

## DYTISCIDAE: II. The genus *Nebrioporus* RÉGIMBART, 1906 in China (Coleoptera)

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### Abstract

The Chinese species of the genus *Nebrioporus* RÉGIMBART, 1906 (Coleoptera: Dytiscidae) are revised. Eight species are recognised. A new subspecies of *Nebrioporus formaster* (ZAITZEV, 1908), *N. formaster jaechi* ssp.n., is described from Tibet. A lectotype is designated for *N. amurensis* SHARP, 1882. *Nebrioporus melanogrammus* (RÉGIMBART, 1899) is considered a valid species and is recorded for the first time from China (Yünnan). A key for the identification of the species is included. New synonymies: *Hydroporus airumlus* KOLENATI, 1845 = *Deronectes amurensis* SHARP, 1882; *Deronectes indicus* SHARP, 1882 = *Potamonectes manii* VAZIRANI, 1970; *Hydroporus melanogrammus* RÉGIMBART, 1899 = *Potamonectes satie* VAZIRANI, 1980. The synonymy *Hydroporus kashmirensis* RÉGIMBART, 1899 = *Hydroporus airumlus* KOLENATI, 1845 is confirmed.

**Key words:** Coleoptera, Dytiscidae, *Nebrioporus*, taxonomy, new subspecies, new synonymies, China.

### Introduction

This paper represents the first part of a study of *Nebrioporus* RÉGIMBART, with the objective of improving the knowledge of this genus towards a revision. Several works, both specific and generic, have been published by various authors this century, with descriptions of many new species, redescriptions of some poorly known taxa, and revisions species groups (e.g. GUIGNOT 1941; WEWALKA 1974; SHIRT & ANGUS 1992; NILSSON 1992; ANGUS, FRESNEDA & FERY 1992; FERY, FRESNEDA & MILLAN 1996). Nevertheless, no comprehensive revision of the genus has been presented so far, with the exception of SHARP (1882), within his concept of *Deronectes*. Of course, many changes have occurred since the publication of Sharp's "Opera Omnia", but even if the knowledge of some zoogeographic areas can now be considered fairly satisfactory (e.g. large part of the West Palearctic area and North America), it is also true that in other countries the status of some taxa is still uncertain. With regard to the Chinese territory, contributions to the knowledge of its Dytiscid fauna can be found by authors such as FENG (1932, 1933, 1936), WU (1937), BALFOUR-BROWNE (1946), etc., while the first (and so far the only) specific work on Chinese and neighboring *Nebrioporus* has been drafted recently by HENDRICH & MAZZOLDI (1995), who described a new species from Sichuan.

Thanks to the research works of the China Water Beetle Survey (CWBS), plenty of material from what is still considered one of the last "terrae incognitae" of the Palearctic Realm (JÄCH & JI 1995: 5), is now easily available for study. A list of the species then known in the Chinese territory has also been published by NILSSON (1995: 55-56) giving a total of 10 *Nebrioporus* species. Nevertheless the taxonomy and the distribution of some species were considered still uncertain even in this latter work.

### Acronyms and CWBS localities

BMNHL	British Museum (Natural History), London, Great Britain
CASS	Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang
CWBS	China Water Beetle Survey (material deposited in NMW and CASS)
EIHUS	Entomological Institut, Hokkaido University, Sapporo, Japan
HFB/NMW	Hans Fery Collection, Berlin, Germany (property of NMW)
GWV	Günther Wewalka Collection, Wien, Austria
MCSNV	Museo Civico di Storia Naturale, Verona, Italy
MNHNP	Muséum national d'Histoire naturelle, Paris, France
MTB	Mario Toledo Collection, Brescia, Italy
NHMB	Natural History Museum, Budapest, Hungary
NMW	Naturhistorisches Museum, Wien, Austria
PMB	Paolo Mazzoldi Collection, Brescia, Italy
ZSIC	Zoological Survey of India, Calcutta, India
ZMHUB	Zoologisches Museum der Humboldt Universität, Berlin, Germany
ZSM	Zoologische Staatssammlung, München, Germany
ZMSP	Zoological Museum, St. Petersburg, Russia

CWBS loc. 10: **Beijing Municipality**; Xiang Shan [= Fragrant Hills], ca. 35 km NW Beijing City; small stream (epirhithron), flowing through forest; 2.VII.1992; leg. Jäch & Ji.

CWBS loc. 14: **Yunnan Province**; Dali Autonomous Prefecture; Weishan County; Weibao Shan, 60 km S Xiaguan City and 12 km S Weishan City; pool in a small, shaded, unpolluted stream, 2500 - 3000 m a.s.l.; 1. - 17.VII.1993; leg. Ji.

CWBS loc. 23: **Hunan Province**; Xiangxi Prefecture; Dayong County; Zhangjiajie Forest National Park, Suoxiyü Nature Reserve, Wulingyuan section (ca. 30 km N Dayong City); ca. 2 km downstream of Shuirosimen; small branch of Jinbian Xi, ca. 1 - 2 m wide, slowly flowing, with riffle areas and pools; 30.X.1993; leg. Schönmann, Schillhammer & Ji.

CWBS loc. 65: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; Erdao Bai He [= 2nd White River], near bridge, 10 - 15 m wide, fast flowing, 650 m a.s.l.; 15.VIII.1994; leg. Jäch, Ji & Wang.

CWBS loc. 79: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; near Hongsi Forest Station, ca. 30 km NE Baihe City; shallow pool with muddy edges; 17.VIII.1994; leg. Jäch, Ji & Wang.

CWBS loc. 89: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; surroundings of Changbai Mountain Research Station, along the road to Changbai Mountain; unshaded roadside pools, ca. 750 m a.s.l.; 19.VIII.1994; leg. Jäch.

CWBS loc. 93: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; near Power Plant of Baihe City; unshaded, springfed pools, cold water, ca. 750 m a.s.l.; 19.VIII.1994; leg. Jäch.

CWBS loc. 95: **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 62 km N Baihe City; Erdao Bai He, including pools on gravel bank, ca. 1750 m a.s.l.; 20.VIII.1994; leg. Jäch, Ji & Wang; (see JACH & Ji 1995: Fig. 21).

CWBS loc. 96: **Liaoning Province**; Jinzhou City Region; Beizhen County; Yiwulü Shan; ca. 5 km NW Beizhen City (Guaning); Toudao Gou He [= 1st Valley River], 2 - 5 m wide, only partly shaded, flowing through Chinese Pine (*Pinus tabulaeformis*) forest, strongly washed out due to heavy spates which occurred 2 weeks before, ca. 200 m a.s.l.; 22.VIII.1994; leg. Jäch, Ji & Wang.

- CWBS loc. 98: **Liaoning Province**; Jinzhou City Region; Beizhen County; Yiwulü Shan, ca. 17 km NW Beizhen City; Sandao Gou He, 10 m wide, granite, including small pools on gravel bank, ca. 150 m a.s.l.; 23.VIII.1994; leg. Jäch, Ji & Wang; (see JÄCH & JI 1995: Fig. 22).
- CWBS loc. 124: **Liaoning Province**; Benxi City Region; Benxi County; ca. 50 km SE Benxi City; 5 km S Xiamatang Village; near Aiguo Village; branch of an unnamed river, 3 - 4 m wide, slowly flowing, limestone, unshaded, gravel, mud, including rock pools, slightly polluted, 20°C, vegetation mainly composed of *Quercus* sp., *Robinia* sp. and *Salix* sp.; 26.IX.1994; leg. Ji & Wang.
- CWBS loc. 137: **Shandong Province**; Tai'an Prefecture; Tai Shan Nature Reserve; near Doumugong Temple; small stream, 3 m wide, slowly flowing, limestone, shaded, with stones and gravel, including rock pools, decaying leaves, unpolluted, surrounding vegetation: *Platyclusus* sp., *Maackia* sp., *Castanea* sp., *Quercus* sp., *Firmiana* sp., ca. 350 m a.s.l.; 19.X.1994; leg. Ji & Wang.
- CWBS loc. 266: **Guizhou Province**; Liupanshui City Region; 10 km W Liupanshui City, close to Yao Shang reservoir dam; deep pool, ca. 2 m<sup>3</sup>, with aquatic vegetation, slightly polluted, ca. 1800 m a.s.l.; 27.VII.1997; leg. Wang.
- CWBS loc. 272: **Guizhou Province**; Bijie Prefecture; Bijie County; 5 km NW Bijie City; river (Dao Tian He), 10 m wide, slightly polluted, fast flowing, banks with aquatic vegetation, ca. 1200 m a.s.l.; 28.VII.1997; leg. Wang.
- CWBS loc. 273: **Guizhou Province**; Bijie Prefecture; Bijie County; close to CWBS loc. 272; small stream, ca. 0.5 m wide, unpolluted, partly shaded, surrounded by secondary forest, ca. 1200 m a.s.l.; 28.VII.1997; leg. Wang.
- CWBS loc. 278: **Guizhou Province**; Zunyi Prefecture; Zunyi City Region; 25 km NE Zunyi City, near Niuxin Shan village; river, 5 m wide, fast flowing, banks with gravel and sand, slightly polluted, ca. 1000 m a.s.l.; 3.VIII.1997; leg. Wang.
- CWBS loc. 279: **Guizhou Province**; Zunyi Prefecture; Zunyi City Region; Tuanxi village; small stream, ca. 0.5 m wide, fast flowing, with gravel, mud and sand, ca. 1000 m a.s.l.; 3.VIII.1997; leg. Wang.
- CWBS loc. 282: **Guizhou Province**; Zunyi Prefecture; Zunyi City Region; 25 km N Zunyi City; small river, 3 m wide, gravel and sand, polluted, surrounded by agricultural fields and trees, ca. 1200 m a.s.l.; 5.VIII.1997; leg. Wang.
- CWBS loc. 330: **Nei Mongol Autonomous Region**; Ganjig Ka County; ca. 20 km SW Ganjig Ka, Daqing Shan National Park; river (tributary of Liu He), 2 - 5 m wide, sand, submerged trees and organic litter along the shores, densely shaded, slowly flowing through a ca. 50 m deep valley, forested with various broadleaf trees, ca. 180 m a.s.l.; 24.VII.1998; leg. Ji, Schönmann, Schönmann & Wang; (see JÄCH & JI 1998: Fig. 24).

### Acknowledgements

I am obliged to Dr. Paolo Mazzoldi (Brescia), Dr. Hans Fery (Berlin), Dr. Manfred A. Jäch (Wien), Jaroslav Štátný (Liberec) and Lorenzo Pizzetti (Mantova), who helped me in various ways. Prof. Dr. Günther Wewalka (Wien) is thanked for the revision of the first version of the manuscript and Dr. David T. Bilton (Plymouth) for the English language revision.

### *Nebrioporus* RÉGIMBART

*Nebrioporus* was established by RÉGIMBART (1906) as a monotypic subgenus of *Hydroporus*, for a peculiar species of Hydroporini from Mount Kilimanjaro (Kenya): *Hydroporus kilimandjarensis* RÉGIMBART. Subsequently GUIGNOT (1946: 15) elevated *Nebrioporus* to generic status which was then still considered monotypic.

Eleven years after RÉGIMBART's description of *Nebrioporus*, ZIMMERMANN (1919: 186) described *Potamodytes* as subgenus of *Deronectes* SHARP, including the species of SHARP's groups 3 and 4 of this latter genus. As this name had already been preoccupied, he subsequently (1921: 87) replaced *Potamodytes* with the name *Potamonectes*. GUIGNOT (1933: 462), assigned generic status to *Potamonectes* and later (1946: 115) selected *Dytiscus elegans* PANZER, 1794, as the type species. He also divided (1941) the genus into four subgenera, based principally on the punctuation of the external surface of the metatibiae. This classification has been adopted by all European authors until recently.

In their work on the reclassification of the *Deronectes*-group of genera, NILSSON & ANGUS (1992) consider that *Potamonectes* (sensu ZIMMERMANN 1921 and GUIGNOT 1933) is not a natural group, and the characters traditionally used for the separation of this genus (1: elytra densely covered with small punctures and without microreticulation or larger punctures between longitudinal series; 2: pronotum without sublateral longitudinal impressions; 3: metacoxal process with interlaminary bridge hidden; 4: ventral surface dull from microreticulation or more or less granular punctuation; 5: dorsal surface vittate or maculate; 6: median lobe of aedeagus symmetrical) are to be considered plesiomorphic within the *Deronectes*-group of genera. Therefore, in order to establish a monophyletic unit, they introduce the following important changes:

1) *Potamonectes* (sensu ZIMMERMANN 1921 and GUIGNOT 1933) is not a monophyletic group. Most of the species have parameres with an apical sclerotised hook ("parameres potamonectien" GUIGNOT 1933: 462), while some species do not have such a hook, but show generalised Hydroporine parameres ("parameres hydroporien" GUIGNOT 1933: 462). The former situation is considered apomorphic and represents the synapomorphy that defines *Potamonectes* as a monophyletic group, while the latter situation is considered plesiomorphic as it occurs in different lineages of Hydroporini. Therefore the species that share this second condition, until then included in *Potamonectes*, are excluded from this genus and inserted in the genus *Stictotarsus* ZIMMERMANN. This means that almost all the Nearctic species of *Potamonectes* are now in *Stictotarsus*, together with *Potamonectes griseostriatus* (DEGEER) and the closely related Palearctic species, plus *Potamonectes otini* (GUIGNOT). In spite of its hooked parameres, *Scarodytes* DES GOZIS (which does not seem to occur in China) remains a separate genus.

2) *Nebrioporus kilimandjarensis* (RÉGIMBART) is considered as congeneric with *Potamonectes* ZIMMERMANN and, as *Nebrioporus* was described before *Potamonectes*, by priority this latter genus becomes a junior synonym of the former.

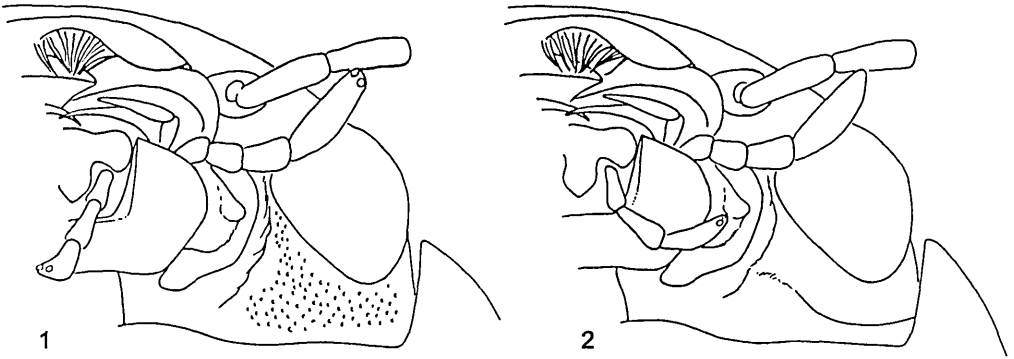
### Key to *Nebrioporus* of China

- 1 No traces of a preapical denticle or angulation is visible on each elytron ..... 2
- At least a preapical angulation (but usually a real denticle) clearly visible on each elytron ..... 4
- 2 Surface of metasternum, metacoxal plates and first two sternites visible, almost smooth between large and deep scattered punctures (Fig. 13); body outline broadly oval (Fig. 10), with longitudinal vittae on elytra fused together at medial and subapical level; male protarsal claws unequal in length: the inner clearly shorter than the outer; parameres subrectangular, with a large membranous ellipse apically (Fig. 52). North India, Nepal, China (Yünnan) ..... *melanogrammus* (♂♂)
- Whole ventral surface rougher, microreticulated, without punctuation, except for few, sparse dots on last sternites; body outline more elongate; longitudinal vittae on elytra not fused together; protarsal claws in males long and stout, subequal in length; parameres triangular with a small apical hook (Fig. 46) ..... 3
- 3 Size larger (5.2 - 6.0 mm); body outline broader; dark coloration on pronotum and elytra more extended (Fig. 3). Mountains of Siberia, Mongolia, China (Xinjiang) ..... *formaster formaster*

- Size smaller (4.1 - 4.8 mm); body outline more elongate; coloration on pronotum and elytra paler (Fig. 4). China (Tibet) ..... *formaster jaechi*
- 4 Underside almost smooth between large and scattered punctures; elytra with reduced but visible subapical denticles ..... *melanogrammus* (♀ ♀)
- Ventral surface covered by a fine, dense and less deeply impressed punctation; each elytron usually with a well developed subapical denticle ..... 5
- 5 Ventral face of head with postocular area microreticulated and with postocular ridge well visible (Fig. 2); pronotum wider at the base than at the middle, with lateral sides more or less straight, converging inward; male foreclaws unequal, with the inner shorter than the outer (Figs. 26 - 27); apex of parameres with a large membranous ellipse; habitus as in Fig. 11. Northern Pakistan, North India, Nepal, China (Tibet, Yunnan) ..... *indicus*
- Ventral face of head with postocular area covered by a dense and deep punctation and with postocular ridge not visible (Fig. 1); base of pronotum as wide as at the middle or slightly wider, sides rounded; male foreclaws subequal in length or with the inner longer and stouter than the outer (Figs. 20 - 24); apex of parameres with a simple hook (Figs. 47 - 51) ..... 6
- 6 Dorsal surface with indistinct and diffuse dark pattern (Fig. 9); Elytra dark, with a pale basal band and several pale spots on discal and subbasal portion; male protarsal claws long, slightly more than the last two protarsal segments together (Fig. 24). China (Shandong) ..... *laticollis*
- Dorsal surface with more distinct dark pattern: Elytra pale with dark longitudinal stripes ..... 7
- 7 Large species (5.2 - 5.8 mm); male anterior claws long and slender, subequal, more than two times the length of 5th protarsal segment (Figs. 16, 22). China (Sichuan) ..... *sichuanensis*
- Smaller species (4.2 - 5.6 mm); male anterior claws no more than twice the length of 5th protarsal segment (Figs. 14, 15, 17, 20, 21, 23) ..... 8
- 8 Inner claw of male protarsus with a rounded tooth-like expansion on its ventral side; seen from above both claws appear straight and slender (Figs. 14, 20); dark coloration on pronotum and elytra usually moderately extended. Turkey, Iran, Central Asia, China ..... *airumlus*
- Inner claw of male protarsus without such an expansion, seen from above it appears sinuated and more robust than the outer; dark coloration on pronotum and elytra usually more extended ..... 9
- 9 Male protarsal claws longer (Figs. 17, 23); almost twice the length of 5th protarsal segment; apical third of paramere more gently narrowed. China (Guizhou, Sichuan, Hunan) ..... *brownei*
- Male protarsal claws shorter (Figs. 15, 21); about one and a half times the length of 5th protarsal segment; apical third of parameres abruptly narrowed (Fig. 48). Far Eastern Siberia (Primorye Territory), Japan, Taiwan, north-eastern China ..... *hostilis*

### Taxonomy

The genus *Nebrioporus*, as defined by NILSSON & ANGUS (1992), has been split by the same authors into two subgenera: *Nebrioporus* s.str. and *Zimmermannius* GUIGNOT, 1941, by the presence or absence of a subapical spine on each elytron and by the punctation patterns of the external side of metatibiae. In the course of a revisional work on this genus, I have seen almost all the described species of *Nebrioporus*, and it is clear to me that these characters are not to be considered sufficiently constant as to define natural groups. From this point of view, therefore, these two subgenera are paraphyletic, with no reason to be considered as valid. It is in fact difficult to group the different species of this genus, but a good solution seems to be the definition of species-groups (as already attempted by such authors as GUIGNOT 1941; NILSSON & ANGUS 1992; FERY, FRESNEDA & MILLAN 1996) based on external features and on male sexual characters. This way of classification is, in my opinion, clearer for grouping the species of *Nebrioporus* into natural categories. A detailed work on this argument will be published in the future. Eight species belonging to three species-groups of *Nebrioporus* are recognized in China.



Figs. 1 - 2: Ventro-lateral view of head of 1) *Nebrioporus airunlus*, 2) *N. indicus*.

### *Nebrioporus ceresyi* - group

This group has been recently defined and revised by FERY, FRESNEDA & MILLAN (1996), and seems to be the most plesiotypic lineage of *Nebrioporus* as it is characterised by a number of primitive features, such as the absence of subapical spines on the elytra, unmodified male protarsal claws and the simple shape of the male genitalia [with the exception, for the last two characters, of *N. formaster*]. It is composed of nine species, most of them Mediterranean. Three species are known from Asia: *N. ceresyi* (AUBÉ), *N. steppensis* (MOTSCHULSKY) and *N. formaster* (ZAITZEV).

### *Nebrioporus formaster formaster* (ZAITZEV)

*Hydroporus* (*Deronectes*) *formaster* ZAITZEV, 1908: 259 (orig. descr.).

*Nebrioporus formaster* - NILSSON 1995: 55; FERY, FRESNEDA & MILLAN 1996: 314.

This taxon has been recently redescribed by FERY, FRESNEDA & MILLAN (1996), to which the reader is referred for the complete bibliography.

TYPE LOCALITY: Irkutsk, Siberia, Russia.

TYPE MATERIAL: Lectotype (ZMSP) designated by FERY, FRESNEDA & MILLAN (1996).

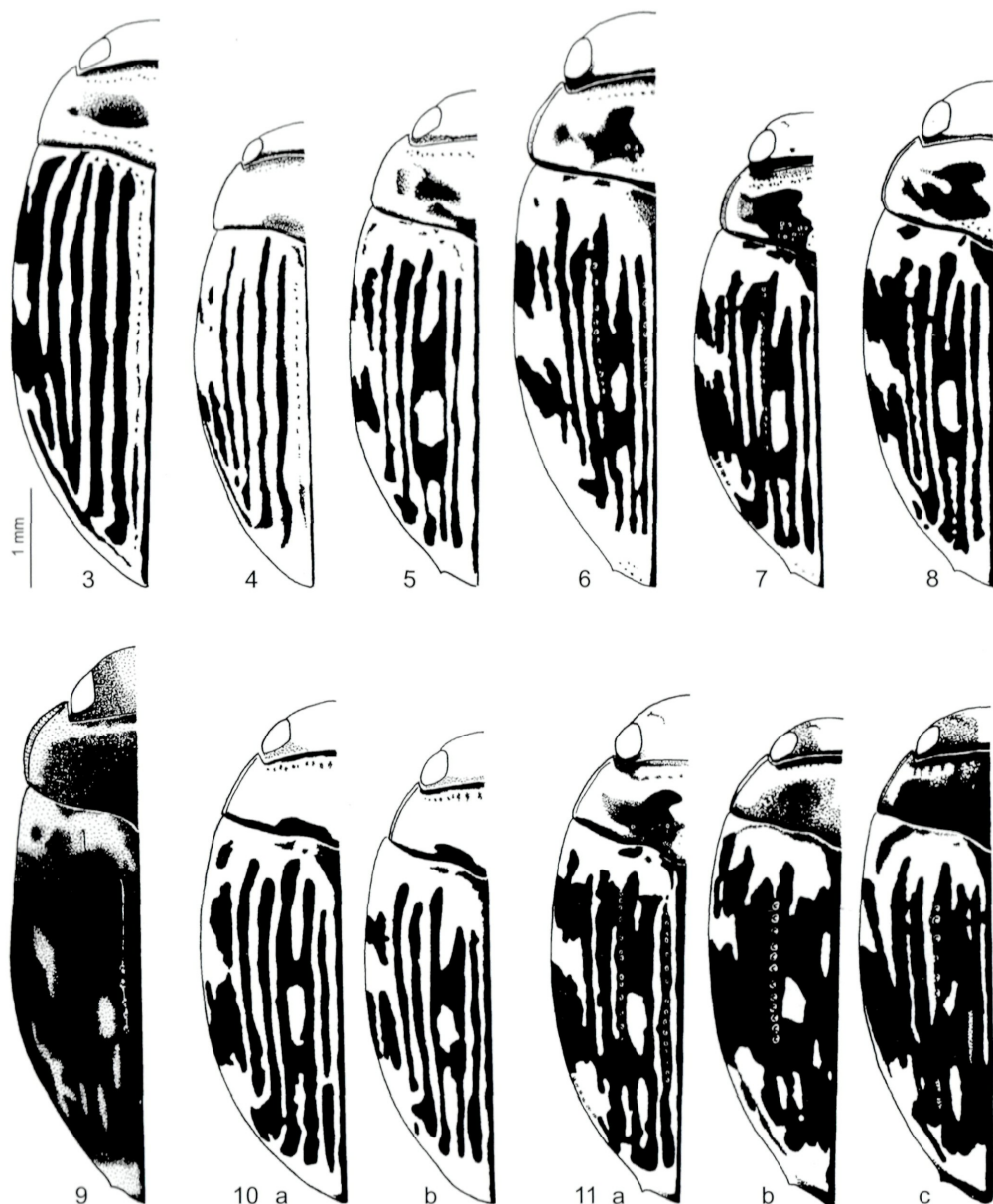
#### MATERIAL EXAMINED:

RUSSIA: Altay Mts., 2200 m a.s.l., Kuskunnur Lake, 18.VII.1995, leg. J. Šťastný / *Nebrioporus formaster*, det. J. Šťastný (5 exs. in PMB and MTB).

DIAGNOSIS: One of the largest *Nebrioporus* of the eastern Palearctic region. Habitus (Fig. 3). 5.2 - 6.0 mm. Oblong-oval, convex. Angle between pronotum and elytra obsolete. Reddish-brown, with dark striae on elytra and two dark spots, more or less developed, on pronotum.

Head reddish-brown, sometimes with a very thin, dark postocular band. Microreticulated, with few, scattered punctures. Antennae reddish-brown, widely darkened from the 4th segment. Mouthparts reddish-brown.

Pronotum quite narrow. Maximum width near the base. Lateral sides quite straight, with a very fine border. Posterior angles acute. Dorsal surface covered by a reticulation formed by rounded cells, together with fine, scattered dots, concentrated mostly on anterior and posterior borders. Coloration reddish-brown, with a very fine dark band on the posterior border and two discal spots, more or less developed.



Figs. 3 - 11: Habitus of 3) *Nebrioporus formaster formaster*, 4) *N. formaster jaechi* ssp.n., 5) *N. airumilus*, 6) *N. sichuanensis*, 7) *N. hostilis*, 8) *N. brownei*, 9) *N. laticollis*, 10) *N. melanogrammus*: a) Yünnan, b) Nepal, 11) *N. indicus*: a) specimen from North India, b) holotype of *Potamonectes manii*, c) specimen from Nepal.

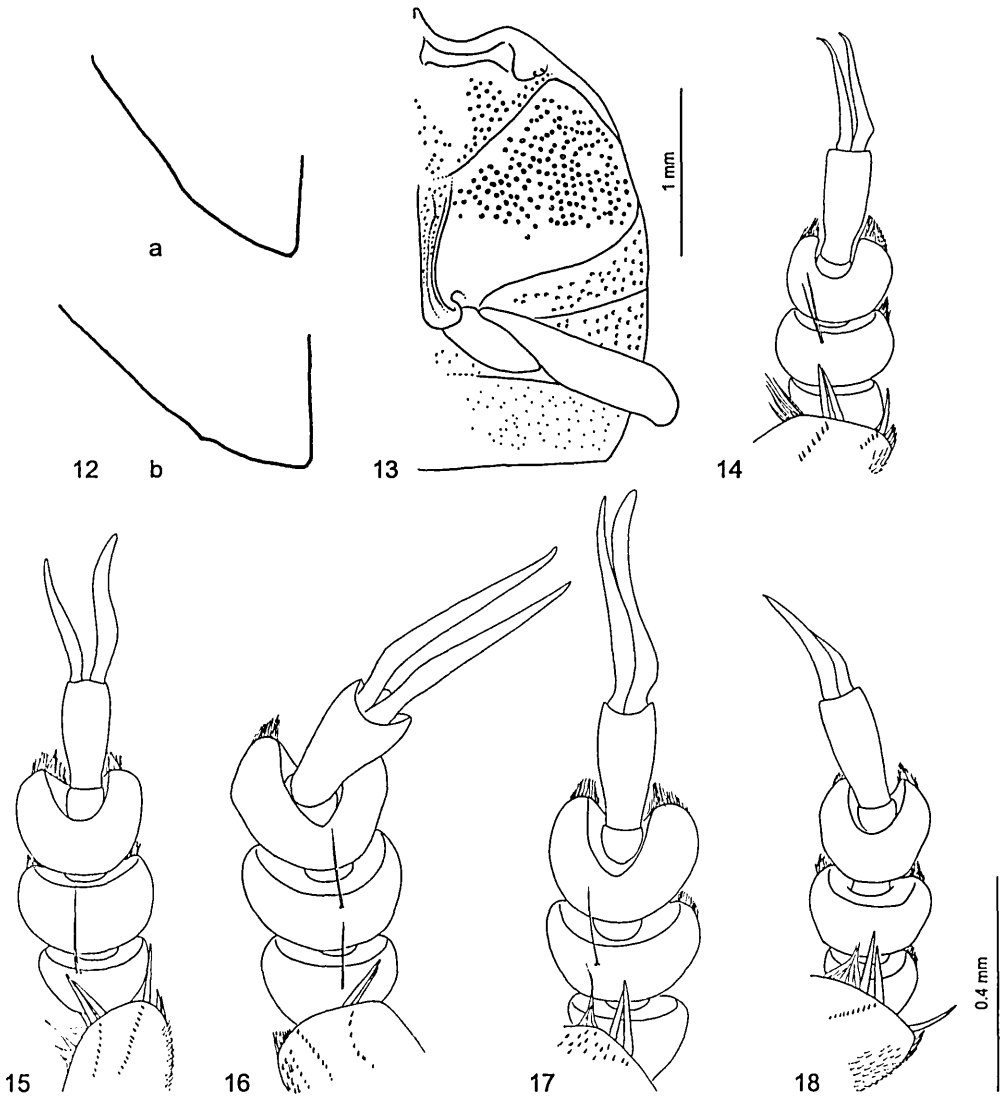


Fig. 12: *Nebrioporus melanogrammus*, clytral apex of a) male, b) female.

Fig. 13: *Nebrioporus melanogrammus*, surface of metasternum, metacoxal plate and first three visible sternites.

Figs. 14 - 18: Male anterior tarsi (dorsal view) of 14) *Nebrioporus airunlus* (left), 15) *N. hostilis* (left), 16) *N. sichuanensis* (right), 17) *N. brownei* (left), 18) *N. indicus* (left).

Elytra oblong-oval. Maximum width at about the middle of their length. Sides slightly rounded. Surface covered by a fine and impressed punctation. Subapical denticle absent. Coloration reddish-yellow, with five longitudinal stripes, as wide as or wider than interstriae, plus two lateral maculae and a lateral stripe along the sides of the distal half.



Underside black, epipleura reddish-brown. Surface covered only by a dense and impressed microreticulation with rounded elements; no traces of punctation are visible except for few sparse dots on the apex of the last sternites.

Legs reddish-brown, with darkened tarsi.

♂: protarsi widened. Anterior claws as in Fig. 19, strong and straight, subequal. Median lobe of aedeagus and parameres as in Figs. 28, 37, 46.

♀: similar to male.

**DISTRIBUTION** (Fig. 56): Mountains of Siberia and Mongolia. I have seen no Chinese specimens. In China it is recorded from Xinjiang, where it may be confined to the mountains. It is also probable, however, that these records could be attributed to the following subspecies.

### *Nebriporus formaster jaechi* ssp.n.

**TYPE LOCALITY:** Couna Lake, 4400 m, 25 km W Amdo, Tibet, China.

**TYPE MATERIAL:** **Holotype** ♂ (NMW): "CHINA: Tibet 14.VIII. 25 km W Amdo, 4400 m COUNA Lake - brook leg. X. Guo 1998". **Paratypes:** 11 exs., same data; 9 exs. in NMW and 2 in MTB; "Tibet: Tingri, 15000 ft. 6.VII - 1924. Maj. R.W.G. Hingston. / Everest Exped. Brit. Mus. 1924 -386.": 6 exs. (1 ♂, 5 ♀) in BMNHL; "Tibet: Rongahar Valley, 15000ft. 1.vii -1924. Maj. R.W.G. Hingston / Everest Exped. Brit. Mus. 1924 -386": 1 ♀ in BMNHL; "Tibet: Shekhar. 15000ft. 1.vii -1924. Maj. R.W.G. Hingston / Everest Exped. Brit. Mus.": 1 ♀ in BMNHL.

**DIAGNOSIS:** Habitus (Fig. 4). 4.1 - 4.8 mm. It can be easily distinguished from *N. f. formaster* principally for its smaller size, dark striae on elytra thinner than interstriae and paler color of dorsal surface, legs and antennae. Male anterior claws and genitals as in *N. formaster formaster*.

**DISTRIBUTION** (Fig. 56): China (Tibet).

### *Nebriporus depressus* - group

This is the largest group of species within the genus and it is characterised by the presence of a subapical spine on each elytron and by (in almost all the species) rounded sides of pronotum and modified male protarsal claws (subequal or the inner longer or more robust than the outer). The distribution of these species covers North America, Europe, Palearctic Asia and the Arabian Peninsula. Most of the species are very similar externally, and it is extremely difficult to identify the species without male characters, above all the protarsal claws.

### *Nebriporus airumilus* (KOLENATI)

*Hydroporus airumilus* KOLENATI, 1845: 85 (orig. descr.).

*Hydroporus (Deronectes) airumilus* - RÉGIMBART 1899: 196; PESCHET 1914: 226.

*Deronectes (Potamodytes) airumilus* - ZIMMERMANN 1919: 189; 1920: 122; FENG 1932: 25; 1933: 104; 1936: 8; WU 1937: 210.

*Deronectes (Potamonectes) airumilus* - ZIMMERMANN 1933: 166.

*Potamonectes airumilus* - ZAITZEV 1953: 210; LAITER 1989: 242.

*Potamonectes* (s.str.) *airumilus* - GUEORGUIEV 1981: 409; ZENG 1989: 3.

*Nebriporus* (s.str.) *airumilus* - NILSSON & ANGUS 1992: 287.

*Nebriporus airumilus* - HENDRICH & MAZZOLDI 1995: 4; NILSSON 1995: 55.

*Deronectes amurensis* SHARP, 1882: 427 **syn.n.**

*Deronectes amurensis* - VAN DER BRANDEN 1885: 45.

*Hydroporus (Deronectes) amurensis* - RÉGIMBART 1899: 194.

*Deronectes (Potamodytes) amurensis* - ZIMMERMANN 1919: 189; 1920: 122; FENG 1932: 25; 1933: 104; 1936: 8; GSCHWENDINER 1933; WU 1937: 210.

- Deronectes (Potamonectes) amurensis* - ZIMMERMANN 1933: 166 (nota).  
*Potamonectes amurensis* - BALFOUR-BROWNE 1946: 439; ZENG 1989: 3.  
*Nebrioporus amurensis* - NILSSON 1995: 55.  
*Hydroporus (Deronectes) kashmirensis* RÉGIMBART, 1899: 196.  
*Deronectes (Potamodytes) kashmirensis* - ZIMMERMANN 1919: 189; 1920: 127.  
*Deronectes (Potamonectes) kashmirensis* - ZIMMERMANN 1933: 166 (syn. of *airumilus* KOLENATI).  
*Potamonectes kashmirensis* - VAZIRANI 1970: 123.  
*Potamonectes* (s.str.) *kashmirensis* - ANGELINI 1978: 385.  
*Nebrioporus kashmirensis* - NILSSON & ANGUS 1992: 288.  
*Deronectes laeviventris* SHARP, 1882: 428 (nec REICHE, 1855).

For synonyms see also BALFOUR-BROWNE (1946: 489).

TYPE LOCALITIES: *H. airumilus*: "Caucasus"; *D. amurensis*: Siberia, Irkutsk; *H. kashmirensis*: Kashmir, Goorais Valley.

TYPE MATERIAL: *H. airumilus*: type not found in ZMSP (A. Kirejtshuk, personal communication); *D. amurensis*: Lectotype ♂ (BMNHL), here designated "Siberia Irkutsk / Sharp Coll. 195-313 / type 242 / *Deronectes amurensis* / Siberia Or. n.sp. / Irkutsk"; *H. kashmirensis*: ? lectotype (MNHN) designated by WEWALKA (1974) "Lectotype. *Potamonectes kashmirensis* Rég. = *airumilus* Kol. det. Wewalka 74".

#### CHINESE MATERIAL EXAMINED:

YÜNNAN: CWBS loc. 14 (13 exs.); Baoshan, 5.-8.VI.1993, leg. E. Jendek & O. Šauša (8 exs. in NMW); 100 km W Kunming, Diaolin, 22.V.-2.VI.1993, leg. E. Jendek & O. Šauša (41 exs. in NMW); 100 km W Baoshan, Gaoligong Shan, 14.-21.VI.1993, leg. E. Jendek & O. Šauša (1 exs. in NMW); Lijiang, 1800 m a.s.l., 26.53N 100.18E, 23.VI.-21.7.1992, leg. Bečvář (17 exs. in MTB, 2 exs. in PMB). GUIZHOU: CWBS loc. 266 (5 exs.); CWBS loc. 272 (13 exs.); SHANDONG: CWBS loc. 137 (4 exs.); SHAANXI: Qin Ling, 110.05E, 34.27-32N, Hua Shan, 118 km E Xian, way to first top, 600-1600 m, 17.-21.VIII.1995, leg. A. Pütz (1 ex. in NMW); Yenan, 26.VII.1996, leg. P.M. Hammond (2 exs. in BMNHL). HENAN: Lin Hsien, 12.VIII.1966, leg. P.M. Hammond (3 exs. in BMNHL). LIAONING: CWBS loc. 96 (1 ex.); CWBS loc. 98 (1 ex.); CWBS loc. 124 (6 exs.). NEI MONGOL: CWBS 330 (1 ex.); JILIN: CWBS loc. 65 (4 exs.); CWBS loc. 79 (1 ex.); CWBS 89 (1 ex.); CWBS loc. 93 (3 exs.); CWBS loc. 95 (5 ex.); BEIJING: CWBS loc. 10 (4 exs. in NMW and 1 ex. in GWW).

Note: Several CWBS specimens from Liaoning and Jilin had been identified erroneously as *Nebrioporus hostilis* by Nilsson in 1995.

DIAGNOSIS: A variable and widespread species. Habitus (Fig. 5). 4.2 - 5.2 mm. Oval, oblong-oval, a little convex. Angle between pronotum and elytra visible or obsolete. Testaceous, with dark striae on elytra and two dark spots, more or less developed, on pronotum.

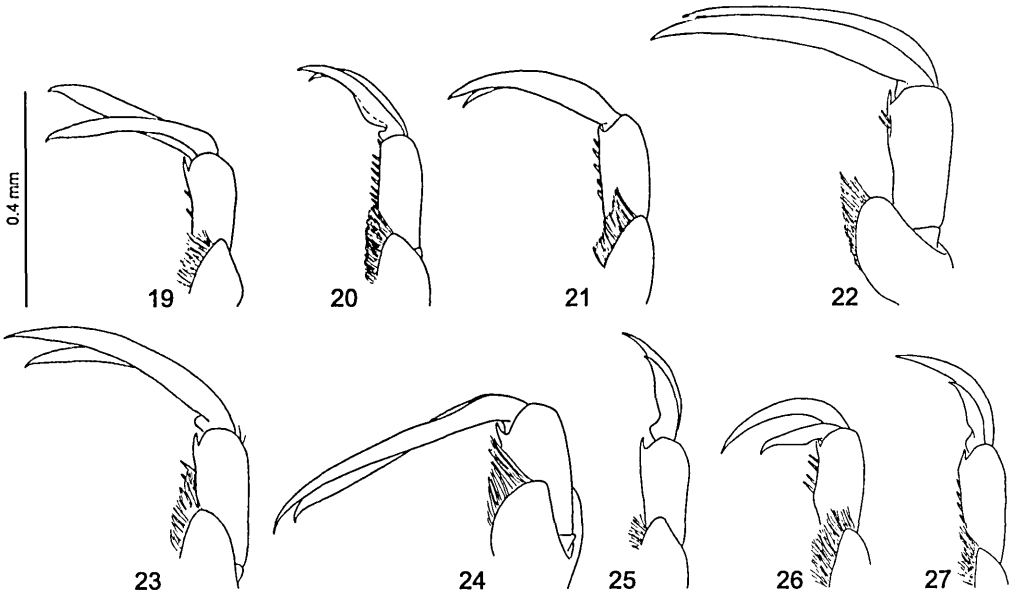
Head yellow, sometimes with a very thin, dark, postocular band. Punctuation deep, with small, close punctures together with scattered large ones. Antennae completely testaceous, often with the last 6 - 11 articles slightly darkened apically. Mouthparts reddish or reddish-yellow.

Pronotum quite wide, with maximum width near or just behind the middle of its length. Lateral sides from rounded to slightly rounded, with a fine or well visible border. Posterior angles rounded. Dorsal surface covered by a dense punctuation, together with larger dots, scattered and strongly impressed, concentrated mostly on anterior and posterior borders. Coloration from pale yellow to almost reddish, with a very fine dark band on the posterior border and two discal spots, more or less developed.

Elytra oval. Maximum width at about the middle of the length. Sides well or slightly rounded. Surface covered by a fine and impressed punctuation. Subapical denticle well or scarcely visible. Coloration pale-yellow. Dark markings from poorly to well developed, composed of five longitudinal lines and two or three lateral maculae.

Underside brownish or pitch-black, epipleura testaceous. Punctuation deep and impressed.

Legs yellow, with slightly darkened tarsi.



Figs. 19 - 27: Right anterior claws of male of 19) *Nebrioporus formaster jaechi* ssp.n., 20) *N. airunlus*, 21) *N. hostilis*, 22) *N. sichuanensis*, 23) *N. brownei*, 24) *N. laticollis*, 25) *N. melanogrammus*, 26) *N. indicus*, specimen form Nepal, 27) *N. indicus*, specimen form North India.

♂: Protarsi slightly widened. Anterior claws (Figs. 14, 20) straight in dorsal view. In lateral view the inner with a ventral tooth-like expansion. Median lobe of aedeagus and parameres (Figs. 29, 38, 47).

♀: Usually duller. Lateral sides of pronotum usually more regularly rounded.

**DISTRIBUTION** (Fig. 55): Eastern Europe, Turkey, Caucasus, Iran, Turkmenistan, Uzbekistan, Kazakhstan, Tajikistan, Kyrgystan, Afghanistan, Pakistan (Baltistan), India (Kashmir), Eastern Siberia. In China it is so far known with certainty from: Xinjiang, Nei Mongol, Heilongjiang, Liaoning, Gansu, Shaanxi, Shanxi, Beijing, Shandong, Hebei, Henan, Jiangsu, Sichuan, Guizhou, Yunnan. Nevertheless it may occur in the whole Chinese territory except, perhaps, for the southeast.

### *Nebrioporus hostilis* (SHARP)

*Deronectes hostilis* SHARP, 1884: 443 (orig. descr.).

*Hydroporus* (*Deronectes*) *hostilis* - RÉGIMBART 1899: 197.

*Deronectes* (*Potamodytes*) *amurensis* SHARP, 1884 - ZIMMERMANN 1919: 189; 1920: 128; TAKIZAWA 1933: 176.

*Deronectes* (*Potamonectes*) *hostilis* (SHARP, 1884) - ZIMMERMANN 1933: 169 (nota).

*Potamonectes hostilis* - ZAITZEV 1953: 213.

*Nebrioporus* (s.str.) *hostilis* - NILSSON & ANGUS 1992: 287.

*Nebrioporus hostilis* - HENDRICH & MAZZOLDI 1995: 2; NILSSON, WEWALKA, WANG & SATÔ 1995: 364; NILSSON 1995: 55.

*Potamonectes depressus* (FABRICIUS, 1775) - LAFER 1989: 242 (misident.).

**TYPE LOCALITY:** *D. hostilis*: South Kiushu, Japan.

**TYPE MATERIAL:** *D. hostilis*: Holotype ♂ (BMNH) with red, circular label "Type", "Japan G. Lewis 1910-320 / 1874 / *Deronectes hostilis* type D.S. Japan, Lewis".

**ADDITIONAL MATERIAL EXAMINED:**

C H I N A: TAIWAN: Taichung, Wulin, 14.-15.XII.1995, leg. L.-J. Wang (1 ex. in MTB).

J A P A N: Kanazawa, Sagamihara City, Kanagawa, 28.III.1987, leg. T. Abe (6 exs. in PMB and MTB).

N - K O R E A: Kaesong City, Bagyon Falls, Singled, 30.VII.1982, leg. Forrò & Ronkay, *Potamonectes hostilis* Fery det. (2 exs. in NHMB).

**DIAGNOSIS:** Habitus (Fig. 7). 4.8 - 5.4 mm. Oval, a little convex. Angle between pronotum and elytra very obtuse but visible. Testaceous, with black striae on elytra and two dark spots on pronotum.

Head yellow with a thin, dark, postocular band. Punctuation deep, with small, close punctures together with scattered large ones. Antennae reddish-yellow, with the last 6 - 11 articles dark apically. Mouthparts reddish. Last article of maxillary palpi darkened apically.

Pronotum with maximum width near the middle of its length. Lateral sides rounded, bordered. Posterior angles rounded. Dorsal surface covered by a dense punctuation, together with larger dots, scattered and strongly impressed, concentrated mostly on anterior and posterior borders. Coloration yellow, with a dark band on the anterior and posterior borders and two wide, discal spots.

Elytra oval. Maximum width at about the middle of the length. Sides regularly rounded. Surface covered by a fine and impressed punctuation. Discal longitudinal row of dots well visible, the other two less easily visible. Subapical denticle well visible. Coloration yellow, with five longitudinal dark lines and 2 - 3 lateral maculae.

Underside brownish-black, epipleura testaceous. Punctuation deep and impressed.

Legs yellow, with darkened tarsi.

♂: Protarsi widened. Anterior claws (Figs. 15, 21) quite long, sickle-shaped: the inner slightly longer than the outer and, viewed from above, sinuated. Median lobe of aedeagus and parameres (Figs. 30, 39, 48).

♀: dull, at least on pronotum. Lateral sides of pronotum usually more regularly rounded.

**DISTRIBUTION** (Fig. 55): Eastern Siberia (Primorye Territory), China (Liaoning, Taiwan), Korea, Japan. I have not seen any specimens from continental China.

**DISCUSSION:** The diagnosis between *N. airumilus* and *N. hostilis* is not always easy. The two specimens that I have seen from Korea, for example, do share intermediate characters of *N. hostilis* and *N. airumilus*, as the male anterior claws are not so straight in lateral view as in typical *N. hostilis*, but they are more sinuate, as in *N. airumilus*. Habitus, penis and parameres are however typically those of *N. hostilis*. Continental populations of *N. hostilis* may be intermediate between *N. airumilus* and insular *N. hostilis* and this could mean that the latter might be a subspecies of the former. Anyway I have seen very few specimens of *N. hostilis* in general, and in spite of my suppositions this is not the place for a discussion of such a problem, which would require much more material to be available.

***Nebriporus brownei* (GUIGNOT)**

*Potamonectes brownei* GUIGNOT, 1949: 44 (orig. descr.).

*Nebriporus* (s.str.) *brownei* - NILSSON & ANGUS 1992: 287.

*Nebriporus brownei* - HENDRICH & MAZZOLDI 1995: 4; NILSSON 1995: 55.

**TYPE LOCALITY:** Guizhou, China.

**TYPE MATERIAL:** Holotype ♂ (MNHP) "China, Gan Chouen [= Guizhou]. Paratypes "Kouy Tchcou [= Guizhou], P. Cavalerie 1910": 3 ♂ in MNHP and 1 ♂ in BMNHL.

#### ADDITIONAL MATERIAL EXAMINED:

CHINA: HUNAN: CWBS loc. 23 (31 exs.); SICHUAN: Kuanhsien, Chin Loo Po, 26.IV.1940 (1 ex. in GWW);  
GUIZHOU: CWBS loc. 272 (31 exs.); CWBS loc. 273 (1 ex.); CWBS loc. 282 (3 exs.); CWBS 278 (13 exs.);  
CWBS 279 (2 exs.).

**DIAGNOSIS:** Habitus (Fig. 8). 5.1 - 5.3 mm. Oval, a little convex. Angle between pronotum and elytra poorly visible. Testaceous, with extended dark pattern on pronotum and elytra.

Head yellowish with a thin, dark, postocular band. Punctuation moderately deep, close, together with larger, scattered dots. Antennae yellow, with the last 6 - 11 articles darkened apically. Mouthparts reddish-brown. Last article of maxillary palpi darkened apically.

Pronotum, with maximum width just behind the middle of its length. Lateral sides rounded, bordered. Posterior angles rounded. Dorsal surface covered by a dense punctuation, together with larger dots, scattered and strongly impressed, concentrated mostly on anterior and posterior borders. Coloration yellowish, with a thin, dark band on the posterior border and two large discal spots, both sometimes fragmented into two parts.

Elytra oval. Maximum width at about the middle of the length. Sides regularly rounded. Surface covered by a fine and impressed punctuation. Longitudinal series of dots usually visible, specially the sutural and discal ones. Subapical denticle well visible. Coloration yellow, with five longitudinal dark lines, plus 2 - 3 lateral maculae.

Underside reddish-brown, darker on sides of metacoxae and on metasternal expansions. Punctuation deep and impressed.

Legs uniformly reddish-yellow.

♂: Protarsi widened. Anterior claws (Figs. 17, 23) long, sabre-shaped, double the length of the 5th protarsal segment. The inner slightly longer than the outer and, viewed from above, visibly sinuated. Median lobe of aedeagus and parameres (Figs. 31, 40, 49).

♀: duller. Lateral sides of pronotum usually more regularly rounded.

**DISTRIBUTION** (Fig. 55): China (Guizhou, Hunan and Sichuan). First record for Hunan.

#### *Nebrioporus laticollis* (ZIMMERMANN)

*Deronectes* (*Potamonectes*) *laticollis* ZIMMERMANN, 1933: 163 (orig. descr.).

*Potamonectes laticollis* - ZAITZEV 1953: 215; LAFER 1989: 242.

*Nebrioporus* (s.str.) *laticollis* - NILSSON & ANGUS 1992: 287.

*Nebrioporus laticollis* - HENDRICH & MAZZOLDI 1995: 2; NILSSON 1995: 56.

**TYPE LOCALITY:** Shandong, China.

**TYPE MATERIAL:** Lectotype ♂ (ZSM) designated by HENDRICH & MAZZOLDI (1995).

**DIAGNOSIS:** Habitus (Fig. 9). 5.6 mm. Oblong-oval, almost flat. Angle between pronotum and elytra well pronounced. Reddish-brown, with paler markings on pronotum and elytra.

Head reddish with an area of darker shading round the eyes. Surface microreticulated, with some scattered dots. Antennae reddish, with the last 6 - 11 articles slightly darkened apically. Mouthparts reddish-brown. Last article of maxillary palpi slightly darkened apically.

Pronotum wide, with maximum width just behind the middle of its length. Lateral sides noticeably rounded and bordered. Posterior angles rounded. Dorsal surface covered by a dense and deep punctuation, together with larger dots, concentrated mostly on anterior and posterior borders. Coloration mainly dark, reddish-brown, paler on lateral sides.

Elytra oblong-oval. Maximum width just before the middle of the length. Proximal half with sides almost straight. Surface covered by a fine and impressed punctuation. All three longitudinal

series of dots well visible, resembling superficial longitudinal grooves. Subapical denticle visible. Coloration reddish-brown, with a pale pattern composed of a basal band, two discal spots and some preapical markings.

Underside pitch-black, covered by a deep and impressed punctation.

Legs reddish-brown.

♂: Protarsi widened. Anterior claws (Figs. 24) very long, both twice the length of the 5th protarsal segment. The inner claw is straight and thin, the outer a little shorter and robust. Median lobe of aedeagus and parameres (Figs. 33, 42, 51).

♀: Unknown to me.

DISTRIBUTION (Fig. 55): So far known only from the type locality (Shandong).

### *Nebrioporus sichuanensis* HENDRICH & MAZZOLDI

*Nebrioporus sichuanensis* HENDRICH & MAZZOLDI, 1995: 4 (orig. descr.).

*Nebrioporus sichuanensis* - NILSSON 1995: 56.

TYPE LOCALITY: 30 km W Nanping, Jiuzhaigou, 3100 m a.s.l., Sichuan, China.

TYPE MATERIAL: Holotype ♂ (ZMHUB). Paratypes (17 exs.), same locality, in LHB, PMB, HFB/NMW, GWW.

DIAGNOSIS: Together with *N. formaster formaster* and *N. laticollis* this is the largest species of *Nebrioporus* in Chinese territory. Habitus (Fig. 6). 5.2 - 5.8 mm. Long oval, a little convex. Angle between pronotum and elytra quite pronounced. Reddish or reddish-yellow, with extended dark pattern on pronotum and elytra.

Head reddish with a very thin, dark, postocular band. Punctation moderately deep, close, together with few, slightly larger, scattered dots. Antennae reddish, with the last 6 - 11 articles darkened apically. Mouthparts reddish-brown. Last article of maxillary palpi slightly darkened apically.

Pronotum wide, with maximum width near or just behind the middle of its length. Lateral sides noticeably rounded, bordered. Posterior angles more or less rounded. Dorsal surface covered by a dense punctation, together with larger dots, scattered and strongly impressed, concentrated mostly on anterior and posterior borders. Coloration reddish, with a thin, dark band on anterior and posterior borders and two large discal spots, both sometimes fragmented into two parts.

Elytra elongated oval. Maximum width just before the middle of the length. Sides regularly rounded. Surface covered by a fine and impressed punctation. Longitudinal series of dots usually visible, specially the sutural and discal ones. Subapical denticle visible. Coloration reddish-yellow, with five longitudinal dark lines, plus 2 - 3 lateral maculae.

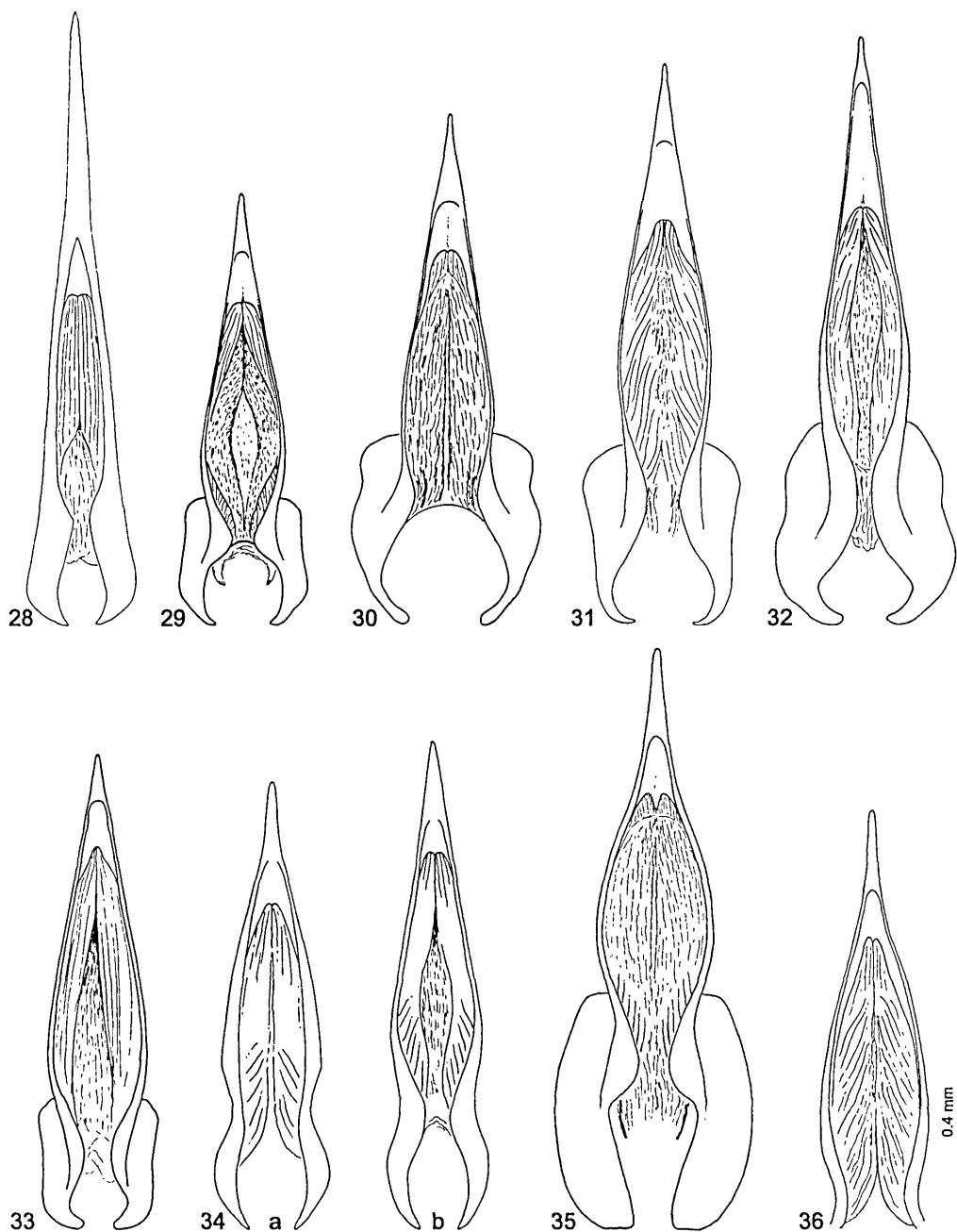
Underside black, covered by a deep and impressed punctation.

Legs reddish-yellow.

♂: Protarsi widened. Anterior claws (Figs. 16, 22) subequal in length, straight in dorsal view, sabre-shaped and very long, double the length of the 5th protarsal segment. The inner slightly longer than the outer and, viewed from above, visibly sinuated. Median lobe of aedeagus and parameres (Figs. 32, 41, 50).

♀: duller. Lateral sides of pronotum usually more regularly rounded.

DISTRIBUTION (Fig. 55): So far known only from the type locality (north Sichuan).



Figs. 28 - 36: Median lobe of aedeagus (dorsal view) of 28) *Nebrioporus formaster jaechi* ssp.n., 29) *N. airunlus*, 30) *N. hostilis*, 31) *N. browni*, 32) *N. sichuanensis*, 33) *N. laticollis*, 34) *N. melanogrammus*, a) specimen from Nepal, b) specimen from Yunnan, 35) *N. indicus*, specimen from North India, 36) *N. indicus*, specimen from Nepal.

*Nebrioporus laeviventris* - group

Large and well defined species-group, distinguished by the wide, ellipse-shaped apex of the parameres and male protarsal claws that are (with the exception of two species) unequal, with the inner shorter than the outer. Other features of this group are the presence of a subapical spine on each elytron, often less developed in males, and the unpunctated postocular area, with postocular ridge visible. Fifteen described species belong to this group, mostly from the eastern Mediterranean, Asia Minor, Sinai and the Arabian Peninsula. Two species are known from China.

*Nebrioporus melanogrammus* (RÉGIMBART)

*Hydroporus* (*Deronectes*) *melanogrammus* RÉGIMBART, 1899: 197 (orig. descr.).

*Deronectes* (*Potamodytes*) *melanogrammus* - ZIMMERMANN 1919: 189; 1920: 128.

*Potamonectes* (s.str.) *melanogrammus* - GUIGNOT 1959: 11 (syn. of *indicus* SHARP); VAZIRANI 1970: 126 (idem).

*Potamonectes satie* VAZIRANI, 1980: 28 **syn.n.**

*Nebrioporus* (s.str.) *satie* - NILSSON & ANGUS 1992: 288.

TYPE LOCALITIES: *H. melanogrammus*: Moradabad, Raghore, India; *P. satie*: Sirmour, Himachal Pradesh, India.

TYPE MATERIAL: *H. melanogrammus*: 2 syntypes (MNHN): 1 ♂ labelled "Moradabad" and 1 ♀ "Raghore"; *P. satie*: Holotype ♂ (ZSIC) "India, Himachal Pradesh, Sirmour, 29.VII.1972, M. Chandra, Reg. No 8443/H<sub>1</sub>A", 1 paratype "Reg. No 8444/H<sub>1</sub>A" same locality as holotype.

## ADDITIONAL MATERIAL EXAMINED:

INDIA: UTTAR PRADESH: Hardwar, Ganges / *Potamonectes melanogrammus*, det. G. Wewalka, 1984 (3 exs. in BMNH and 1 ex. in GWW).

NEPAL: Chitwan, Narayanghat, 170 m a.s.l., Narayani, 12.XI.1993, leg. Moog & al. (4 exs. in NMW); 20 km NW Pokhara, Lumle, 1600 m a.s.l., 2.V.1984, leg. G. Wewalka [N2] (2 exs. in GWW); Dahrán, 13.II.1987, leg. M.A. Jäch, [N12] (4 exs. in NMW).

CHINA: YÜNNAN: 100 km W Baoshan, Gaoligong Shan, 14.-21.VI.1993, leg. E. Jendek & O. Šauša (1 ex. in NMW).

DIAGNOSIS: Habitus (Fig. 10). 4.8 - 5.3 mm. Widely oval, flat, shining dorsally and ventrally. Angle between pronotum and elytra obsolete. Testaceous, with poorly developed dark markings on head and pronotum, elytra vittate.

Head yellow with a very thin, dark, postocular band. Punctuation moderately deep and close together with few, larger, scattered dots. Antennae completely testaceous. Mouthparts reddish-yellow. Maxillary palpi entirely testaceous.

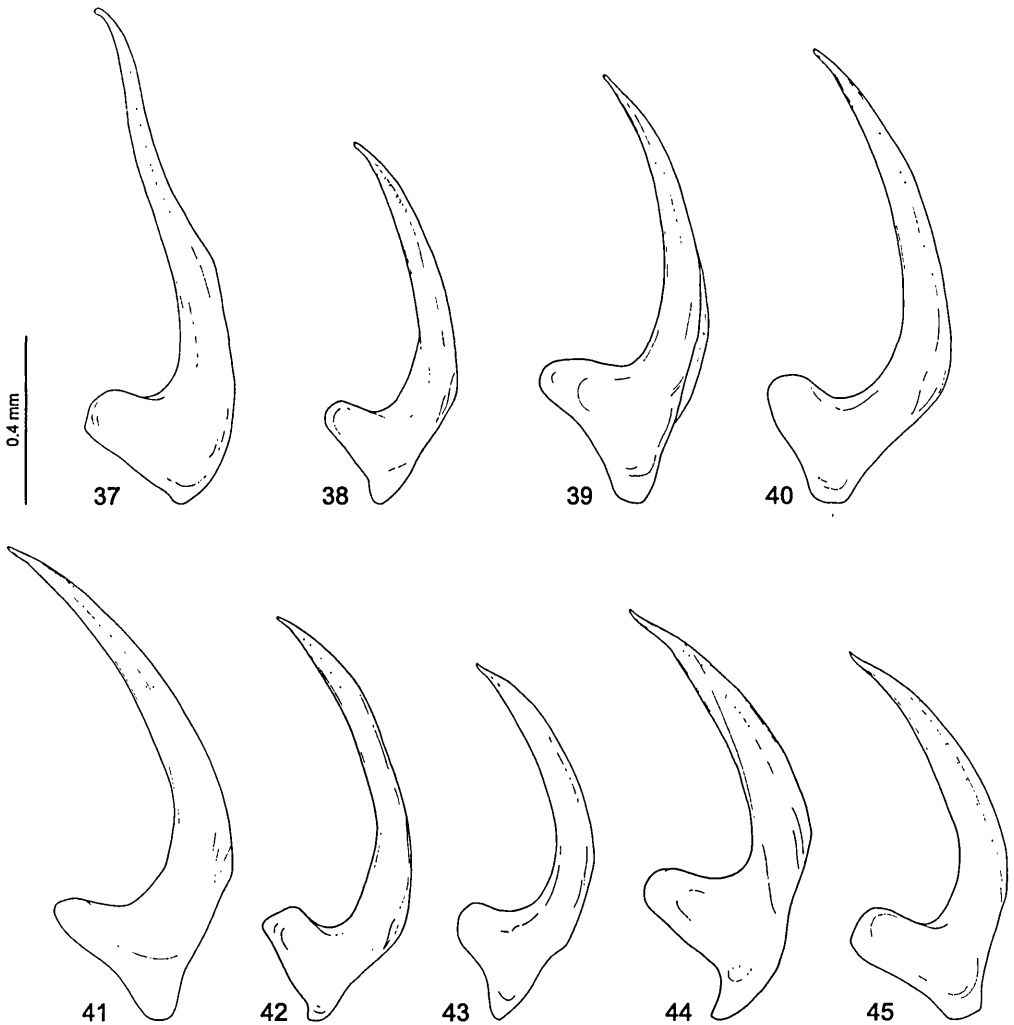
Pronotum narrow, maximum width at its base. Lateral sides more or less straight, bordered. Posterior angles acute. Dorsal surface covered by a fine punctuation, not very close on the disc, together with few larger dots, on anterior and posterior borders. Coloration yellow or reddish-yellow, with a thin, dark band on anterior and posterior borders, the latter extends into two small expansions.

Elytra oval. Maximum width at about the middle of the length. Sides regularly rounded. Surface covered by a fine punctuation. Discal series of dots usually visible, the other two obsolete. Subapical denticle invisible or almost so. Coloration yellow, with five longitudinal dark lines, plus 2 - 3 lateral maculae.

Underside almost smooth, with very large, deep and well spaced dots on lateral expansions of metasternum, metacoxal plates and first two sternites. Smaller and finer dots on metacoxal process, medial portion of metasternum and the other sternites. Coloration pitch-black, paler on prosternal process. Epipleura testaceous.

Legs uniformly yellow.





Figs. 37 - 45: Median lobe of aedeagus (lateral view) of 37) *Nebrioporus formaster jaechi* ssp.n., 38) *N. airumilus*, 39) *N. hostilis*, 40) *N. brownei*, 41) *N. sichuanensis*, 42) *N. laticollis*, 43) *N. melanogrammus*, 44) *N. indicus*, specimen from North India, 45) *N. indicus*, specimen from Nepal.

♂: Subapical denticle invisible. Protarsi slightly dilated. Anterior claws (Fig. 25) blunt, with the inner shorter than the outer. Median lobe of aedeagus and parameres (Figs. 34, 43, 52).

♀: A little duller. Subapical angles on elytra hardly visible. Lateral sides of pronotum less clearly bordered.

DISTRIBUTION (Fig. 56): North India (Uttar Pradesh, Himachal Pradesh), Nepal, China (Yunnan). First record for China.

**DISCUSSION:** The Chinese specimen shows some small differences from Indian and Nepalese specimens, specially in the shape of the median lobe of the aedeagus. Due also to its apparent geographical separation it could represent a subspecies.

***Nebriporus indicus* (SHARP)**

- Deronectes indicus* SHARP, 1882: 413 (orig. descr.).  
*Deronectes indicus* - VAN DER BRANDEN 1885: 198.  
*Hydroporus (Deronectes) indicus* - RÉGIMBART 1899: 198.  
*Deronectes (Potamodytes) indicus* - ZIMMERMANN 1919: 189; 1920: 127.  
*Potamonectes* (s.str.) *indicus* - GUIGNOT 1959: 10.  
*Potamonectes indicus* - VAZIRANI 1970: 126; BRANCUCCI 1979: 199; ZENG 1989: 3.  
*Nebriporus* (s.str.) *indicus* - NILSSON & ANGUS 1992: 288; NILSSON 1995: 56.  
*Potamonectes manii* VAZIRANI, 1970: 124 (orig. descr.). **syn.n.**  
*Potamonectes manii* - ANGELINI 1978: 387; ZENG 1989: 3.  
*Nebriporus* (s.str.) *manii* - NILSSON & ANGUS 1992: 288; NILSSON 1995: 56.

**TYPE LOCALITIES:** *D. indicus*: North India: *P. manii*: Haichin, Kashmir, India.

**TYPE MATERIAL:** *D. indicus*: ? Holotype ♂ (MNHNP) "Northern India type 267 (hw Sharp)", coll. Wehncke. In the original description (SHARP 1882), the single type specimen has the indications "type 287 in coll. Bonvouloir". It is not clear therefore, if the specimen in MNHNP is indeed the holotype. Three specimens in BMNHL (2 ♂♂ and 1 ♀) labelled "India 67-56 / *D. (Potamonectes) indicus* Sharp, J. Balfour-Browne det." were incorrectly considered syntypes by VAZIRANI (1970); *P. manii*: Holotype ♂ (MNHNP), dissected, "Kachemire Haichin 22-IX-1954 / ♂ / *Potamonectes* (s. str.) *manii* n. sp. T. G. Vazirani det / Holotype".

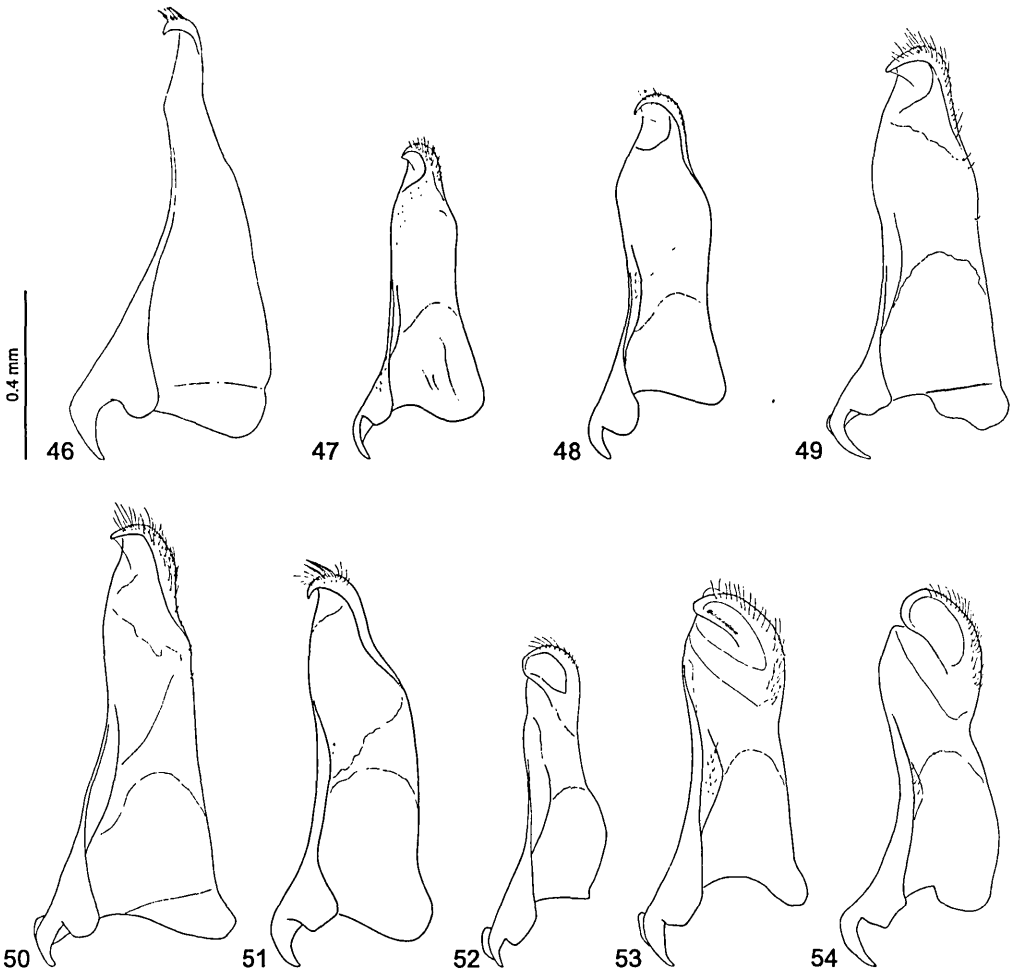
**ADDITIONAL MATERIAL EXAMINED:**

- P A K I S T A N:** BALTISTAN: Skardou, Indus River, Karakorum, 2300 m a.s.l., 2.VII.1976, leg. Osella / *Potamonectes manii*, det. Angelini (3 exs. in MCSNV); same data 20.VII.1976 (1 ex. in MCSNV); same data, Karakorum, 3000-3300 m a.s.l., 12.VII.1976 (1 ex. in MCSNV); Swat, SE Mingora Karakar, 1100 m a.s.l., 25.V.1978, leg. C. Holzschuh (2 exs. in GWW).
- I N D I A:** UTTAR PRADESH: Missouriic, Mossy Falls, 22.III.1932, leg. H.G. Champion (2 exs. in BMNHL); Thalari, 24.VII.1994, leg. M. Snizek (14 exs. in MTB); Bhimtal, Kumaon Kallees, 5.VI.1978, Rig. Bisht / *Potamonectes indicus*, det. Wewalka, 1973 / *Potamonectes balli*, det. T.G. Vazirani 1979 (1 ex. in BMNHL); Barkot 1100-1200 m a.s.l., 5.-12.VI.1981, leg. M. Brancucci (3 exs. in GWW); HIMACHAL PRADESH: Monali, 2000-2300 m a.s.l., 15.V.1977, leg. W. Wittmer & M. Brancucci (1 ex. in GWW).
- N E P A L:** Silghari-Doti, Kali Gandaki, 30.VII.1953, leg. J.B. Tyson (1 ex. BMNHL); Pokhara Lake 25.VII.1985, leg. E. Preuler / *Potamonectes insignis*, det. H. Fery (1 ex. in NMW); Mustang, Jomson, Dumba Lake, 21.XI.1993, leg. Moog & al. / *Nebriporus indicus*, det. G. Wewalka 1994 (2 exs. in NMW); Mustang Distr., Kaligandaki near Marpha, 1.IV.1996, leg. Graf & al. (1 ex. in NMW); Mustang Distr., Manang, Pisang, 3350 m a.s.l., 25.XI.1987, leg. Pasang (11 exs. in NMW); Mustang Distr., Jharkot, Muktinath, Khola, 19.XI.1993, leg. S. Sharma (1 ex. in NMW); Prov. Kabrepalanchowk, Cha Khola, Dolalghat, 7.XI.1993, leg. Moog & al. [S 10] (1 ex. in NMW); Godawari, 16.-17.V.1992, leg. I. Jenis (5 exs. in NMW); Kathmandu Valley, 2.II.1981, leg. M.A. Jäch (5 exs. in NMW); idem, 25.II.1981, leg. M.A. Jäch (1 exs. in NMW); Mustang Distr., Jharkot, 1985, leg. E. Preuler / *Potamonectes insignis*, det. H. Fery (9 exs. in NMW and HFB/NMW).

**DIAGNOSIS:** Habitus (Fig. 11). 4.7 - 5.5 mm. Oval to slightly elongate, flat, slightly shining. Angle between pronotum and elytra obsolete. Coloration yellow with more or less extensive dark markings on pronotum and elytra.

Head yellow or reddish-yellow, usually with a very thin, dark postocular band. Punctuation moderately deep and close, together with few, larger scattered dots. Antennae testaceous, slightly darkened at the apex of the last 6 - 11 segments. Mouthparts reddish-yellow. Maxillary palpi testaceous, darkened apically.

Pronotum quite narrow, with maximum width at base. Lateral sides straight or almost so, bordered. Posterior angles acute. Dorsal surface covered by a fine punctuation, not very close on the disc, together with few larger dots on anterior and posterior borders. Coloration reddish-yellow, with a thin, dark band on anterior and posterior borders and two discal spots.



Figs. 46 - 54: Parameres of 46) *Nebrioporus formaster jaechi* ssp.n., 47) *N. airunlus*, 48) *N. hostilis*, 49) *N. brownei*, 50) *N. sichuanensis*, 51) *N. laticollis*, 52) *N. melanogrammus*, 53) *N. indicus*, specimen from North India, 54) *N. indicus*, specimen from Nepal.

Elytra yellow, vittate. Oval. Maximum width at about the middle of the length. Sides regularly rounded. Surface covered by a fine and impressed punctation. Discal and sutural rows of dots usually visible. Subapical denticle distinct.

Underside black, shining, regularly covered by a dense and deep punctation. Epipleura testaceous. Legs uniformly reddish-yellow.

♂: Protarsi slightly dilated. Anterior claws (Figs. 18, 26, 27) similar to those of *N. melanogrammus*, but with the outer relatively longer. Median lobe of aedeagus and parameres (Figs. 35, 36, 44, 45, 53, 54).

♀: Similar to male, sometimes a little duller.

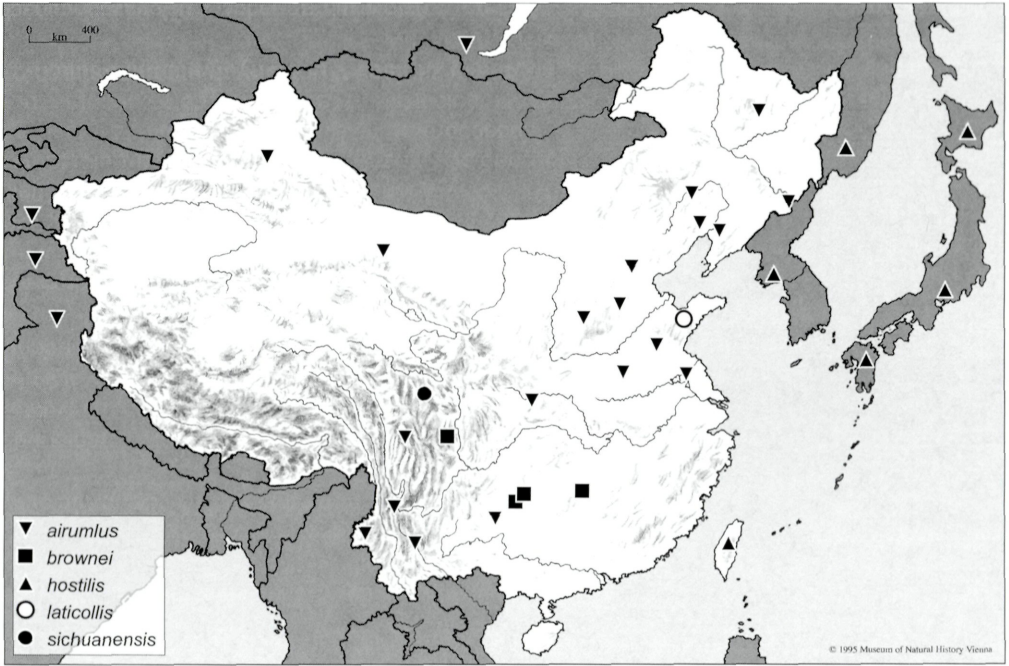


Fig. 55: Geographical distribution of *Nebrioporus airumulus*, *N. brownei*, *N. hostilis*, *N. laticollis*, *N. sichuanensis*.

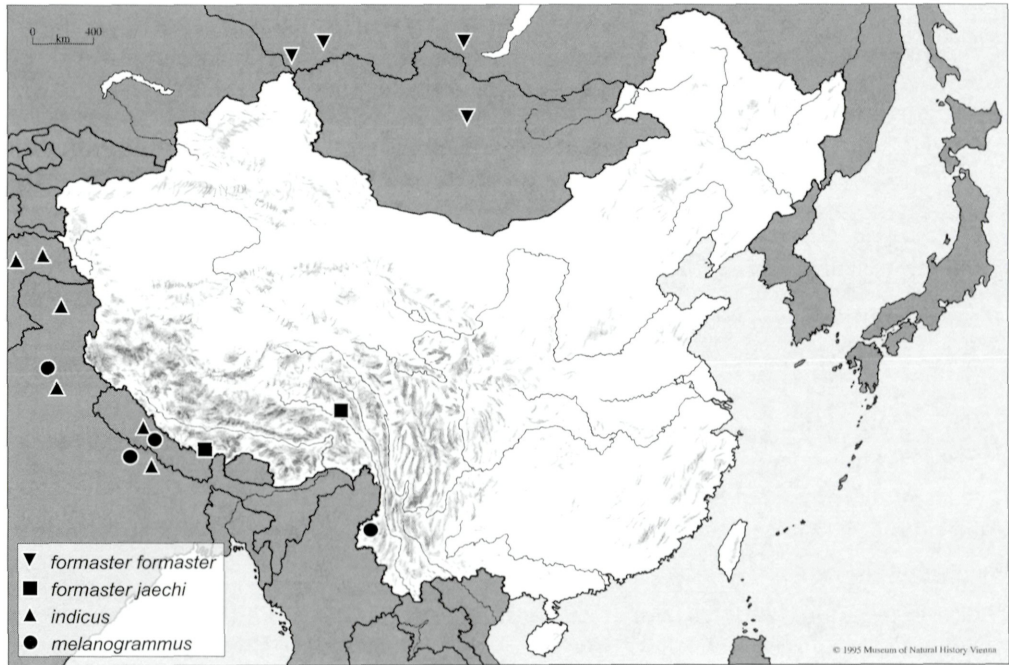


Fig. 56: Geographical distribution of *Nebrioporus formaster formaster*, *N. formaster jaechi*, *N. indicus*, *N. melanogrammus*.

**DISTRIBUTION** (Fig. 56): *Nebrioporus indicus* is so far known with certainty from northern Pakistan (Baltistan), North India (Kashmir, Himachal Pradesh, Uttar Pradesh) and Nepal. In China ZENG (1989: 3) recorded *Potamonectes indicus* and *P. manii* for Tibet and Yunnan. I have not seen any Chinese specimens. This species may also have been confused with *N. melanogrammus*.

### Discussion

East Asian *Nebrioporus* species are mostly found within the borders of the Palearctic Realm. They occur from Siberia down to a line running along the southern slopes of the Himalayas and eastwards to Korea, Japan, Sakhalin and the Kuril Islands. The only exception is represented by the populations of some species in southern Japan, southern China and Taiwan, which live in a territory just south of the hypothetical (and somewhat controversial) border between the Palearctic and Oriental Realms (JÄCH & Ji 1995: 9).

Eight species and one subspecies of *Nebrioporus*, belonging to three species-groups, have so far been recognised in China. The first group, the *ceresyi*-group, is represented by *Nebrioporus formaster* and its subspecies *N. formaster jaechi*; these two taxa constitute a particular eastern variant, from both a morphological and a biogeographical point of view, of a mainly Mediterranean species-group (both *Nebrioporus steppensis* and *N. ceresyi* reach Central Asia, but their range is nevertheless further to the west than the *N. formaster* s.l. populations). Within the second group, the *depressus*-group, which has the largest number of species, two different lineages may be distinguished by both biogeographical and morphological criteria. The first lineage includes *Nebrioporus airumlus*: a very widespread species probably of Central Asian origin (according to ZAITZEV 1953: 90); this lineage might have given rise to *N. hostilis* and, perhaps, *N. browniei* populations in China and the Far East, thus representing a western "invasion" from Central Asia. The second lineage, which may be older than the first, seems to have evolved and differentiated in East Asia. It is composed of *Nebrioporus sichuanensis* and *N. laticollis* (plus *N. anchoralis* SHARP, a Japanese species), very closely related species with distinctive morphological characters such as their large size and the very long and straight male foreclaws as well as a common Oriental genomy. Lastly, the *laeiventris*-group is mainly distributed over Arabia and the Middle East, an area which may also be the place of origin of this group. The distribution of some species (e.g. *Nebrioporus mascatensis* (RÉGIMBART) and *N. turca* (SEIDLITZ)) suggests that this group may have colonised the Himalayan region by passing through the Iranian plateau, Baluchistan, the Indus Valley or Afghanistan. This colonisation could have finally resulted in the differentiation of *N. indicus* and of the highly specialised *N. melanogrammus*, both exclusive to the Himalayas. There is clear evidence that *N. melanogrammus* crossed the Himalayan watershed and passed to the northeastern side, as the presence of a population of this species, probably cut off from those of North India and Nepal, has also been documented on Chinese territory (Yunnan). It is not yet clear, however, whether ZENG's (1989) record of *N. indicus* (= *Potamonectes manii*) in Tibet and Yunnan is valid, since *N. melanogrammus* can be easily confused with *N. indicus*, also because of the synonymy used up to now between the two names. In fact, the diagnosis of certain species of *Nebrioporus* is far from simple without the detailed examination of particular characters, above all the male foreclaws, together with the shape of the body, the coloration, the size and in some cases the punctuation, while the examination of the median lobe of aedeagus is often decidedly unhelpful in distinguishing the species of this genus, especially where these are closely related. The situation is further complicated by the high degree of variability in some species, a variability present also in characters (like male foreclaws) which are usually stable in most species. Because of this variability it can often happen that two formally distinct species grade into one another, so that it becomes extremely difficult to attribute one specific name rather than another to a particular population, often represented by few available

specimens. This for example is true of *N. hostilis*, whose continental populations are, from what I have been able to study, difficult to distinguish from *N. airumulus*, unlike the well characterised island populations. This could well give grounds for supposing that *N. airumulus* and *N. hostilis* are two species still in the process of differentiation, or, on the contrary, two species that have recently come into contact along the coasts of East Asia, giving rise to hybridisation in that particular area. For this reason there is a need for a complete redefinition, based on the examination of extensive material, of the presence and distribution of *N. hostilis* in continental China.

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