and its tuberculous posterior angles of the pronotum.

Fig. 25: Acutely protruding posterior angle (arrow) of the pronotum of *Nebria (Epinebriola) tuberculata* sp. nov. in dorso-lateral view. Scale bar = 0.5 mm.



Distribution (Fig. 41): Known only from the type locality, the pass Ganja La (= Kanja La) in the Helambu mountain range, Northwestern Central Nepal.

Habitat: Not noted.

***Nebria (Epinebriola) numburica* sp. nov.** (Fig. 26)

Holotype ♂: Nepal, Solu Khumbu, S Dudh Kund, 4400–4600 m, 27°42' N, 86°35' E, 25. V. 2013, leg. J. Schmidt (cSCHM).

Paratypes: 79 ♂ 45 ♀, same data as holotype (NMBE, cSCHM); 1 ♂ 1 ♀, Nepal, Solu Khumbu, S Dudh Kund, 4200–4400 m, 27°40'36" N, 86°35'26" E, 25. V. 2013, leg. J. Schmidt (cSCHM); 2 ♂ 2 ♀, Nepal, Solu Khumbu, S Dudh Kund, 4000–4100 m, 27°40'36" N, 86°35'26" E, 25. V. 2013, leg. J. Schmidt (cSCHM).

Body length 11–12 mm. Colour black, shiny, appendages of head brown. Antennae brown, rarely the antennal scape or the entire antenna blackish darkened. Legs black, knees brownish lightened, tarsi brown.

Head with a shallow transverse impression behind the prominent eyes. Labrum with anterior margin straight, bearing six setae. Apical margin of clypeus straight. Clypeus laterally unisetose. Head supraorbitally unisetose, rarely asymmetrically bisetose or bisetose (in a single case in the type series). Frontal furrows shallow. Vertex finely transversally wrinkled but impunctate. Antennae long and slender extending to the middle of the elytra. Antennal scape elongate, as long as the eye's diameter, basally narrowed, cylindrical apically, with one dorsal seta. 2nd Antennomere with one seta ventroapically.

4th antennomere apically with a collar of long setae, without additional short setae. Penultimate labial palpomere bi- or trisetose, rarely asymmetrically with two and three setae. Ligula spiny, with two lateral setae. Maxillary stipes laterally straight, with 5–7 setae. Mentum with bifid medial tooth. Submentum with a row of 10–13 setae. Not or inconspicuously punctate on vertex. Microsculpture of the head isodiametric.

Pronotum transverse, subcordate, moderately convex, narrowed basally, lateral margin straight in basal half, rarely with a faint concave sinuation in front of the basal angles (Fig. 31F). Lateral groove very narrow, conspicuous, broadened basally. Lateral margin basally blade-like. Posterior angles acutely projected posteriorly. Anterior angles wide, rounded, weakly protruding. Basal margin bisinuate, with a deep incision towards the basal fovea. Pronotal disc weakly convex. Basal fovea deepened, apical and posterior transverse impressions well-defined; median longitudinal impression weak. Basal fovea and transverse impressions sparsely punctate, lateral groove only in the basal, broadened part punctate. Punctuation of the apical transverse impression extended to the apical margin. Posterior part of the median longitudinal impression with faint wrinkles. Apical margination of the pronotum restricted to lateral one-third, merges with a distinct ridge at the apex of the anterior angle; the ridge continues along the lateral groove to the hindmost lateral seta. Basal margination of the pronotum absent. Basolateral seta present. 3–5 (rarely two) midlateral setae in the apical half of the pronotum. Midlateral setae conspicuously inserted on the edge of the lateral margin, the large insertion grooves disturb the outline of the pronotum. Microsculpture of the pronotum isodiametric, impunctate on disc. Proepisternum sparsely and faintly punctate; prosternal process elongate, rounded apically, unmarginated.

Elytral silhouette moderately convex, ovoid-elongate, narrowed basally, widest in the apical half of the elytra, no subapical sinuation. Elytral apex sharp, rounded. Basal margination straight, smoothly merged, or joined at an obtuse angle, with the lateral margination. Humeral carina faintly developed. Subapical carina absent. Striae on disc finely punctuate, striae only very weakly deepened, nearly inexistent. Striae and punctuation obliterate towards the basal margin and towards the apex; striae 6–8 visible as a faint trace of punctuation. Intervals flat; 3rd interval with 5–8 long setae adjoining stria 3. 5th interval often (59%) with 1–3 setae. 7th interval rarely (14%) with 1–4 setae. Scutellar seta present. Microsculpture transverse-oblong. Mesepisterna smooth with a few strong punctulae. Metepisterna 1.6 times as long as wide; smooth. Hind coxa with 2–4 basal and one apical setae. Hindwings present as a short strap-like vestige.

Fig. 26: *Nebria*
(*Epinebriola*) *numburica*
sp. nov. Holotype.
Scale bar = 5 mm.



Sternum 3 with a row of 4–7 medial setae. Sterna 4–6 each with 3–6 posterior paramedial setae; anal sternum with 1–3 paramedial setae in male, 3–4 in female. All sterna with faint impressions laterally.

Legs long and slender. All tarsi dorsally glabrous, rarely with a few short setae. Protarsus of male with tarsomeres 1–3 distinctly broadened, with pads of adhesive setae ventrally. Apex of hind tarsomere 4 ventrally markedly projected. Meso- and metatarsomeres 2–4 ventroapically with long setae. All tarsomeres 5 ventrally with two rows of 3–4 short setae. Metatarsomere 5 longer than the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20E): Basal part of the median lobe wide, with triangular basolateral lobes. Mid-shaft strongly curved at base on the

inner side, and shallowly curved on the outer side forming a flat angle; moderately curved at apex. Apex long, slender, acute, faintly deflected to the left. Midshaft of the endophallus asetose.

Female genitalia: Gonocoxa (Fig. 10F): Gonocoxite 2 triangular, half the length of gonocoxite 1, broad at base. Apex broadly rounded, slightly arcuate dorsally, dorsally slightly grooved (Fig. 10G). Ventral preapical insertion furrow elongate-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: $\text{hea.w}/\text{fro.w} = 1.46 \pm 0.034$ (1.39–1.53); $\text{prm.w}/\text{hea.w} = 1.24 \pm 0.023$ (1.19–1.30); $\text{prm.w}/\text{prp.w} = 1.53 \pm 0.047$ (1.41–1.57); $\text{pra.w}/\text{prp.w} = 1.16 \pm 0.030$ (1.09–1.20); $\text{ely.w}/\text{prm.w} = 1.59 \pm 0.044$ (1.51–1.69); $\text{prm.w}/\text{prm.l} = 1.31 \pm 0.038$ (1.26–1.38); $\text{ely.l}/\text{ely.w} = 1.62 \pm 0.027$ (1.58–1.67).

Etymology: The specific epithet refers to the Numbur Mountain North of the type locality.

Diagnosis: Due to the polysetose lateral margin of the pronotum and the polysetose 3rd abdominal sternum *N. numburica* sp. nov. belongs to the *molendai* species group (*N. molendai*, *N. christinae*, *N. numburica*). The *molendai* species group is also characterized by the similar shape of gonocoxite 2, which have a broadly rounded apex in contrast to the similar gonocoxite 2 of *N. tuberculata* sp. nov. with an acuminate apex. These three species of the *molendai* group inhabit the neighboring massifs of the Rolwaling Himal and the Solu Khumbu Massif. *N. numburica* sp. nov. differs from *N. christinae* by the transverse pronotum, which is very slender in *N. christinae*. *N. numburica* sp. nov. differs from *N. molendai* by the sparsely punctate pronotum, which is coarsely and densely punctate in *N. molendai*, and by the long and slender apex of the median lobe, which is shorter in both *N. molendai* and in *N. christinae*.

The *rasa* species group (*N. rasa*, *N. schawalleri*, *N. martensi*) of Eastern Nepal, which is characterized by the polysetose lateral margin of the pronotum as in the *molendai* species group, differs from the *molendai* species group by the absence of setae on the 3rd abdominal sternum (present in the *molendai* species group).

Distribution (Fig. 41): Known only from the type locality in the headwaters of the Dudhkund Khola on southern slope of the Shorong Himal, Solu Khumbu district, eastern Central Nepal.

Habitat (Fig. 27): The specimens were collected alongside melt water streams and at the edge of a rivulet in the lower alpine and subalpine zones.

Monophyly. The monophyly of the *molendai* species group (*N. molendai*, *N. christinae* and *N. numburica* sp. nov.) appears clearly and is suggested by



Fig. 27: Habitat of *Nebria (Epinebriola) numburica* sp. nov.: Headwater of the Dudhkund Khola, 4100 m a.s.l., subalpine zone. Specimens were collected alongside the stream. Photo: Joachim Schmidt.

four characters: the polysetose lateral margin of the pronotum, the absence of setae on the 3rd abdominal sternum, and the resemblances in the shapes of the median lobes and of the gonocoxites 2. Moreover, the separated distribution of the *molendai* species group is also consistent with its monophyly.

***Nebria (Epinebriola) retingensis* sp. nov.** (Fig. 28)

Holotype ♂: Tibet, side valley S Reting, 30°15'57" N, 91°32'04" E, 4500–4800 m, 1.8.2015, leg. J. Schmidt (cSCHM).

Paratypes: 1 ♂ 12 ♀, same data as holotype (NMBE, cSCHM)

Body length 9–11 mm. Colour dark brown to black. Appendages of the head, antennae, tibiae and tarsi brownish lightened.

Head: Labrum finely punctate with anterior margin straight, bearing six setae. Clypeus with anterior margin straight. Frons transversally wrinkled. Eyes large, protruding, temples very long. One supraorbital seta. Head with a faint collar constriction. Vertex impunctate. Antennae long and slender

extending at least to the middle of the elytra. Antennal scape thickened, cylindrical, shorter than the eye's diameter (or as long as the diameter), basally narrowed, with one dorsal seta. 2nd antennomere with one seta ventroapically, rarely with an additional dorsoapical seta (asymmetrically in the holotype male and in one paratype female). Maxillar palpomeres short. Maxillary stipes laterally straight, with 5–6 setae. Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 6–10 setae. Vertex impunctate. Microreticulation of the head isodiametric.

Pronotum slender, ratio width/length of the pronotum = 1.23. Lateral margin faintly convex, slightly narrowed basally (ratio apical width/basal width = 1.12), faintly rounded to the anterior and hardly rounded to the posterior angles, straight in front of the posterior angles (Fig. 31G). Lateral groove very narrow, also apically, broadened basally. Anterior angles faintly acuminate, slightly protruding, margined only at apex. Posterior angles acute, slightly protruding backwards. Basal margin medially straight, in front of the posterior angles weakly sinuate. Pronotal disc weakly convex. Basal fovea deep, anterior transverse impression weak, posterior transverse impression distinct, median line shallow. Lateral groove and anterior transverse impression impunctate; basal fovea and posterior transverse impression sparsely punctate. Apical margination of the pronotum restricted to lateral one-fourth, merging with the apex of the anterior angle. Base of the pronotum not margined. Basolateral seta present. One midlateral seta in the apical half of the pronotum, inserted within the narrow lateral groove; outline of the lateral margin at the insertion site of the seta weakly disturbed. Pronotum impunctate on disc, microreticulation isodiametric. Proepisternum craniad coarsely and shallowly punctate. Prosternal process laterally distinctly margined, apex margined or bulging.

Elytral silhouette slender, long-ovoid, with the lateral margin almost straight in the middle, widest at apical third behind the middle. Ratio length/width of the elytra = 1.69. Distinctly wider than the pronotum, ratio elytral width/pronotal width = 1.71. Elytral apex acutely rounded, apical carina faint or even absent. Basal margination straight, at right angles with the elytral suture, obliquely merged with the lateral margination. Humeral carina present. Striae distinct, deep, reaching the apex, striae coarsely punctate; lateral striae obliterate towards the apex. Intervals flat or slightly convex. Interval 3 with 2–4 setae adjoining stria 3, intervals 5 and 7 asetose. Scutellar seta absent. Microreticulation isodiametric. Mesepisterna sparsely punctate.

Sternum 2 laterally coarsely punctate. Sternum 3 medially unisetose or bisetose. Sterna 4–6 posteriorly each with 3–6 paramedial setae; sterna lat-

Fig. 28: *Nebria*
(*Epinebriola*)
retingensis sp. nov.
Holotype.
Scale bar = 5 mm.



erally with shallow impressions. Anal sternum with two paramedial setae in the male, with 2–4 setae in the female. Metepisterna twice as long as wide, sparsely punctate. Metacoxa basally with 2–5 setae, apically unisetose.

Legs long and slender. All tarsomeres dorsally glabrous. Protarsus of male stoutly built with tarsomeres 1–3 distinctly broader than in the female, and ventrally with pads of adhesive setae. Ventroapical tooth of the metatarsomere 4 markedly projected. Meso- and metatarsomeres 2–4 ventroapically with long



Fig. 29: Habitat of *Nebria (Epinebriola) retingensis* sp.nov.: The specimens were collected on melt water rivulets in stone fields in the lower alpine zone (4800 m a.s.l.) of the Gangdise Shan near the Reting Monastery. Photo: Joachim Schmidt.

setae. All tarsomeres 5 ventrally with two rows of 3–4 short setae. Metatarsomere 5 as long as the metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20F): Base of the median lobe small, with small basolateral lobes; the base decreasing abruptly to the thin mid-shaft. Mid-shaft strongly curved at base on inner side as well as on outer side; moderately curved to the apex. Apex straight, faintly deflected to the left, in front of the short tip on the ventral side faintly convex. Mid-shaft of the endophallus asetose.

Female genitalia: Gonocoxa (Fig. 10J, 34A): Gonocoxite 2 very long, as long or longer than gonocoxite 1, slender, curved dagger-like, broad at base, distinctly narrowing near base, parallel sided in median part. Apex acuminate, slightly arcuate dorsally, apex dorsally not grooved. Ventral preapical insertion furrow small, short-oval, with two nematiform setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: hea.w/fro.w = 1.50 ± 0.012 (1.48–1.51); prm.w/hea.w = 1.15 (1.13–1.17); prm.w/prp.w = 1.52 (1.51–1.53); pra.w/prp.w = 1.12 (1.11–1.13); ely.w/prm.w = 1.71 (1.66–1.74); prm.w/prm.l = 1.23 (1.22–1.25); ely.l/ely.w = 1.69 (1.66–1.73).

Etymology: The specific epithet refers to the type locality.

Diagnosis: *N. retingensis* sp. nov. is closely related to *N. delicata* sp. nov. due to the resemblance in the shape of the median lobes (Figs 16F, H). *N. retingensis* sp. nov. differs from the similar *N. delicata* sp. nov. by the labrum with six setae (eight setae in *N. delicata* sp. nov.), by the finely punctate labrum (impunctate in *N. delicata* sp. nov.), by large and protruding eyes with long temples (small eyes, not protruding, temples shorter in *N. delicata* sp. nov.), by the lateral margin of the pronotum which is straight towards the posterior angles (with a faint concave sinuation in front of the posterior angles in *N. delicata* sp. nov.), and by hanging shoulders (accentuated in *N. delicata* sp. nov.).

Distribution (Fig. 41): Known only from the type locality in the Transhimalaya (Gangdise Shan) near the famous Reting Monastery immediately south of the river Reting Zhangbo. *N. retingensis* sp. nov. is one of the two *Epinebriola* species (in addition to *N. delicata* sp. nov.) known to inhabit the central part of the Transhimalaya.

Habitat (Fig. 29): All specimens were collected alongside a melt water stream in the lower alpine zone.

***Nebria (Epinebriola) delicata* sp. nov.** (Fig. 30)

Holotype ♂: S Tibet, Mt. Mendju Zari, SE Lhasa, 29°34' N, 91°13' E, 5200–5420 m, 4.6.2011, leg. J. Schmidt (cSCHM).

Paratype: 1 ♀, same data as holotype (cSCHM).

Body length 9 mm. Colour dark brown to black. Appendages of the head, antennae, tibiae and tarsi brownish lightened.

Head small. Labrum with anterior margin straight, bearing eight setae. Clypeus with anterior margin straight. Frons transversally wrinkled. Eyes small, weakly prominent, temples long. One supraorbital seta. Head with a faint collar constriction. Vertex impunctate. Antennae long and slender extending at least to the middle of the elytra. Antennal scape slender, elongate, cylindrical, longer than the eye's diameter, basally narrowed, with one dorsal seta. 2nd antennomere with one seta ventroapically. Maxillar palpomeres short. Maxillary stipes laterally straight, with 5 setae. Penultimate labial palpomere trisetose. Ligula spiny, with two lateral setae. Mentum with bifid medial tooth. Submentum with a row of 4+5 setae. Vertex impunctate. Microreticulation of the head isodiametric.

Pronotum slender, ratio width/length of the pronotum = 1.25. Lateral margin faintly convex, slightly narrowed basally (ratio apical width/basal width = 1.07), rounded to the anterior angles, faintly rounded to the posterior angles, weakly concave in front of the posterior angles (Fig. 31H). Lateral groove

very narrow, narrow evenly apically, broadened basally. Anterior angles faintly acuminate, slightly protruding. Posterior angles acute, slightly protruding backwards. Basal margin medially straight, in front of the posterior angles weakly sinuate. Pronotal disc weakly convex. Basal fovea deep, anterior transverse impression weak, posterior transverse impression distinct, median line shallow. Lateral groove and anterior transverse impression impunctate; basal fovea and posterior transverse impression sparsely punctate. Apical margination of the pronotum restricted to lateral one-fourths, merges with the apex of the anterior angle. Base of the pronotum not margined. Basolateral seta present. One midlateral seta in the apical half of the pronotum, inserted within the narrow lateral groove; outline of the lateral margin at the insertion site of the seta weakly disturbed. Pronotum impunctate on disc, microreticulation isodiametric. Proepisternum smooth. Prosternal process laterally margined, apex bulging and unmargined.

Elytral silhouette slender, elongate, convex with the lateral margin almost straight in the middle, widest slightly behind the middle. Ratio length/width of the elytra = 1.71. Distinctly wider than the pronotum, ratio elytral width/pronotal width = 1.65. Elytral apex acutely rounded, apical carina faint. Basal margination straight, at right angles with the elytral suture, regularly merged with the lateral margination. Humeral carina weakly present. Striae distinct, deep, reaching the apex, striae 1–2 faintly punctate, the remaining striae coarsely punctate; lateral striae obliterate towards the apex. Intervals slightly convex. Interval 3 with 2–4 setae adjoining stria 3, intervals 5 and 7 aetose. Scutellar seta absent. Microreticulation isodiametric, interspersed with transverse meshes. Mesepisterna sparsely punctate.

Sternum 2 laterally faintly punctate. Sternum 3 medially aetose. Sterna 4–6 posteriorly each with 1–3 paramedial setae; anal sternum with two paramedial setae in the male. Metepisterna twice as long as wide, sparsely punctate. Metacoxa basally bisetose, apically unisetose.

Legs long and slender. Tarsi slender, tarsomeres 1 and 2 dorsally with a few short setae. Protarsus of the male with tarsomeres 1–3 broadened, ventrally with pads of adhesive setae. Ventroapical tooth of the metatarsomere 4 small and only little projecting. Meso- and metatarsomeres 2–4 ventroapically with long setae. Tarsomeres 5 ventrally with two rows of 3–4 short setae. Metatarsomere 5 as long as metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 20G): Base of the median lobe small, with small basolateral lobes; the base decreasing abruptly to the thin mid-shaft. Mid-shaft strongly curved at base on inner side as well as on outer side; moderately curved to the apex. Apex straight, faintly deflected to the left, in front of the long tip on the ventral side faintly convex. Mid-shaft of the endophallus aetose.

Fig. 30: *Nebria (Epinebriola) delicata* sp. nov. Holotype.
Scale bar = 5 mm.



Female genitalia: Gonocoxa (Fig. 32): Gonocoxite 2 very long, as long or longer than gonocoxite 1, slender, curved dagger-like, broad at base, distinctly narrowing near base, parallel sided in median part. Apex acuminate, slightly arcuate dorsally. Ventral preapical insertion furrow small, short-oval, with two nematiform setae.

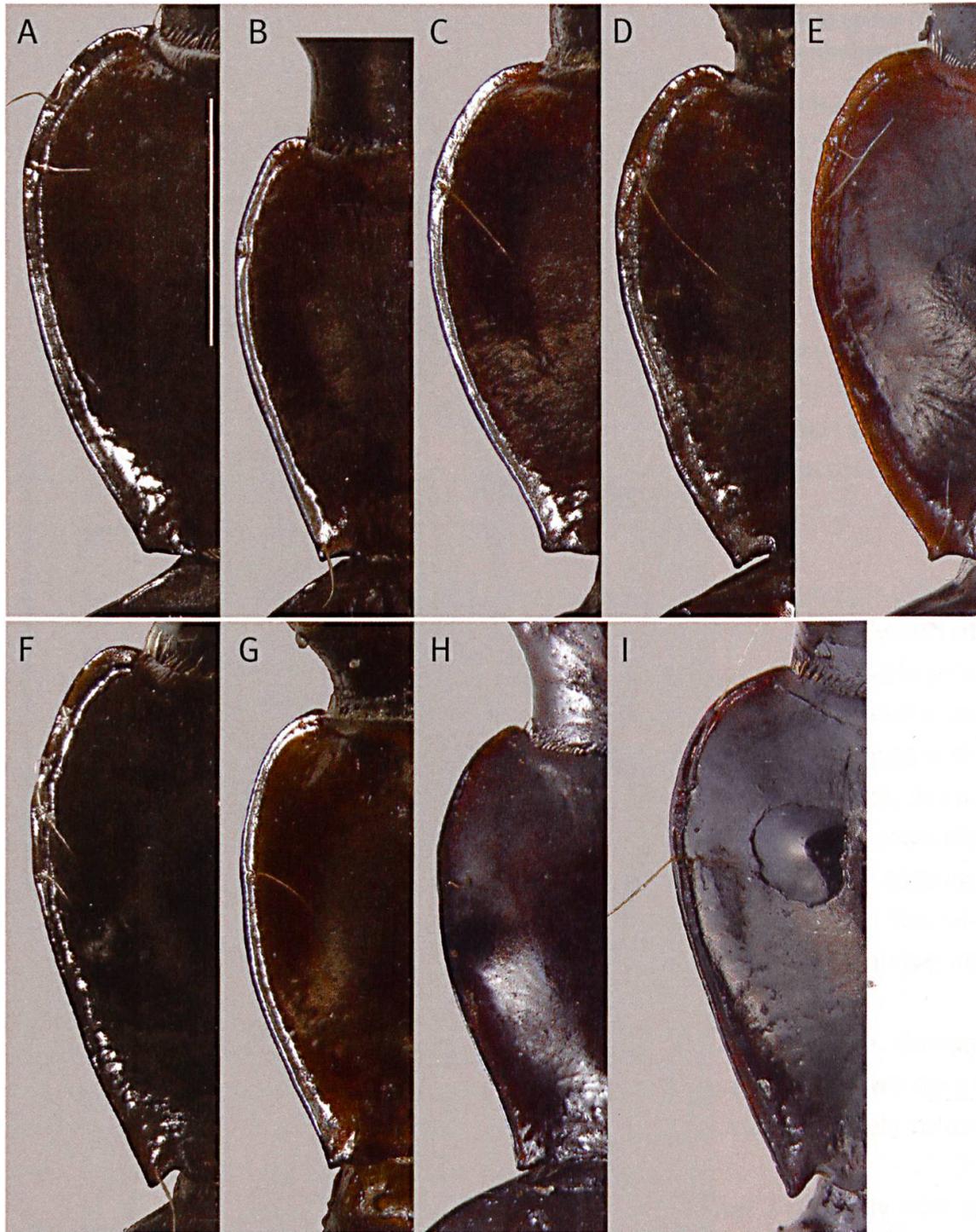
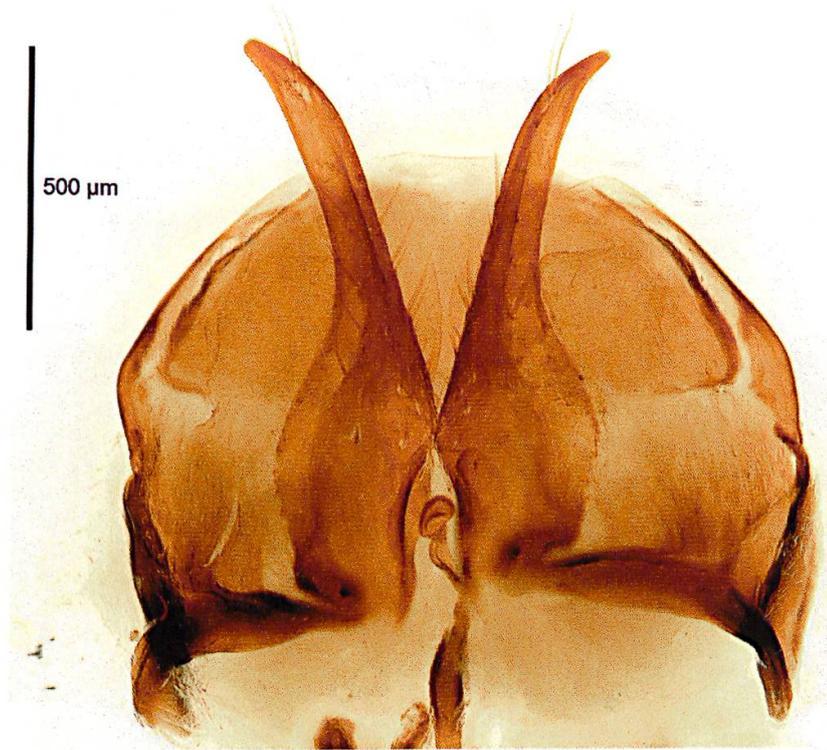


Fig. 31: Left part of the pronotum of *Epinebriola* species. A: *Nebria (Epinebriola) triseriata* sp. nov.; B: *N. (E.) rupina* sp. nov.; C: *N. (E.) montisanimae* sp. nov.; D: *N. (E.) impunctata* sp. nov.; E: *N. (E.) tuberculata* sp. nov.; F: *N. (E.) numburica* sp. nov.; G: *N. (E.) retingensis* sp. nov.; H: *N. (E.) delicata* sp. nov.; I: *N. (E.) incarinata* sp. nov.; Scale bar = 1 mm.

Fig. 32: Gonocoxae of *Nebria (Epinebriola) delicata* sp. nov., in caudal view.



Body ratios: hea.w/fro.w = 1.38; prm.w/hea.w = 1.16; prm.w/prp.w = 1.47; pra.w/prp.w = 1.07; ely.w/prm.w = 1.71; prm.w/prm.l = 1.21; ely.l/ely.w = 1.69.

Etymology: The specific epithet refers to the habitus and to the finely margined pronotum (*delicatus*, latin = delicate, dainty, fine).

Diagnosis: *N. delicata* sp. nov. is recognizable within the subgenus *Epinebriola* by its dainty habitus and by the anterior margin of the labrum with a row of eight setae instead of six. A labrum of eight setae is also present in *N. pindarica* – distributed in Uttarakhand, India –, a large species of 13–15 mm with the lateral margin of the pronotum distinctly concavely narrowed in front of the posterior angle and with hanging shoulders, whereas in the small (9 mm) species *N. delicata* sp. nov. the lateral margin of the pronotum is only faintly concave in front of the posterior angle, and the shoulders are pronounced. *N. delicata* sp. nov. is closely related to *N. retingensis* sp. nov. due to the resemblance in the shape of the median lobes (Figs 20F, 20H).

Remark: Generally the species of the genus *Nebria* have the anterior margin of the labrum with a row of six apical setae with the exception of *N. (Epinebriola) pindarica*, *N. (Tyrrenia) eugeniae* K. Daniel, 1910, and *N. (Alpaeonebria) exul* Peyerimhoff, 1910 which all have eight setae, and of *N. (Eonebria) lucifer* Ledoux & Roux, 1998 with ten setae (Ledoux & Roux 2005). Obviously the evolution to eight or more labral setae happened convergently several times in different subgenera within the genus *Nebria*.



Fig. 33: Habitat of *Nebria (Epinebriola) delicata* sp. nov.: Humid slope near mountain crest, 5400 m a.s.l., below big stones (white arrow) on the Mendju Zari Mountain SE of the Lhasa Valley in the central Transhimalaya (Gangdise Shan). Photo: Joachim Schmidt.

Distribution (Fig. 41): Known only from the type locality, the Mendju Zari Mountain SE of the Lhasa Valley in the central Transhimalaya (Gangdise Shan).

Habitat (Fig. 33): Both specimens of the type series were collected on a humid slope in the high alpine zone.

Remark (see Fig. 34): The gonocoxites 2 of *N. (Epinebriola) retingensis* sp. nov. (Fig. 10J, 34A) and *N. (Epinebriola) delicata* sp. nov. (Fig. 32) are conspicuous in length and shape. Such long and dagger-shaped gonocoxites 2 are neither described nor mentioned in relevant *Nebria* literature (Ledoux & Roux 2005). In the present case the gonocoxite 2 of *N. retingensis* sp. nov. (Fig. 34A) is compared with those of some species of the subgenus *Eonebria* SEMENOV & ZNOJKO, 1928. The gonocoxites 2 of *N. (Eonebria) kurentzovi* LAFER, 1989 (Anisimovka, Primorsk. Kr. Litovka, Far East Russia; coll. NMBE. Fig. 34B) and of *N. (Eonebria) gemina* LEDOUX, ROUX & WRASE, 1996 (Qin Ling Shan, Tabai Shan, Shaanxi, China; coll. NMBE. Fig. 27C) look similar to that of *N. (Epinebriola) retingensis* sp. nov., whereas in *N. (Eonebria) amabilis* LEDOUX, ROUX & SAWADA, 1991 (Heka, Qinghai, China; coll. NMBE. Fig. 34D) the gonocoxite 2 is shaped in a rather "normal", not dagger-like way. The subgenus *Eonebria* currently consists of 74 taxa, and the selected three taxa may not be

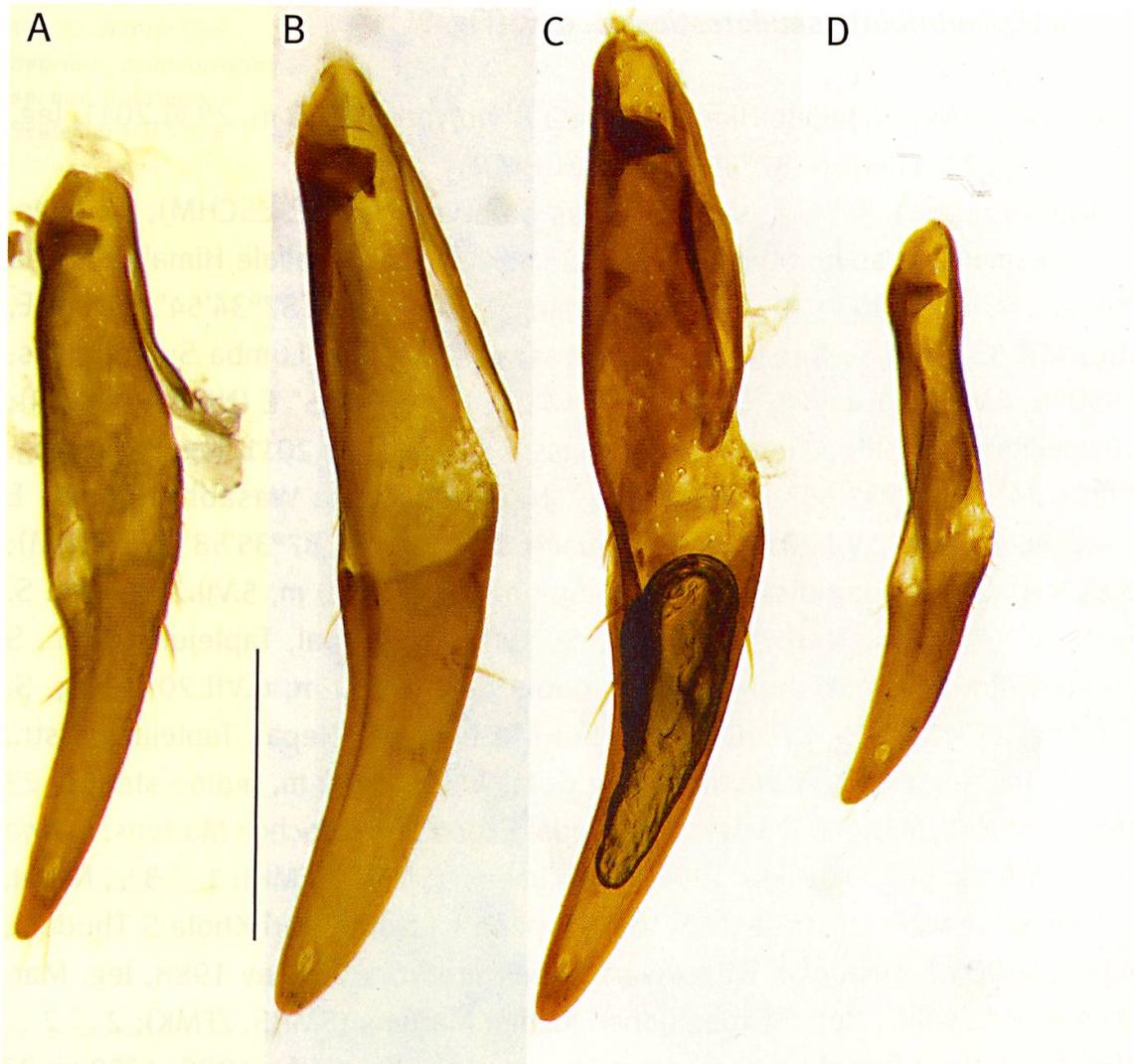


Fig. 34: Right gonocoxa, in ventral view. A: *Nebria (Epinebriola) retingensis* sp. nov. (= Fig. 10J); B: *N. (Eonebria) kurentzovi* LAFER, 1989; C: *N. (Eonebria) gemina* LEDOUX, ROUX & WRASE, 1996; D: *N. (Eonebria) amabilis* LEDOUX, ROUX & SAWADA, 1991. Scale bar = 0,5 mm.

representative for the whole subgenus. But the gonocoxites 2 of the selected *Eonebria* species may point to a certain variability of the gonocoxite shape as in the subgenus *Epinebriola*. A re-evaluation of the subgenus *Eonebria* including the disregarded gonocoxal characters may be required, but such an analysis was not the objective of the present study. For now we leave *N. retingensis* sp. nov. and *N. delicata* sp. nov. within the subgenus *Epinebriola*, and we interpret the dagger-like gonocoxite 2 as being convergent to those of some *Eonebria* species.

***Nebria (Epinebriola) pseudorestias* sp. nov.** (Fig. 35)

Holotype ♂: Nepal, Jaljale Himal, Thangla Bhanjyang, 4630 m, 29.VI.2011, leg. S. Tamang, 27°41'41" N, 87°35'32" E (cSCHM).

Paratypes: 41 ♂ 74 ♀, same data as holotype (NMBE, cSCHM); 42 specimens same data as holotype (ZSM); 18 ♂ 24 ♀, Nepal, Jaljale Himal, Thangla Pokhari, 4340 m, 30.VI.2011, leg. S. Tamang, 27°43'09" N, 87°34'54" E (NMBE, cSCHM); 53 ♂ 63 ♀, Nepal, Sankhua Wasabha, W-slope Lumba Sumba pass, 4830 m, 4.VII.2011, leg. S. Tamang, 27°44'24" N, 87°37'55" E (NMBE, cSCHM); 40 specimens W-slope Lumba Sumba pass, 4830 m, 4.VII.2011, leg. S. Tamang, 27°44'24" N, 87°37'55" E (ZSM); 1 ♂, Nepal, Sankhua Wasabha, Somne E Thudam, 4150 m, 2.VII.2011, leg. S. Tamang, 27°45'16" N, 87°35'58" E (cSCHM); 2 ♂, Nepal, Taplejung distr., S Lumba Sumba pass, 4750 m, 5.VII.2011, leg. S. Tamang, 27°43'24" N, 87°39'20" E (cSCHM); 2 ♀, Nepal, Taplejung distr., S Lumba Sumba Himal, upper Palung Khola Vall., 4200 m, 6.VII.2011, leg. S. Tamang, 27°41'12" N, 87°40'15" E (cSCHM); 6 ♂ 3 ♀, Nepal, Taplejung distr., ascent to Tangje La NW Walungchung Gola, 4400–4600 m, alpine steppe, 23 May 1988, leg. Martens & Schawaller, Nepal-Expeditionen Jochen Martens, *Nebria orestias* Andr. det. Shilenkov 1994 [2 specimens] (SMNS, ZFMK); 1 ♂ 3 ♀, Nepal, Sankhua Wasabha distr., ascent to Meropapa La from Gabri Khola S Thudam, 4300–4600 m, meadows with dwarf *Rhododendron*, 26 May 1988, leg. Martens & Schawaller, Nepal-Expeditionen Jochen Martens (SMNS, ZFMK); 2 ♂ 2 ♀, Nepal, Sankhua Wasabha distr., from Thudam to Gabri Khola, 4000–4250 m, 27 May 1988, dwarf *Rhododendron*, leg. Martens & Schawaller, Nepal-Expeditionen Jochen Martens (SMNS, NMBE); 1 ♀, Nepal, Sankhua Wasabha distr., descent from Pomri La, S slope, 4550–4450 m, on snow cover, 29.V.1988, leg. Martens & Schawaller, Nepal-Expeditionen Jochen Martens (SMNS).

Additional material examined: 9 specimens, Nepal, Mechi/Taplejung, 500 m NE Ghunsa, 3500–3600 m, stone debris/mixed forest, 10.5.2003, leg. A. Weigel, 27°39'48" N, 87°56'36" E (NMBE, NME, cSCHM); 1 ♂ 2 ♀, Nepal, S Kangchenjunga, Hadi Pokhari, 4300 m, 13.VI.2012, leg. S. Tamang, 27°25'12" N, 88°01'16" E (cSCHM); 2 ♀, Nepal, S Kangchenjunga, Timbu(wa) Pokhari, 4350–4500 m, 14–16.VI.2012, leg. S. Tamang, 27°26' N, 88°03' E (cSCHM).

Body length 9–10.5 mm.

Colour: Black. Head without bright spot on vertex. Pronotum sometimes blackish brown, brighter than the head. Appendages of the head piceous. Legs black with testaceous knees and tarsi, occasionally tibiae testaceous. Antennae reddish-brown, antennal scape occasionally infuscated.

Head slightly constricted behind the prominent eyes. Anterior margin of the labrum straight, bearing six setae. Apical margin of the clypeus straight

Fig. 35: *Nebria (Epi-
nebriola) pseudorestias*
sp. nov. Holotype.
Scale bar = 0.5 mm.



or scarcely concave; clypeus laterally usually unisetose. Frontoclypeal suture slightly concave. Frons laterally near the insertion of the antennal scape faintly obliquely wrinkled, medially distinctly transversally wrinkled. Eyes prominent. Supraorbital setation bilaterally unisetose (rarely unilaterally or bilaterally bisetose). Vertex impunctate with an isodiametric microreticulation. Antennae long, extending to the middle of the elytra. Antennal scape oval-elongate, shorter than the eye's diameter, distinctly narrowed basally and apically, with one dorsal seta; 2nd antennomere with one ventroapical seta. Penultimate labial palpomere trisetose. Stipes normal. Ligula spiny, with two lateral setae. Mentum obtusely bidentate with only a shallow incision between the denticles. Submentum with a row of 10–12(–15) setae, medially interrupted.



Fig. 36: Left part of the pronotum.
A: *Nebria (Epinebriola) pseudorestias* sp. nov.
B: *N. (E.) orestias*
ANDREWES, 1932, holotype (BMNH).
Scale bar = 1 mm

Pronotum (Fig. 36A): Bulging, subcordate, widest at apical third. Lateral margin widely rounded to the anterior angles. Anterior angle acutely rounded, protruding. Lateral margin evenly rounded to the posterior angles with a weak concave situation just in front of the angles which acutely protrude backwards. Lateral margin near base strongly and nearly vertically reflexed. Basal margin deeply bisinuate. Apical margination of the pronotum restricted to lateral one-fourth, merges with a short ridge at the apex of the anterior angle. Base of the pronotum not margined. One midlateral seta present in the apical half at widest diameter of the pronotum, inserted in a distinct groove at the inside of the slightly upturned margin. The insertion groove of the midlateral seta disturbs the outline of the pronotum. Lateral explanation narrow, distinctly narrowed just behind the midlateral seta, then broadened basally. Base narrower than apex. Basolateral seta present, inserted at the inside of the edge of the lateral margin. Apical and basal transverse impressions distinct, distinctly and sparsely punctate. Transverse impressions faintly and sparsely punctate; longitudinal impression weak, reaching neither the apical nor the basal margin; paraterally transversally wrinkled. Basal fovea deep due to the strongly reflexed lateral margin. Microreticulation isodiametric. Prosternal process elongate, rounded apically, laterally and apically unmargined, longitudinally bulging. Proepisternum smooth.

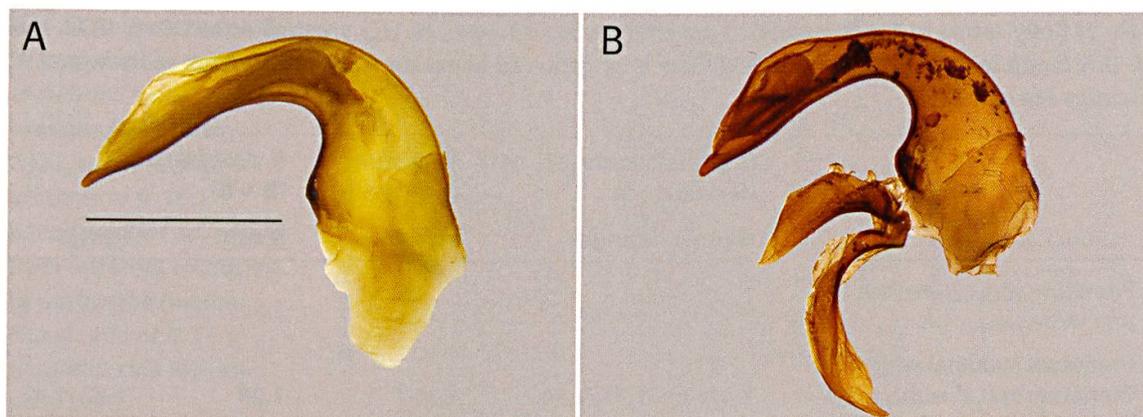


Fig. 37: Male edeagi. A: *Nebria (Epinebriola) pseudorestias* sp. nov. B: *N. (E.) orestias* ANDREWES, 1932, with parameres; holotype (BMNH). Scale bar = 1 mm.

Elytra: Convex, ovoid-elongate, sparsely narrowed basally, laterally faintly convexly sinuate at basal third. Humeral carina weakly present. Scutellar setae absent. Striae shallow, obliterated apically and laterally, but deeply incised near base. Striae finely punctate, obliterated apically. Intervals scarcely convex on disc, but distinctly near base. Microreticulation transverse. 3rd interval without discal setae, with 0–2 setae at the elytral decline just at apex. 5th and 7th interval asetose.

Sternum 3 medially asetose. Sterna 4–6 with 3–5 posterior paramedial setae; sterna laterally with shallow impressions. Anal sternum with 2(–3) paramedial setae in male, and with (2)–3 setae in female. Mesepisternum smooth and impunctate. Metepisternum smooth, 1.8 times as long as wide. Metacoxa basally and apically unisetose.

Legs: Long and slender. Tarsi dorsally glabrous. Metatarsomere 4 with a short ventral tooth. In male protarsomeres 1–3 expanded, with pads of adhesive setae ventrally. Metatarsomere 5 shorter than metatarsomeres 3+4.

Male genitalia: Edeagus (Fig. 37A): Base of the median lobe wide, with prominent basolateral lobes. Base fading abruptly to the thick mid-shaft. Mid-shaft long, strongly curved at base, straight to the apex. Apex in front of the tip on ventral side distinctly convex. Tip short. Apex deflected to the left. Mid-shaft of the endophallus without setae.

Female genitalia: Gonocoxa (Fig. 10I): Gonocoxite 2 triangular, short, one third the length of gonocoxite 1, broad at base. Apex broadly rounded, dorsally arcuate and distinctly grooved. Ventral preapical insertion furrow short-oval, with two nematiforme setae. Gonocoxites ventrally unjointed and continuously sclerotized, dorsally separated by a membranous area.

Body ratios: see Tab. 3.

Morphometry: The scatterplot of the shape PCA shows that the three populations of *N. pseudorestias* sp. nov. from different localities of the Jaljale

Tab. 3: Body ratios in *N. (Epinebriola) pseudorestias* sp. nov., *N. (E.) orestias* ANDREWES, 1932, and *N. (E.) tangjelaensis* SHILENKOV, 1998. The best ratios to separate *N. pseudorestias* sp. nov. and *N. orestias* are in bold.

	<i>N. pseudorestias</i> sp. nov. (N = 65)		<i>N. orestias</i> (N = 1)	<i>N. tangjelaensis</i> (N = 8)	
	Mean	Range	Mean	Mean	Range
Pronotum width/Head width prm.w/hea.w	1.22	1.15–1.30	1.15	1.15	1.11–1.19
Pronotum maximal width/ Pronotum apical width pra.w/ prm.w	1.42	1.35–1.50	1.31	1.39	1.32–1.45
Pronotum width/Pronotum posterior width prm.w/prp.w	1.74	1.61–1.90	1.65	1.63	1.55–1.68
Elytral width/Pronotum width ely.w/prm.w	1.62	1.52–1.71	1.64	1.60	1.54–1.65
Pronotum width/Pronotum length prm.w/prm.l	1.24	1.17–1.33	1.25	1.26	1.23–1.32
Elytral length/Elytral width ely.l/ ely.w	1.66	1.56–1.74	1.67	1.67	1.63–1.72
Head width/Frontal width hea.w/fro.w	1.50	1.43–1.60	1.60	1.54	1.48–1.57
Frons width/scape length fro.w/ant.l	2.39	2.21–2.57	2.08	2.42	2.35–2.52

Himal (Thangla Bhanjyang, Tangje La, Lumba Sumba pass) differ clearly from the holotype specimen of *N. orestias* along the first shape PC, and from the sympatric species *N. tangjelaensis* along the second shape PC (Fig. 38A).

The scatterplots of the three Jaljale populations of *N. pseudorestias* sp. nov. are almost entirely overlapping, indication that they belong to a single species. We performed another shape PCA including only these three populations and the type specimen of *N. orestias*. The scatterplot (Fig. 38B) shows a clear separation of *N. orestias* along the first and second shape PC. The isolation of the *N. orestias* holotype is furthermore based on true shape differences and not just due to allometric scaling.

The LDA ratio extractor was used to find the best body ratio for separating *N. orestias* and *N. pseudorestias* sp. nov. The best separating body ratios are frons width / scape length (2.08 in *N. orestias*, 2.39 in *N. pseudorestias* sp. nov.), and pronotum maximal width / pronotum apical width (1.31 in *N. orestias*, 1.42 in *N. pseudorestias* sp. nov.) (Fig. 38C, Tab. 3).

Etymology: The specific epithet refers to the similar species *N. orestias* ANDREWES, 1932.

Fig. 38 A: Scatterplot of first against second PC of *Nebria (Epinebriola) orestias* ANDREWES, 1932, of three populations of *N. (E.) pseudorestias* sp. nov. from different localities in the Lumba Sumba Himal, and of *N. (E.) tangjelaensis* SHILENKOV, 1998.

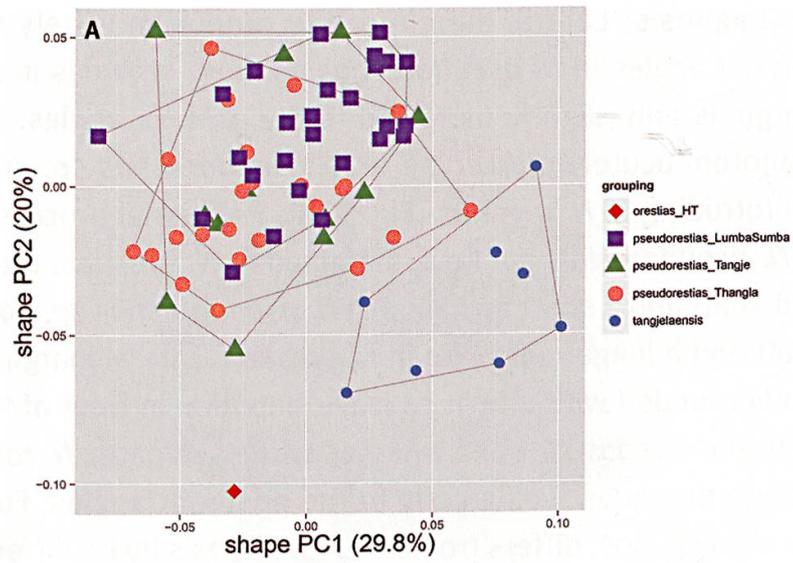


Fig. 38 B: Scatterplot of first against second PC of *Nebria (E.) orestias* ANDREWES, 1932 and of three populations of *N. (E.) pseudorestias* sp. nov. from different localities in the Lumba Sumba Himal.

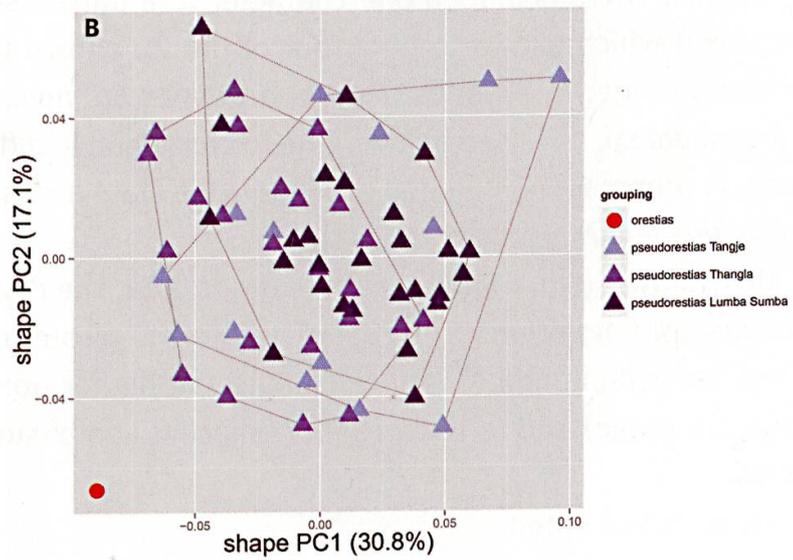
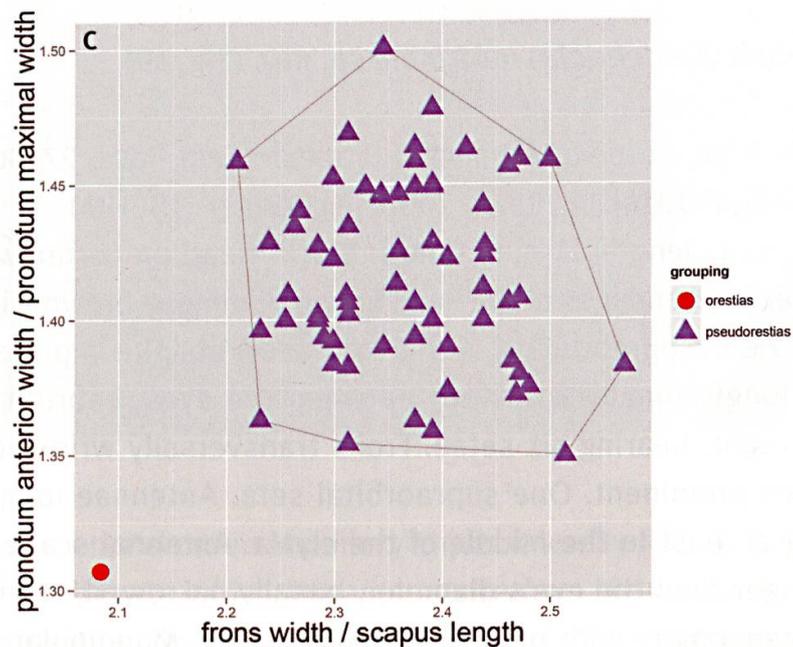


Fig. 38 C: Scatterplot of best and second-best body ratio for separating *N. (E.) orestias* and *N. (E.) pseudorestias* sp. nov.



Diagnosis: Lateral margin of the pronotum widely rounded towards the anterior angles in *N. pseudorestias* sp. nov., whereas in *N. orestias* the lateral margin is only slightly narrowed to the anterior angles. Anterior angles of the pronotum acutely protruding in *N. pseudorestias* sp. nov. (Fig. 32A), scarcely protruding in *N. orestias* (Fig. 32B). Prosternal process laterally unmargined in *N. pseudorestias* sp. nov., margined in *N. orestias*. Median lobe with a long mid-shaft and a short apical tip in *N. pseudorestias* sp. nov., with a shorter mid-shaft and a longer apical tip in *N. orestias*. Lateral margin of the pronotum regularly rounded with a faint concave sinuation in front of the posterior angles in *N. pseudorestias* sp. nov., whereas in the sympatric *N. tangjelaensis* the lateral margin proceeds rectilinearly to the posterior angles. Furthermore, *N. pseudorestias* sp. nov. differs from *N. tangjelaensis* by its different edeagus outline.

Shilenkov (1998) placed *N. tangjelaensis* close to *N. orestias* without giving details. There is indeed one character (the unisetose basal margin of the metacoxa) which allows to pool four of the 20 known taxa from the Eastern Himalaya range: *N. orestias*, *N. pseudorestias* sp. nov., *N. tangjelaensis* and *N. incarinata* sp. nov. (see below). Due to considerable differences in the median lobes, in pronotal and humeral characters we state a close relationship only for *N. orestias* and *N. pseudorestias* sp. nov.

Distribution (Fig. 41): Based on current data, the distribution of *N. pseudorestias* sp. nov. seems to be restricted to the western and southern slopes of the Kangchenjunga Massif (including the higher portions of the Singalila mountain range) and to the westerly adjacent Lumbasumba Himal and Jaljale Himal.

Habitat: Not noted.

***Nebria (Epinebriola) incarinata* sp. nov.** (Fig. 39)

Holotype ♂: India, Arunachal Pradesh, Sela Pass, 27°30'12" N, 92°06'16" E, 4200–4500 m, 24./25. 6. 2008, leg. Reuter (cSCHM).

Body length 11 mm. Colour black. Head on vertex weakly brownish lightened. Appendages of the head brown. Antennae brown. Tibiae and tarsi brown.

Head supraorbitally with two shallow oblique impressions (which are faintly longitudinally wrinkled) between the eyes. Labrum with anterior margin straight, bearing six setae. Frons transversally wrinkled. Vertex impunctate. Eyes prominent. One supraorbital seta. Antennae long and slender extending at least to the middle of the elytra. Antennal scape cylindrical, elongate, longer than the eye's diameter, basally narrowed, with one dorsal seta. 2nd antennomere with one seta ventroapically. Mandibular lamella longitudinally

**Fig. 39: *Nebria (Epinebriola) incarinata* sp. nov.
Male holotype.
Scale bar = 5 mm.**



wrinkled. Maxillar palpomeres slender. Maxillary stipes laterally flat, with 5–6 long and fine setae. Penultimate labial palpomere trisetose. Ligula short, triangular, with two lateral setae. Mentum with a bifid medial tooth. Submentum

with a row of 13 long and fine setae. Vertex impunctate. Microreticulation of the head isodiametric.

Pronotum transverse, ratio width/length of the pronotum = 1.39. Lateral margin widely rounded to the anterior angles, rectilinearly narrowed to the posterior angles (Fig. 31). Anterior angles not protruding. Lateral explanation narrow with a shallow groove also apically, broadened basally. Lateral margin at the posterior angle obliquely upturned. Basal margin near angles deeply concavely arcuate. Posterior angles acutely projecting backwards. Pronotal disc weakly bulging. Basal fovea deep, anterior transverse impression weak, posterior transverse impression faint, median line shallow. Lateral groove, basal fovea, anterior transverse impression impunctate, the latter paramedially longitudinally wrinkled. Posterior transverse impression sparsely punctate. Apical margination of the pronotum restricted to lateral one-thirds, merges with the apex on the anterior angle. Base of the pronotum not margined. Basolateral seta present, in the holotype specimen at hand on both sides broken, visible only in lateral view as a short stub. Two midlateral setae in the apical half of the pronotum, inserted within the lateral groove. Pronotum impunctate on disc, Microreticulation isodiametric. Proepisternum smooth. Prosternal process triangular, laterally and apically unmargined.

Elytra: Elytral outline convex, regularly ovoid-elongate, widest slightly behind the middle. Ratio length/width of the elytra = 1.56. Elytral apex widely rounded, apical carina faint. Basal margin bent backwards towards the scutellum, arcuate cranially, obtusely merged with the lateral margination. Lateral margin of the elytra slightly rounded to the base. Humeral carina absent, instead of that a distinct incision towards the scutellum as basal margin of the epipleuron; no triangular carinal area (Fig. 40). Distance between the humeral angles shorter than the distance between the pronotal posterior angles. Striae distinct but shallow, faintly punctate on disc, obliterate towards the apex. Intervals flat. 3rd interval with 6–7 setae adjoining stria 3, 5th interval with one seta on disc, 7th interval asetose. Scutellar seta absent. Microreticulation isodiametric. Mesepisterna smooth. Metepisterna 1.8 times as long as wide, smooth. Metacoxa basally and apically unisetose.

Sternum 2 laterally smooth. Sternum 3 medially asetose. Sterna 4–6 each with 2 posterior paramedial setae. Anal sternum with two paramedial setae in the male. All sterna with faint impressions laterally.

Legs: Tarsi dorsally glabrous. In the male protarsomeres 1–3 conspicuously broadened, ventrally with pads of adhesive setae. Metatarsomere 4 with a long ventral tooth which is nearly as long as the tarsomere itself. Meso- and metatarsomeres 2–4 compact. Metatarsomere 5 ventrally with two rows of 2–3 short setae, longer than metatarsomeres 3+4.

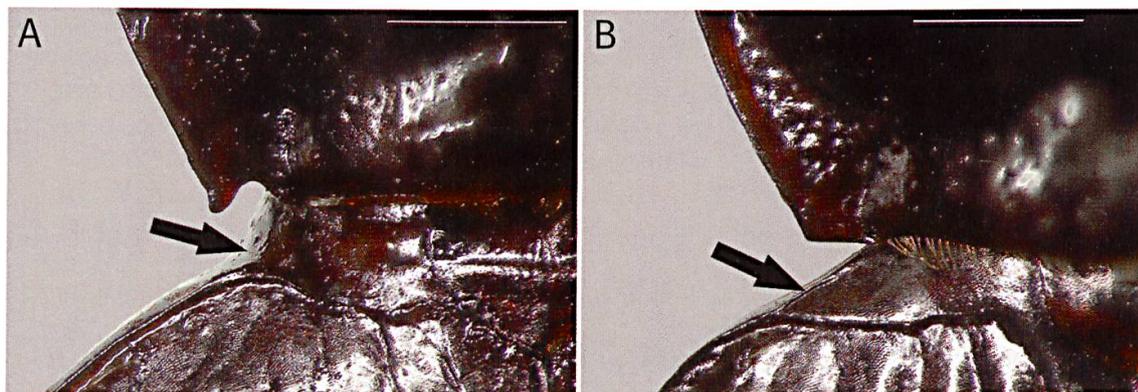


Fig. 40: Humeral area of the elytra. **A:** *Nebria (Epinebriola) incarinata* sp. nov. with the humeral carina absent (arrow). **B:** *N. (E.) triseriata* sp. nov. with the humeral carina present (arrow). Scale bars = 0.5 mm.

Male genitalia: Edeagus large (Fig. 20H): Base of the median lobe small, with prominent basolateral lobes. Mid-shaft of the median lobe regularly curved at base, moderately at apex. Mid-shaft thin, apically bulbously thickened, apex deflected to the left. Apex in dorsal view broadened, tip of the apex triangular (Fig. 20I), short and wide. Mid-shaft of the endophallus without setae.

Female unknown.

Body ratios: hea.w/fro.w = 1.39; prm.w/hea.w = 1.27; prm.w/prp.w = 1.59; pra.w/prp.w = 1.07; ely.w/prm.w = 1.52; prm.w/prm.l = 1.39; ely.l/ely.w = 1.56.

Etymology: The specific epithet refers to the absence of the humeral carina.

Diagnosis: *N. incarinata* sp. nov. differs from all *Epinebriola* species by its unique humeral outline of the elytra due to the absence of the humeral carina.

Distribution (Fig. 41, Nr. 22): Known only from the type locality, the pass Sela in Western Arunachal Pradesh, India, east of the Bhutan border.

Habitat: Not noted.

Remarks to the taxonomic significance of characters of the female gonocoxae

Although some authors (Shilenkov 1983, Kavanaugh & Shilenkov 1996, Shilenkov 1998, Huber & Schmidt 2007) repeatedly described and pictured female gonocoxae and pointed in such a way to a possible shape variability of the distal gonocoxite 2, in relevant literature (Ledoux & Roux 2005) the value of female gonocoxae is not considered noteworthy due to their "high similarity" ("sont assez semblables"). The present study of female gonocoxae shows a wide shape variability of the gonocoxite 2, even in the small species group of the subgenus *Epinebriola*. The taxonomic value of the distal gonocoxite 2 obviously has been disregarded and unvalued up to now by the nebriologists.

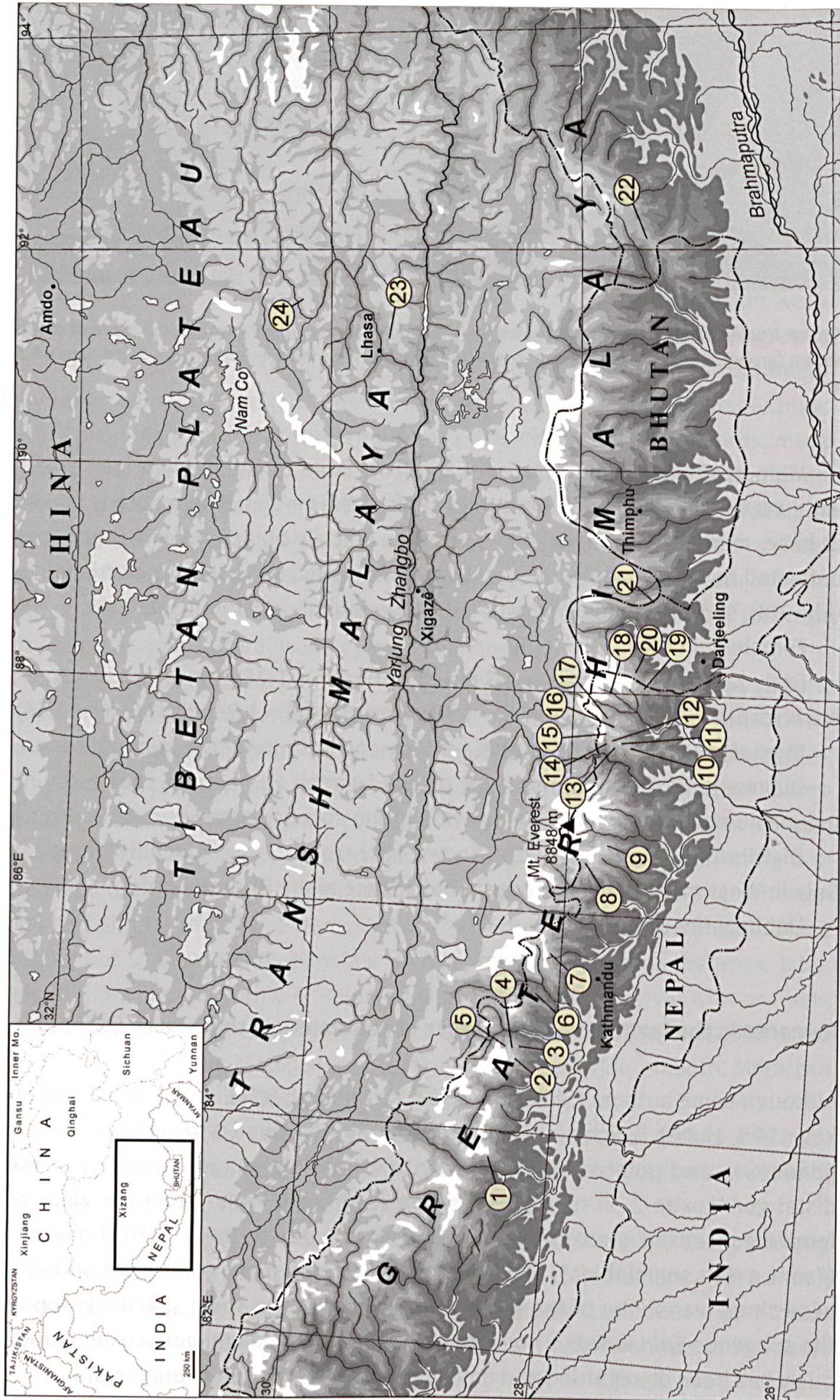


Fig. 41: Locations with occurrences of *Nebria* (*Epinebriola*) species from the Central and Eastern Himalaya and from South Tibet.

- 1: West slope of Annapurna South Himal (*N. triseriata* sp. nov.).
- 2: South slope of Himal Chuli, Dudh Pokhari (*N. montisanimae* sp. nov.; *N. rupina* sp. nov.).
- 3: South western slope of Himal Chuli, between Rumche Tal and Rupina La Pass (*N. montisanimae* sp. nov.; *N. rupina* sp. nov.).
- 4: South western slope of Himal Chuli, Narte Pokhari south of Rupina La Pass (*N. montisanimae* sp. nov.).
- 5: West slope Himal Chuli, between Tabruk and Rupina La Pass (*N. montisanimae* sp. nov.; *N. rupina* sp. nov.).
- 6: South western slope of Ganesh Himal, Jaisuli Kund (*N. impunctata* sp. nov.).
- 7: Helambu Massif, South slope of Ganja La Pass (*N. tuberculata* sp. nov.).
- 8: Upper Rolwaling Valley (*N. christinae* HUBER & SCHMIDT, 2007; *N. molendai* HUBER & SCHMIDT, 2007).
- 9: South slope of Shorong Himal, south of Dudh Kund (*N. numburica* sp. nov.).
- 10: Jaljale Himal, Jaljale Pokhari (*N. martensi* HUBER & SCHMIDT, 2012).
- 11: Jaljale Himal, below Paanch Pokhari (*N. martensi* HUBER & SCHMIDT, 2012).
- 12: Jaljale Himal, Thangla Pokhari (*N. pseudoestias* sp. nov.).
- 13: Jaljale Himal, South slope of Pomri La (*N. pseudoestias* sp. nov.).
- 14: Modek Cheju Khola Valley: North slope of Meropapa La South of Thudam (*N. pseudoestias* sp. nov.).
- 15: West slope of Lumba Sumba Pass and upper Modek Cheju Khola Valley, Somne, Kongla Khola, Gabri Khola (*N. martensi* HUBER & SCHMIDT, 2012; *N. pseudoestias* sp. nov.; *N. tangjelaensis* SHILENKOV, 1998).
- 16: South slope of Lumba Sumba Pass and upper Palung Khola Vall. (*N. pseudoestias* sp. nov.; *N. tangjelaensis* SHILENKOV, 1998).
- 17: East slope of Lumba Sumba Pass, between Walungchung Gola and Tangje La (*N. pseudoestias* sp. nov.; *N. schawalleri* SHILENKOV, 1998; *N. tangjelaensis* SHILENKOV, 1998).
- 18: West slope of Kangchenjunga Himal, upper Ghunsa Khola Valley (*N. pseudoestias* sp. nov., *N. schawalleri* SHILENKOV, 1998).
- 19: South slope of Kangchenjunga Himal, Hadi Pokhari, Timbu Pokhari (*N. pseudoestias* sp. nov.).
- 20: East slope of Kangchenjunga Himal: Ratong Chu Valley (*N. rasa* ANDREWES, 1936).
- 21: Jalep La (*N. orestias* ANDREWES, 1932).
- 22: Sela Pass (*N. incarinata* sp. nov.).
- 23: Mt. Mendju Zari southeast of Lhasa (*N. delicata* sp. nov.).
- 24: Side valley of the Reting Tsangpo Valley south of Reting (*N. retingensis* sp. nov.).

Female genital structures are often used in taxonomic and phylogenetic studies in Carabidae (Liebherr & Will 1998, Liebherr 2015, Ortuño & al. 2003), within the tribe Nebriini by Kavanaugh (1996) when separating a new Tribe Pelophilini for the genus *Pelophila* DEJEAN, 1821. Gonocoxae of carabids are primarily unsegmented and unjointed (Arndt & al. 2005). They are viewed as plesiomorphic in the tribe Cicindini Bänninger (Kavanaugh 1986, Kavanaugh & Erwin 1991). Some other basal grade carabid groups (Opisthiini, Nebriini, Notiokasiini, Notiophilini, Pelophilini) have females with the distal gonocoxite 2 either absent or fused with the proximal gonocoxite 1, in both cases synapomorphies (Kavanaugh & Erwin 1991).

In terms of the gonocoxae the plesiomorphic condition seems to be unclear within the Nebriini. In *Epinebriola* and *Barbonebriola* subgen. nov. the continuous ventral sclerotization and the membranous dorso-median area of the gonocoxites may be of an ambiguous value, a character of incipient joint formation or of an uncompleted fusion. A similar feature is mentioned by Kavanaugh (1996) for the bispecific genus *Pelophila*, the sister group of the Nebriini, with the female gonocoxites fused medially and widely separated dorsally.

Moreover, in the present study the shape of the gonocoxite 2 seems to be an evolutionarily stable character within some species groups, which led us (in addition to other characters) to establish the new subgenus *Barbonebriola*. The female gonocoxite 2 as well as the maxillary stipes seem to comprise characters of high taxonomic and evolutionary significance also in genus *Nebria*.

Key to subgenera

Step 28 of the determination key to the subgenera of the genus *Nebria* in Ledoux & Roux (2005) has to be changed in the following way:

- 28** Species of the Himalaya-Tibet orogen from Hindu Kush to SE Tibet. Sterna 4–6 polysetose. 28a
- Species of Tian Shan to Kamar Daban including Dzungaria, the Tarbagatai, the Altai and the Saján Mountains. Sterna 4–6 generally unisetose (exceptionally polysetose in *N. setosa*, *N. kaszabi* and *N. murzini*).
..... **subgenus *Pseudonebriola*** LEDOUX & ROUX, 1989
- 28a** Maxillary stipes laterally berry-like bulging with tubercles bearing each a robust seta. ***Barbonebriola* subgen. nov.**
- Maxillary stipes laterally normal, not berry-like bulging, only with robust setae. **subgenus *Epinebriola*** K. DANIEL, 1904

Key to species of *Barbonebriola* subgen. nov

- 1** Midlateral and basolateral setae of pronotum absent. Lateral groove of pronotum narrow. Far Western Nepal: Api Himal. ***N. tenuisulcata* sp. nov.**
- One midlateral setae of pronotum present, basolateral seta absent. **2**
- 2** Striae of elytra on disc only faintly punctate or impunctate. Basal margin of pronotum straight, not incised. West Nepal, Kanjiroba Himal: Kagmara La. ***N. kagmara* sp. nov.**

- Striae of elytra on disc strongly and densely punctate. Basal margin of pronotum distinctly incised. 3
- 3** Antennal scape short, ovoid. Lateral groove of pronotum narrow. India, Himachal Pradesh: Rohtang pass. ***N. ganeshi*** LEDOUX, 1984
- Antennal scape long, slender, subcylindrical, longer than the eye's diameter. Lateral groove of the pronotum wide. 4
- 4** Elytra ovoid, laterally regularly rounded. Shoulder less pronounced. Far Western Nepal: Saipal Himal. ***N. rubostipes*** sp. nov.
- Elytra elliptic to subovoid, lateral margin subparallel. Shoulder pronounced. 5
- 5** Pronotum flattened, wide, ratio width/length = 1.45. Kashmir Himalaya of India and Pakistan. ***N. barbata*** ANDREWES, 1929
- Pronotum domed, slender, ratio width/length = 1.25. India, Uttarakhand: Badrinath. ***N. restricta*** LEDOUX & ROUX, 2005

Key to species of subgenus *Epinebriola*

- 1** Humeral carina present. Basal margin of elytra regularly merged with lateral margin without forming an angle craniad. Basal margin not directed backwards towards scutellum. 2
- Humeral carina absent. Basal margin of elytra obtusely merged with lateral margination, forming an angle craniad, bent backwards towards scutellum, and forms a humeral incision towards scutellum. India: Arunachal Pradesh, pass Sela. ***N. incarinata*** sp. nov.
- 2** Lateral margin of pronotum with three setae or more. 3
- Lateral margin of pronotum unisetose (or rarely with two setae in *N. laevistriata* and asymmetrically bisetose in *N. tuberculata* sp. nov.). 8
- 3** 2nd abdominal sternum medially polysetose with 6–8 setae. 4
- 2nd abdominal sternum medially asetose (or rarely unisetose in *N. triseriata* sp. nov.). 5
- 4** Elytral striae on disc deep, distinctly punctate. Pronotum slender. Lateral margin of the pronotum with 2–3 (rarely four) setae. Eastern Central Nepal: Rolwaling valley. ***N. molendai*** HUBER & SCHMIDT, 2007
- Elytral striae on disc faint, striae with barely perceptibly punctate. Pronotum transverse. Lateral margin of pronotum with 3–5 (rarely two) setae. Eastern Central Nepal: Shorong Himal. ***N. numburica*** sp. nov.
- 5** 3rd, 5th and 7th interval of elytra with several setiferous pores. Head supra-orbitally usually unisetose. 6

- Only 3rd interval of elytra with setiferous pores, 5th and 7th interval aseptose and free of pores. Head supraorbitally with 2–3 setae. 7
- 6** Penultimate labial palpomere bisetose. Pronotum slender, faintly rounded to anterior angles which are arcuate, faintly rounded to posterior angles. Striae of elytra shallow, obliterate laterally and apically. East Nepal: Lumba Sumba Himal, Jaljale Himal. ***N. martensi*** HUBER & SCHMIDT, 2012
- Penultimate labial palpomere trisetose. Pronotum transverse, widely rounded to anterior angles which are wide, distinctly rounded to posterior angles with a concave incision just in front of posterior angles. Striae of elytra distinct on disc, faintly punctate, obliterate towards apex at apical fifth. Western Central Nepal: Annapurna South Himal.
..... ***N. triseriata*** sp. nov.
- 7** Small, body length 11.4 mm in female. Basal margin of pronotum moderately notched. Elytra slender. Sikkim. ***N. rasa*** ANDREWES, 1936
- Larger, body length 11.5 mm in male, 12.2 mm (11.9–12.6 mm) in female. Elytra wide. East Nepal. ***N. schawalleri*** SHILENKOV, 1998
- 8** Pronotum with posterior angles obtuse, rounded or bevelled, neither rectangular nor posteriorly pointed. 9
- Pronotum with acute posterior angles. 12
- 9** Pronotum with posterior angles bevelled at a 45° angle. Pakistan: Chitral valley, Tangir valley. ***N. chitralensis*** SHILENKOV & HEINZ, 1988
- Pronotum with posterior angles obtuse or rounded. 10
- 10** Large species of 14–16 mm. Pronotum cordate, base distinctly narrower than anterior margin. Posterior angles of pronotum obtuse. Striae of elytra faint, slightly punctate or even impunctate. China, Yunnan: Hengduan Shan. ***N. laevistriata*** LEDOUX & ROUX, 1998
- Small species of 10–13 mm. Pronotum slender, base only slightly narrower than anterior margin. Posterior angles of pronotum largely rounded. Striae of elytra distinct, punctate. 11
- 11** Pronotum with posterior angles obtusely rounded, eyes faintly protruding. Pakistan: Nanga Parbat.
..... ***N. rotundicollis rotundicollis*** HEINZ & LEDOUX, 1989
- Pronotum with posterior angles more accentuated, eyes protruding. Pakistan: Rama valley north of Gilgit.
..... ***N. rotundicollis*** ssp. ***tenuis*** HEINZ & LEDOUX, 1989
- 12** Basolateral seta of pronotum absent. 13
- Basolateral seta of pronotum present. 19
- 13** Anterior margin of labrum with eight setae. India, Uttarakhand: Pindar Valley. ***N. pindarica*** ANDREWES 1925
- Anterior margin of labrum with six setae. 14

- 14 Penultimate labial palpomere trisetose. 15
 – Penultimate labial palpomere bisetose. India, Himachal Pradesh: Rohtang Pass. ***N. poplii*** LEDOUX, 1984
- 15 Scutellar seta present. 16
 – Scutellar seta absent. 17
- 16 Striae of elytra faint, impunctate. Posterior angles distinctly projecting. Central Nepal: Ganesh Himal. ***N. impunctata*** sp. nov.
 – Striae of elytra distinct, punctate. Posterior angles not or only slightly projecting. Western Central Nepal: Manaslu Himal. .. ***N. montisanimae*** sp. nov.
- 17 Antennal scape stout, globular. Afghanistan: Hindu Kush.
 ***N. kabakovi*** SHILENKOV, 1982
 – Antennal scape long, subcylindrical. 18
- 18 Lateral margin of pronotum rectilinear to the posterior angle. Pronotum at base 0.9 times the distance between the anterior angles. Eyes less prominent. Metacoxa basally unisetose. Afghanistan, Nuristan: Kunar Valley.
 ***N. nouristanensis*** LEDOUX, 1985
 – Lateral margin of pronotum distinctly convexly sinuate in front of posterior angle. Pronotum at base narrow, 0.8 times the distance between the anterior angles. Eyes very prominent. Metacoxa basally trisetose. China, Tibet: Central Transhimalaya near Nyingchi.
 ***N. businskyorum*** LEDOUX & ROUX, 1997
- 19 Apex of elytra acuminate. 20
 – Apex of elytra not acuminate, rounded or blunt. 21
- 20 Lateral margin of elytra rounded, shoulders pronounced. Basal margin of elytra angularly joined with lateral margin. China, Xinjiang: Western Kunlun Shan. ***N. oxyptera oxyptera*** K. DANIEL, 1904
 – Lateral margin of elytra rectilinear, shoulders more rounded. Basal margin of elytra evenly joined with lateral margin. China, Xinjiang: Western Kunlun Shan. ***N. oxyptera*** ssp. ***alzonai*** DEUVE & LEDOUX, 1989
- 21 Anterior margin of labrum with eight setae. Small and slender species, 9 mm. Lateral margin of pronotum only weakly concave. China, Tibet: Central Transhimalaya south of Lhasa. ***N. delicata*** sp. nov.
 – Anterior margin of labrum with six setae. 22
- 22 Metacoxa basally polysetose with 2–5 setae. 23
 – Metacoxa basally unisetose. 27
- 23 Head supraorbitally bisetose. China, Tibet: Eastern Transhimalaya north of Zayul, pass Ata Kang La. ***N. zayula*** ANDREWES, 1936
 – Head supraorbitally unisetose. 24
- 24 Scutellar seta present. Eastern Central Nepal: Rolwaling Himal.
 ***N. christinae*** HUBER & SCHMIDT, 2007

- Scutellar seta absent. 25
- 25** Eyes large, protruding, temples long. Pronotum slender, slightly rounded to anterior angles. Lateral groove of pronotum narrow. Shoulders slender, hanging. Distal gonocoxite 2 slender and very long, dagger-like. China, Tibet: Central Transhimalaya south of Reting. ***N. retingensis*** sp. nov.
- Eyes normal, temples short. Pronotum transverse. Distal gonocoxite 2 short, elongate-triangular. 26
- 26** Antennomere 4 apically with short setae in addition to the apical collar of long setae. Posterior angle of pronotum not tubercularly acuminate. Lateral margin flatish rounded to anterior angle. Lateral groove of pronotum narrow. Striae distinct on disc, faintly punctate. Mesotarsomere 5 shorter or as long as mesotarsomeres 3+4. Distal gonocoxite elongate-triangular, slightly narrowed near base. Western Central Nepal: Manaslu Himal.
..... ***N. rupina*** sp. nov.
- Antennomere 4 apically without short setae in addition to the apical collar of long setae. Posterior angle of pronotum tubercularly acuminate. Lateral margin widely rounded to anterior angle. Lateral groove of pronotum wider. Striae distinct on disc, coarsely and tightly punctate. Mesotarsomere 5 longer than mesotarsomeres 3+4. Distal gonocoxite evenly elongate-triangular, wide at base. Central Nepal: Helambu Massiv.
..... ***N. tuberculata*** sp. nov.
- 27** Lateral margin towards posterior angle blade-like, obliquely upturned. ... 28
- Lateral margin towards posterior angle not blade-like upturned. 29
- 28** Pronotum faintly narrowed to anterior angles; ratio of pronotum maximal width/pronotum apical width = 1.31. Ratio of frons width/scape length = 2.1. Eastern Sikkim: Jalep Pass. ***N. orestias*** ANDREWES, 1932
- Pronotum distinctly and widely rounded to anterior angles; ratio of pronotum maximal width/pronotum apical width >1.35. Ratio of frons width/scape length > 2.2. East Nepal: Lumba Sumba Himal, Kangchenjunga Himal.
..... ***N. pseudorestias*** sp. nov.
- 29** Pronotum transverse, ratio width/length > 1,3. 30
- Pronotum slender, ratio width/length < 1,3. 32
- 30** Antennal scape thick, less elongate. Eyes prominent. Ligula broadly based, short. Lateral margin straight towards posterior angle, with only a subtle sinuation in front of the angle. 31
- Antennal scape long, slender. Eyes less prominent. Ligula long and spiny. Lateral margin regularly rounded to posterior angle with a long and distinct concave sinuation in front of the angle. Afghanistan, Kunar: Upper Ourlah Valley. ***N. meurguesae*** LEDOUX, 1985

- 31** Antennomere 3 basally faintly compressed. Elytra with distinct shoulders. Protarsomeres 1–3 ventrally with adhesive pads in males. India, Jammu & Kashmir: Northern Kashmir. *N. masrina masrina* ANDREWES, 1924
- Antennomere 3 basally not compressed. Elytra with hanging shoulders. Only protarsomeres 1–2 ventrally with adhesive pads in males. Northern Pakistan: Kaghan Valley near Naran.
..... *N. masrina* ssp. *calceata* LEDOUX & ROUX, 2003
- 32** Large species: 14 mm. Base of pronotum wide (ratio of pronotum basal width/pronotum apical width = 0.9). Anal sternum bilaterally bisetose (in the known three female type specimens). Afghanistan, Nuristan: Upper Agôk Khwar Valley. *N. praelonga* LEDOUX, 1985
- Small species: 9–10 mm. Base of pronotum narrower (ratio of pronotum basal width/pronotum apical width = 0.8–0.9). Anal sternum bilaterally polysetose: four setae in males, 5–6 setae in females. East Nepal, Taplejung district: Upper Tamur Valley. *N. tangjelaensis* SHILENKOV, 1998

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Addresses of the authors

Charles Huber
Naturhistorisches Museum der Burgergemeinde Bern
Bernastrasse 15
CH–3005 Bern
Switzerland
E-mail: charles.huber@nmbe.ch

Joachim Schmidt
University of Rostock
Institute of Biosciences
General and Systematic Zoology
Universitätsplatz 2
D–18055 Rostock
Germany

and

Lindenstrasse 3a
D–18211 Admannshagen
Germany
E-mail: schmidt@agonum.de

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