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# Notes on the Bembidiina of Taiwan with description of three new species (Coleoptera: Carabidae)

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**Abstract**. This paper provides new observations on the Bembidiina of Taiwan, still poorly known, and deals with their relationships with the Chinese and Japanese lineages. The extreme tendency to endemism of the Taiwanese Bembidiina (14 out of the currently 19 known species are endemic) is emphasized by three new endemic species described in this paper: *Bembidion* (*Blepharoplataphus*) *teradai* sp. nov., *B.* (*Trichoplataphus*) *seijii* sp. nov. and *B.* (*Trichoplataphus*) *jelineki* sp. nov. One poorly known Taiwanese species, *B.* (*Armatocillenus*) *sauteri* Jedlička, 1954, is redescribed and the male genitalia of two species, *B.* (*Ocydromus*) *shunichii* Habu, 1973 and *B.* (*Desarmatocillenus*) *foochowense* Lindroth, 1980, are described for the first time. An updated checklist and a key for the determination of the Taiwanese Bembidiina are also provided.

**Keywords.** Coleoptera, Carabidae, Bembidiina, *Armatocillenus*, *Bembidion*, *Blepharoplataphus*, *Desarmatocillenus*, *Ocydromus*, *Odontium*, *Plataphus*, *Pseudolimnaeum*, *Trichoplataphus*, *Sinechostictus*, taxonomy, checklist, key for species, Taiwan.

## Introduction

After the revision of Eastern Palaearctic Bembidiini by Jedlička (1965), the Taiwanese Bembidiina were only covered by checklists (Marggi et al. 2003; Terada et al. 2005, 2006; Terada 2006) but never systematically reviewed except the taxonomy of the *Cillenus* complex (Sasakawa 2007). Only 13 species of Bembidiina have been known from Taiwan but recent collecting trips by Katsuyuki Terada (Hiroshima, Japan) yielded six more species, three of which turned out to be new to science and are described below. Of the 19 species currently known from Taiwan, only five are also known from other countries of the eastern Palaearctic Region. Particularly noteworthy is the presence of a new species of the subgenus *Blepharoplataphus* Netolitzky, 1920 of the genus *Bembidion* Latreille, 1802. This subgenus includes species with extremely wide distribution and relatively low tendency to differentiation, which suggests once again that the Taiwanese fauna of Bembidiina has a very strong tendency toward endemism.

## Material and methods

This paper is based on the study of about 150 specimens of Bembidiina from Taiwan, China and Japan. The specimens come from the collections of the following institutions and individuals:

BMNH Natural History Museum, London, UK (Max Barclay, Conrad Gillett);
CTVR Luca Toledano collection, Verona, Italy;
HNHM Hungarian Natural History Museum, Budapest, Hungaria (Gyözö Szel, György Makranczy);
KTHJ Katsuyuki Terada collection, Hiroshima, Japan;
MSNV Museo Civico di Scienze Naturali, Verona, Italy (Leonardo Latella);
NHMW Naturhistorisches Museum, Wien, Austria (Manfred Jäch, Heinrich Schönmann, Harald Schillhammer);
NMPC National Museum, Praha, Czech Republic (Jiří Hájek, Josef Jelínek);
NTUC National Taiwan University, Taipei, Republic of China (Wen-Jer Wu);
SMTJ Seiji Morita collection, Tokyo, Japan;
USNM National Museum of Natural History, Washington D.C., USA (Terry Erwin, David Furth, Warren Steiner).

Measurements were made with a Leica MZ12 stereomicroscope at 25× (body) and 100× (phallus) magnifications. Ratios are abbreviated in the text as follows:

pw/pl pronotum width / pronotum length;
pw/hw pronotum width / head width;
el/ew elytral length / elytral width;
ew/pw elytral width / pronotum width;
bl/al body length / length of antennae.

The body length was measured, in mounted specimens, from the front margin of the clypeus to the apex of the elytra, and the length of antennae from the base of antennomere 1 to the apex of antennomere 11. The pronotal length was measured along the midline from the anterior to the posterior margin.

Dissections were made using standard techniques. Genitalia and small parts were preserved in Euparal, attached to label-size acetate sheets and mounted on the same pins as the specimens. The vertical alignment of the aedeagus within the body in living specimens is reflected in the drawings of the aedeagi, following the concept suggested to me by the late Gerd Müller-Motzfeld, who sadly passed away in July 2009.

Habitus photographs are composite images with progressive focusing obtained with a Nikon D200 digital camera equipped with an AF Micro-Nikkor 60mm 1:2.8D lens and three extension tubes Kenko 36 mm + 12 mm + 20 mm, processed with Helicon Focus® 3.61 program and optimized with Photoshop® Elements 3.0. Photographs of the aedeagi are composite images with progressive focusing obtained with a Nikon D200 digital camera fitted to a custom-made microscope and processed in the same way as the habitus photographs.

The systematic treatment of the subtribe Bembidiina follows Marggi et al. (2003); I explained previously (Toledano 2000, 2002, 2008a) the reasons for that choice. According to this treatment, most species of the subtribe (about 1700) belong to the genus *Bembidion* Latreille, 1802, and about 200 species to a dozen of other genera: *Asaphidion* Gozis, 1886, *Phrypeus*

Casey, 1824, *Bembidarenas* Erwin, 1972, *Ocys* Stephens, 1828, *Amerizus* Chaudoir, 1868, *Orzolina* Machado, 1987, *Caecidium* Uéno, 1971, *Sinechostictus* Motschulsky, 1864, and, probably, *Pseudophilochtus* Wollaston, 1877, *Apteromimus* Wollaston, 1877 and *Endosomatium* Wollaston, 1877. The subgenus *Ocydromus* Clairville, 1806 of *Bembidion*, as currently known, is probably polyphyletic but extremely difficult to split it in monophyletic groups due to the occurrence of several characters variously combined in the different species groups. Until the systematics of this subgenus is better known I follow Kryzhanovskij et al. (1995) in the sense of later modifications (Toledano 2000, 2008a; Toledano & Sciaky 2004). For brevity, in the following text '*Ocydromus* sensu lato' means *Ocydromus* sensu Kryzhanovskij et al. (1995), i.e. a subgenus including all the species groups mentioned by Kryzhanovskij et al. (1995) and other species groups intended at the same, infrasubgeneric level.

In the following text, 'type seen' means that I was able to study the type of a given species in the past but not during the writing of this paper. My comments on original labels are given in square brackets.

## Taxonomy

### Genus *Bembidion* Latreille, 1802

#### *Cillenus* Samouelle, 1819 complex

**Systematic notes.** According to Marggi et al. (2003) and Lorenz (2005), the subgenera of the *Cillenus* complex belong to the genus *Cillenus* Samouelle, 1819. This classification is based on the extreme difference in habitus of this complex of subgenera from the other species of the genus *Bembidion*. Also the habitat of these species is unusual for the Bembidiina, because they live on sea shores and probably feed on amphipods (Lindroth 1980). However, as I explained elsewhere (Toledano 2005), even though the subgenera of the *Cillenus* complex are certainly closely related and their body shape is extremely different from the other subgenera of *Bembidion*, the structure of their male genitalia seems to suggest that they actually belong to the genus *Bembidion* and that their peculiar body shape is probably due to an adaptation to the seashore environment. Therefore I still follow Lindroth (1980) until better evidence emerges to elevate the *Cillenus* complex to the generic level.

*Bembidion formosanum* Dupuis, 1912 and *B. sauteri* Jedlička, 1954 are at present included in the subgenus *Armatocillenus* Dupuis, 1912. Terada et al. (2005) and Terada (2006) use this name as a valid genus, but I prefer not to follow that arrangement here for the same reasons as explained above for *Cillenus*. I think that most subgeneric names of Oriental "*Cillenus*-like" species should be synonymized because they share the main structure of the endophallus (Lindroth 1980). In any case, any decisions regarding the generic validity of the taxon *Cillenus* should be addressed in a revision of the phylogenetic relationships of all the known species of the group. Since this is not the goal of this paper, *B. formosanum* and *B. sauteri* are provisionally kept in *Armatocillenus*, which is regarded as a subgenus of *Bembidion*.

## Subgenus *Armatocillenus* Dupuis, 1912

### *Bembidion* (*Armatocillenus*) *sauteri* (Jedlička, 1954)

(Fig. 1)

*Armatocillenus sauteri* Jedlička, 1954: 225.
*Bembidion* (*Armatocillenus*) *sauteri*: Jedlička (1965): 157.
*Cillenus* (*Armatocillenus*) *sauteri*: Marggi et al. (2003): 272; Lorenz (1998): 200; Lorenz (2005): 216.
*Armatocillenus sauteri*: Terada et al. (2005): 170; Terada (2006): 11.

**Type material examined.** Holotype: ♀, 'Formosa, Sauter // Anping, 1909.X. // Typus [red] // Armatocillenus sauteri n.sp. [handwritten], det. ING. JEDLIČKA [pink]' (HNHM).

**Diagnosis.** A "*Cillenus*-like" species, completely pale, with metatrochanter as long as two thirds of metafemur, pronotum with sides sinuate, thus differing from *B. formosanum* Dupuis, 1812 (type seen: Taiwan, NMPC).

**Redescription.** Body length 4.24 mm. Completely pale except for dark eyes and slightly infuscate apices of mandibles (Fig. 1).

Head wide, almost as wide as pronotum. Frontal furrows rather deep, short, posteriorly ending at the level of middle of eyes and not extending to clypeus. Eyes rather convex. Antennae short (bl/al = 2.12). Penultimate article of maxillary palpi long, conical, truncated at apex; last article very small. Mandibles strongly developed.

Pronotum (pw/pl = 1.20; ew/pw = 1.23) slightly transverse, with anterior angles not protruding, sides gently rounded with long, slight sinuosity before the obtuse hind angles. Lateral channel sharp from anterior angle to posterior third, then progressively widening and deepening, adjacent to gently raised, triangular carina in posterior third. Anterior transverse impression and median line superficial. Posterior transverse impression very deep, ending at sides in two superficial basal foveae. Posterior margin rectilinear at middle, gently oblique at sides. Lateral pronotal seta in advanced position, at about the anterior fifth, hind pronotal seta at hind angle.

Elytra (el/ew = 1.98) very narrow, widest slightly posterior to humeri, then gently narrowing and pointed at apex. Humeri strongly rounded, raised elytral margin reaching the beginning of stria 5 and angulate at the beginning of stria 7. Striae 1 to 8 deeply sulcate, complete, reaching apex, elytral intervals rather convex. Scutellar and apical stria long, apical stria being continuation of stria 5 toward elytral apex. Two discal elytral pores in lateral third of interval 3, anterior one slightly before middle of elytra and posterior one at about posterior fifth (pore on left elytron placed slightly more anteriorly than that on right elytron in the holotype).

Metasternal process unbordered.

Metatrochanter as long as two thirds of metafemur.

Microsculpture. Rather distinct, largely glossy, flat, isodiametric cells on entire dorsal surface.

Male unknown.

**Distribution.** So far known only from the type locality in Taiwan.

**Remarks.** *Bembidion sauteri* is probably related to the other Taiwanese species of the subgenus *Armatocillenus*, *B. formosanum*, given the extreme similarity in the elytral shape and coloration. *Bembidion sauteri* differs from *B. formosanum* mainly by the pronotal shape, which is intermediate between that of a "typical" *Armatocillenus* (not sinuate) and that of

*Desarmatocillenus* (sinuate). Since the pronotal shape is one of the main diagnostic characters used to separate *Armatocillenus* from *Desarmatocillenus*, an intermediate character in *B. sauteri* suggests that both subgenera should be synonymized, keeping as valid the older name of *Armatocillenus*, But I refrain from taking this decision here. The most closely related taxon to *B. sauteri* seems to be an undescribed Chinese species (L. Toledano, unpublished data).

### Subgenus *Desarmatocillenus* Netolitzky, 1942

### *Bembidion* (*Desarmatocillenus*) *foochowense* Lindroth, 1980

(Figs. 2, 17)

*Bembidion* (*Desarmatocillenus*) *foochowense* Lindroth, 1980: 200.
*Cillenus* (*Desarmatocillenus*) *foochowensis*: Marggi et al. (2003): 272; Lorenz (1998): 200; Lorenz (2005): 216.
*Bembidion* (*Desarmatocillenus*) *foochowense*: Toledano (2008c): 95.

**Material examined. TAIWAN:** Lunglungchi, Fulung, Taipei Hsien, 31.vii.2001, Terada lgt., 1 ♂ 3 ♀♀ (KTHJ, CTVR).

Type (China, Fujang) seen (BMNH).

**Diagnosis.** A "*Cillenus*-like" species, very similar to *Bembidion aestuarii* (Uéno & Habu, 1955) but differing from it by a shorter metatrochanter (less than half as long as the metafemur), more diffuse and more extended dark elytral spot reaching the suture, and slightly lighter colour of the pronotum (Fig. 2).

Male genitalia (Fig. 17). Median lobe of aedeagus with ventral margin almost rectilinear, bent ventrally at apical fifth. Small complex of typical "*Cillenus*-like" sclerites in middle of endophallus and coarse pack of thick, poorly sclerotized membranes with scales filling anterior half of median lobe. A single, long and thick seta at the apex of each paramere in the specimen examined.

**Distribution.** Originally described from south-eastern China (Foochow = Fuzhou, Fujian Province). First record from Taiwan.

**Remarks.** As already pointed out by Lindroth (1980), *B. foochowense* is very similar in external characters to small specimens of *B. aestuarii* except for the shorter metatrochanters. Given the male genital described here, *B. foochowense* and *B. aestuarii* seem to be sister species. Consequently the phylogenetic importance of the metatrochanter length in the *Cillenus* complex seems less relevant, and I emphasize once more my doubts about the validity of several subgenera of the complex.

## *Odontium* LeConte, 1848 complex

### Subgenus *Odontium* LeConte, 1848

### *Bembidion* (*Odontium*) *fusiforme* Netolitzky, 1914

(Figs. 3, 18)

*Bembidion* (*Bracteon*) *fusiforme* Netolitzky, 1914: 168.
*Bembidion* (*Cylindrobracteon*) *fusiforme*: Netolitzky (1943–44): 51.
*Bembidion* (*Bracteon*) *fusiforme*: Jedlička (1965): 91.
*Bembidion* (*Odontium*) *fusiforme*: Marggi et al. (2003): 257; Lorenz (1998): 202; Lorenz (2005): 218.
*Bembidion fusiforme*: Terada et al. (2005): 170; Terada (2006): 12.

**Material examined. TAIWAN:** Waiao, Ilan Hsien, 1.vi.2001, Terada lgt., 2 ♂♂ 3 ♀♀ (KTHJ, CTVR). Type seen (Taiwan, NHMW).

**Distribution.** Taiwan (Pingtung Hsien, Ilan Hsien).

## *Plataphus* complex
## Subgenus *Plataphus* Motschulsky, 1864

### *Bembidion* (*Plataphus*) *takasagonis* Habu, 1973
(Figs. 4, 19)

*Bembidion* (*Peryphus*) *takasagonis* Habu, 1973: 114.
*Bembidion* (*Ocydromus* incert.) *takasagonis*: Lorenz (1998): 217.
*Bembidion* (*Plataphus*) *takasagonis*: Marggi et al. (2003): 266; Marggi et al. (2005): 227.
*Bembidion takasagonis*: Terada et al. (2005): 171; Terada (2006): 12.

**Material examined. TAIWAN:** Wulai, Taipei Hsien, 11.vi.2001, Terada lgt., 2 ♂♂ 1 ♀ (KTHJ, CTVR).

**Distribution.** Taiwan (Taichung Hsien, Taipei Hsien).

## Subgenus *Blepharoplataphus* Netolitzky, 1920

### *Bembidion* (*Blepharoplataphus*) *teradai* sp. nov.
(Figs. 5, 20)

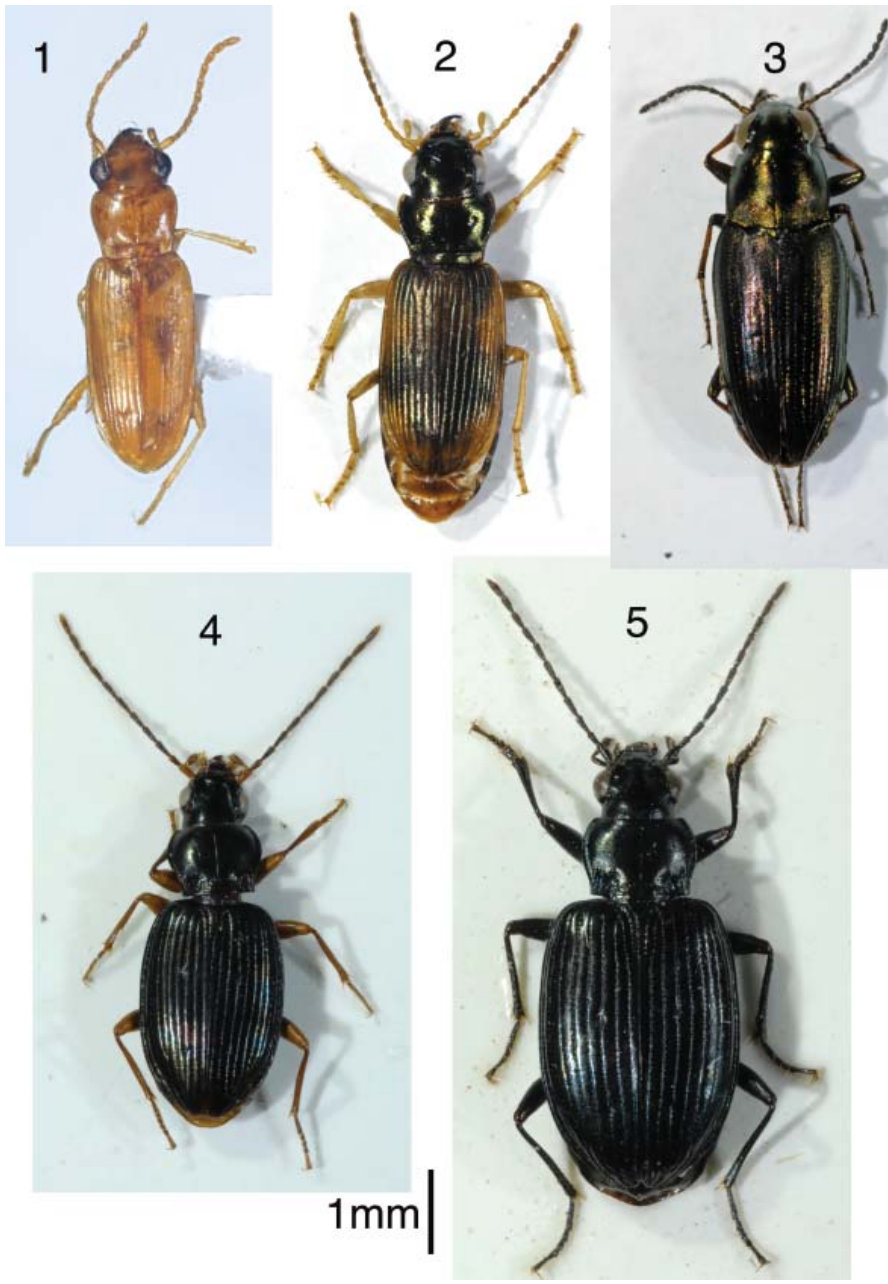
**Type locality.** Taiwan, Nansichi, Wulai, Taipei Hsien.
**Type material.** Holotype: ♂, 'TAIWAN, 23-xii-2001 / Nansichi, Wulai / Taipei Hsien / Terada – 77' // HOLOTYPUS / Bembidion teradai sp.n. / Det. L. Toledano, 2009 [red]' (MSNV). Paratypes: 6 ♂♂ 9 ♀♀, same date and locality as the holotype (NTUC, CTHJ, CTVR); 2 ♂♂ 6 ♀♀, 'Wulai / Taipei Hsien / Taiwan // 4-XII-2001 / K. Terada leg.' (CMTJ); 1 ♂ 1 ♀, 'Wulai Taiwan / 23-XII-2001 / K. Terada leg.' (CMTJ, CTVR). All paratypes labelled as 'PARATYPUS / Bembidion teradai sp.n. / Det. L. Toledano, 2009 [red]'.

**Diagnosis.** A *Blepharoplataphus* species with very wide elytra and humeri, very similar to *Bembidion nirasawai* Morita, 2008 from southwestern Japan, but distinguishable from this last for the apex of the aedeagus, rounded in *B. nirasawai* (Morita 2008) and ventrally hooked in *B. teradai*.
**Description.** Body length 5.38–5.84 mm. Black with faint metallic greenish reflections. Legs and antennae piceous black (Fig. 5).

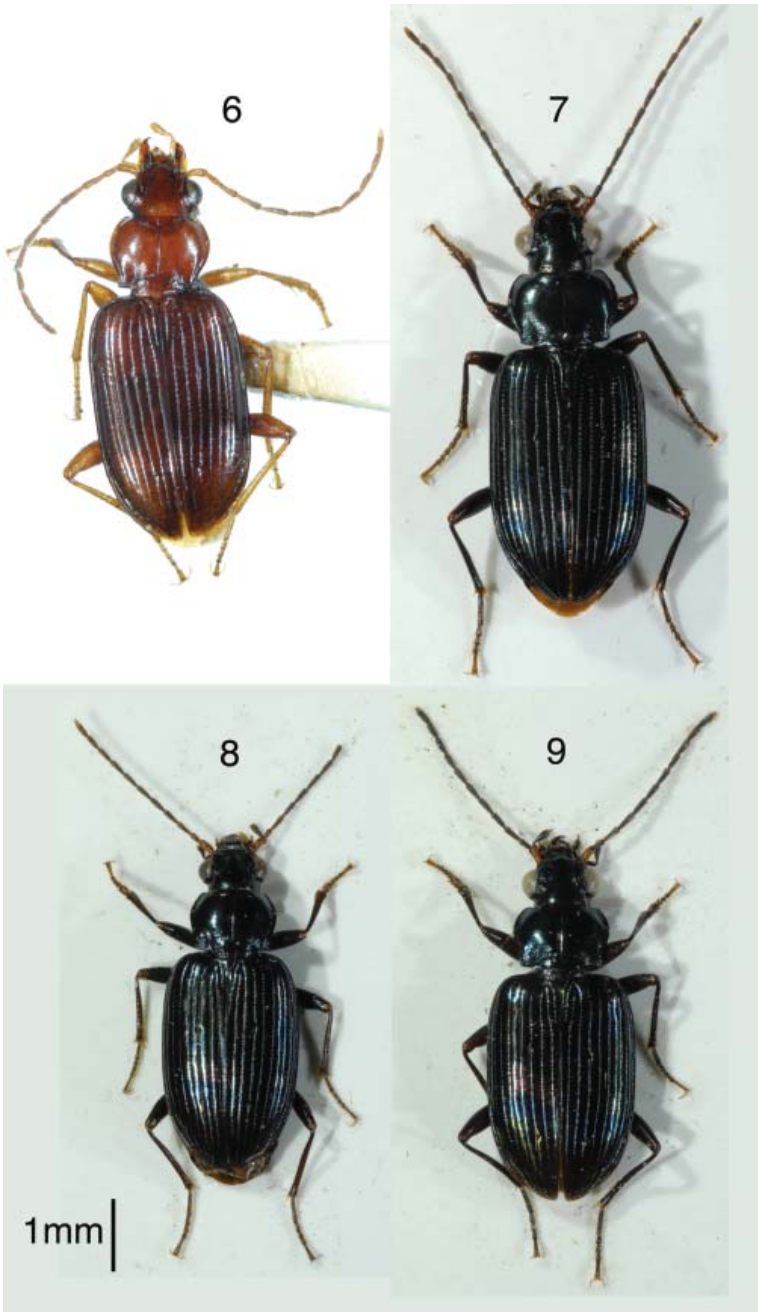
Head with deep, wide and parallel frontal furrows, not extending on clypeus. Eyes convex, antennae rather short (bl/al = 1.98–2.09).

Pronotum transverse (pw/pl = 1.42–1.48), rather narrow in relation to elytra (ew/pw = 1.75–1.76). Sides rounded, briefly sinuate before the short, slightly obtuse hind angles. Lateral channel very wide, anterior transverse impression short, in some specimens with some punctures, median line superficial, basal foveae somewhat square, very rugose, laterally delimited by a carina. Posterior margin straight in middle and oblique at sides.

Elytra (el/ew = 1.40–1.43) oval, very wide and convex, with humeri wide and rather rounded. Elytral striae 1–7 complete, visibly impressed, punctate-sulcate, scutellar stria long, apical stria long and connected with apical end of stria 5. Two discal elytral pores in interval 3 near stria 3.




Figs. 1–5. *Bembidion* spp., habitus. 1 – *B.* (*Armatocillenus*) *sauteri* Jedlička, 1954, holotype; 2 – *B.* (*Desarmatocillenus*) *foochowense* Lindroth, 1980; 3 – *B.* (*Odontium*) *fusiforme* Netolitzky, 1914; 4 – *B.* (*Plataphus*) *takasagonis* Habu, 1973; 5 – *B.* (*Blepharoplataphus*) *teradai* sp. nov., holotype.




Figs. 6–9. *Bembidion* spp., habitus. 6 – *B.* (*Trichoplataphus*) *miwai* Jedlička, 1946; 7 – *B.* (*Trichoplataphus*) *taiwanum* Netolitzky, 1939; 8 – *B.* (*Trichoplataphus*) *jelineki* sp. nov., holotype; 9 – *B.* (*Trichoplataphus*) *seijii* sp. nov., holotype.

Microsculpture distinct, consisting of small isodiametric, convex cells on head and pronotum and of transverse, rather irregular flat cells on elytra.

Male genitalia (Fig. 20). Apex of median lobe ventrally hooked. For the other characters, typical shape and endophallus of the subgenus *Blepharoplataphus*. In particular, the endophallus shares the structure of the sclerites with *B. nirasawai*.

**Etymology.** Dedicated to Katsuyuki Terada, an accomplished specialist in Japanese and Taiwanese Carabidae, who gave me the opportunity to study the interesting fauna of Taiwan by kindly sending me the specimens dealt with in this paper.

**Distribution.** So far known only from the type locality.

**Remarks.** The morphological diversity within *Blepharoplataphus* is very low: the male genitalia and habitus of all species are very similar; *B. teradai* sp. nov. seems closely related to *B. nirasawai*, with which it shares almost identical male genitalia, except for the apical shape.

## Subgenus *Trichoplataphus* Netolitzky, 1914

### *Bembidion* (*Trichoplataphus*) *miwai* Jedlička, 1946

(Figs. 6, 21)

*Bembidion* (*Trichoplataphus*) *miwai* Jedlička, 1946: 2.

*Bembidion* (*Trichoplataphus*) *miwai*: Jedlička (1965): 116; Marggi et al. (2003): 271; Lorenz (1998): 211; Lorenz (2005): 227.

*Bembidion miwai*: Terada et al. (2005):170; Terada (2006): 12.

**Type material examined.** Holotype: ♂, 'TAIWAN / Raisya / 24-XI-1934 / S. Issiki // TYPUS (red) // Mus. Nat. Pragae / 23964 Inv. (orange) // miwai / sp.n. [handwritten] / DET. ING. JEDLIČKA [pink]' (NMPC).

**Additional material examined. TAIWAN:** Near Mt. Ari, Takesari, 24.xi.1937, Y. Yano lgt. ('Yano 7.20, miwai Jedl. Typo collatum det. Netolitzky [handwritten]'), 1 ♂ (NHMW); Kungliao, Taipei Hsien, 18.ii.2002, Terada lgt., 1 ♂ (CTVR); Kao Hsiung, Co., 10–11 km NE Chiahsen, ca. 300 m, 3.–8.vii.1980, forest, D. R. Davis lgt., 2 ♀♀ (USNM, CTVR).

**Intraspecific variability.** The type specimen and the specimen from NHMW (Fig. 6) have lighter colours (entire body light reddish) in comparison to the other specimens listed here. The specimen from Kungliao is darker and has less convex and smaller eyes, but it seems conspecific in all the other characters; Fig. 21 shows the male genitalia of this specimen because the type specimen is immature and the other examined specimen (NHMW) has the endophallus everted.

**Distribution.** Taiwan (Raisya, Takesari, Taipei Hsien, Kao Hsiung).

### *Bembidion* (*Trichoplataphus*) *taiwanum* Netolitzky, 1939

(Figs. 7, 10, 22)

*Bembidion* (*Trichoplataphus*) *taiwanum* Netolitzky, 1939: 50.

*Bembidion* (*Trichoplataphus*) *taiwanum*: Netolitzky (1943–44): 110; Marggi et al. (2003): 271; Lorenz (1998): 211; Lorenz (2005): 227.

*Bembidion* (*Trichoplataphus*) *taivanum*: Jedlička (1965): 118 (incorrect spelling).

*Bembidion taiwanum*: Terada et al. (2005): 171; Terada (2006):12.

**Material examined. TAIWAN:** Tachiachi, Kukuan, Taichung Hsien, 10.vi.1977, Terada lgt., 3 ♂♂ 3 ♀♀ (KTHJ, CTVR); Meichi, Puli, Nantou Hsien, 30.i.2002, Terada lgt., 2 ♂♂ 2 ♀♀ (KTHJ, CTVR).

Type seen (Taiwan, Mt. Ari Takasaki, BMNH).

**Distribution.** Taiwan (Chiayi Hsien, Taichung Hsien, Nantou Hsien).

### *Bembidion* (*Trichoplataphus*) *seijii* sp. nov.

(Figs. 9, 12, 24)

**Type locality.** Taiwan, Hsintienchi, Hsintien, Taipei Hsien.

**Type material.** Holotype: ♂, 'TAIWAN, 19 – xi – 2001 / Hsintienchi, Hsintien / Taipei Hsien / Terada – 69 // HOLOTYPUS / Bembidion seijii sp.n. / Det. L. Toledano, 2009 [red]' (MSNV). Paratypes: 4 ♀♀, same date and locality as the holotype (NTUC, KTHJ, CTVR); 4 ♂♂ 2 ♀♀, 'TAIWAN, 3 – xii – 2001 / Hsintienchi, Hsintien / Taipei Hsien / Terada' (KTHJ); 2 ♂♂ 1 ♀, 'Hsintien / Taipei Hsien / Taiwan / 19-xi-2001 / K. Terada leg.' (SMTJ, CTVR). All paratypes labelled as 'PARATYPUS / Bembidion seijii sp.n. / Det. L. Toledano, 2009 [red]'.

**Diagnosis.** A black *Trichoplataphus* with sides of pronotum evidently sinuate before the long and evidently square hind angles.

**Description.** Body length 4.96–5.40 mm. Black, metallic, with faint bluish reflections. Legs and antennae dark brown except for red antennomere 1 (Fig. 9).

Head wide, with convex eyes, parallel and rather deep, slightly rugose frontal furrows not extending on clypeus. Antennae relatively long (bl/al = 1.80–1.84).

Pronotum transverse (pw/pl = 1.40; ew/pw = 1.54–1.57). Sides rounded, evidently sinuate before the long and square hind angles, much more marked than in the other Taiwanese species of the subgenus (Fig. 12). Lateral channel narrow in anterior third, wider and flat in middle part, then narrowed again and narrowest in posterior third. Anterior transverse impression and median line distinct, posterior transverse impression deep, uneven. Basal foveae very small, placed at each end of posterior transverse impression, laterally delimited by flat punctate area. Posterior margin almost straight with sides slightly oblique.

Elytra wide (el/ew = 1.53–1.54), with relatively parallel sides, square humeri and pointed apex. Elytral striae 1–7 complete, striate-punctate, scutellar and apical striae long, apical striae connected with stria 5. Two discal elytral pores in interval 3 adjoining stria 3. Beginning of stria 5 slightly less deep (stria 5 in the other Taiwanese species deeply impressed at base, much more than other striae).

Microsculpture distinct as small, convex isodiametric cells on head, visible as superficial, very slightly transverse, flat cells on pronotum and practically absent on elytra.

Male genitalia (Fig. 24). Very similar to those of *B. miwai* and *B. taiwanum*, but median lobe of aedeagus with apical fourth of ventral margin evidently bent ventrally and apex more thickly reinforced ventrally. Apicoventral process of main sclerite triangular, less extended and more sclerotized than the same structure in *B. jelineki* sp. nov. (seen from the left).

**Etymology.** Dedicated to my dear friend and colleague Seiji Morita, accomplished specialist in Japanese Carabidae, who kindly helped me in this study.

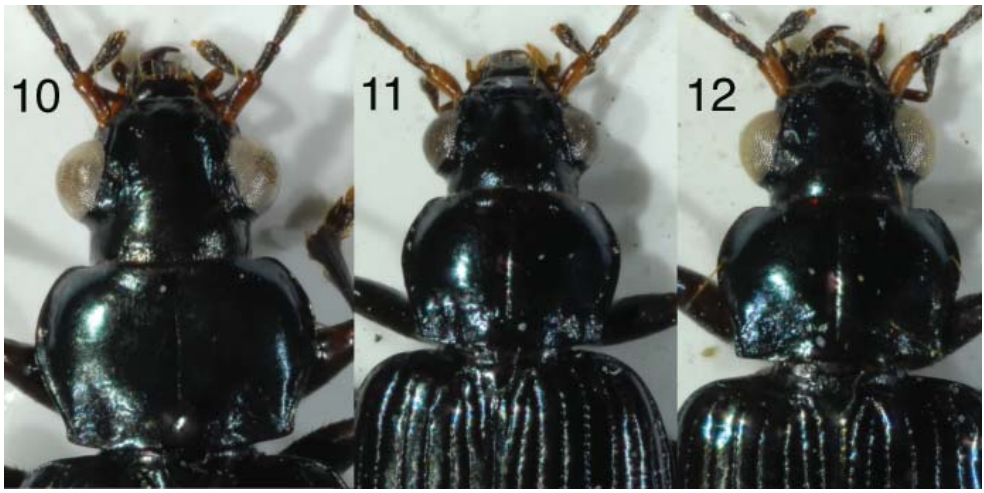
**Distribution.** So far known only from the type locality.

### *Bembidion* (*Trichoplataphus*) *jelineki* sp. nov.

(Figs. 8, 11, 23)

**Type locality.** Taiwan, Shuangchi, near Fulung, Taipei Hsien.

**Type material.** Holotype, ♂, 'TAIWAN, 14–iii–2002 / Shuangchi, near / Fulung, Taipei Hsien / Terada – 94 // HOLOTYPUS / Bembidion jelineki sp.n. / Det. L. Toledano, 2009 [red]' (MSNV). Paratypes: 5 ♂♂ 8 ♀♀, same date and locality as the holotype (NTUC, KTHJ, CTVI); 2 ♂♂, 'Kunliah / Taipei Hsien / Taiwan // 18-II-2002/ K. Terada leg. (handwritten)' (SMTJ, KTHJ). All paratypes labelled as 'PARATYPUS / Bembidion jelineki sp.n. / Det. L. Toledano, 2009 [red]'.




Figs. 10–12. *Bembidion* spp., head and pronotum. 10 – *B.* (*Trichoplataphus*) *taiwanum* Netolitzky, 1939; 11 – *B.* (*Trichoplataphus*) *jelineki* sp. nov., holotype; 12 – *B.* (*Trichoplataphus*) *seijii* sp. nov., holotype.

**Diagnosis.** A black *Trichoplataphus* with dark legs and relatively narrow pronotum (pw/pl = 1.34–1.37), distinguishable from *B. taiwanum* by a narrower pronotum and from *B seijii* sp. nov. by shorter hind angles.

**Description.** Length 4.68–5.80 mm. Black with very faint bluish metallic reflections. Femora piceous, rest of legs and antennae dark brown except for red antennomere 1 (Fig. 8).

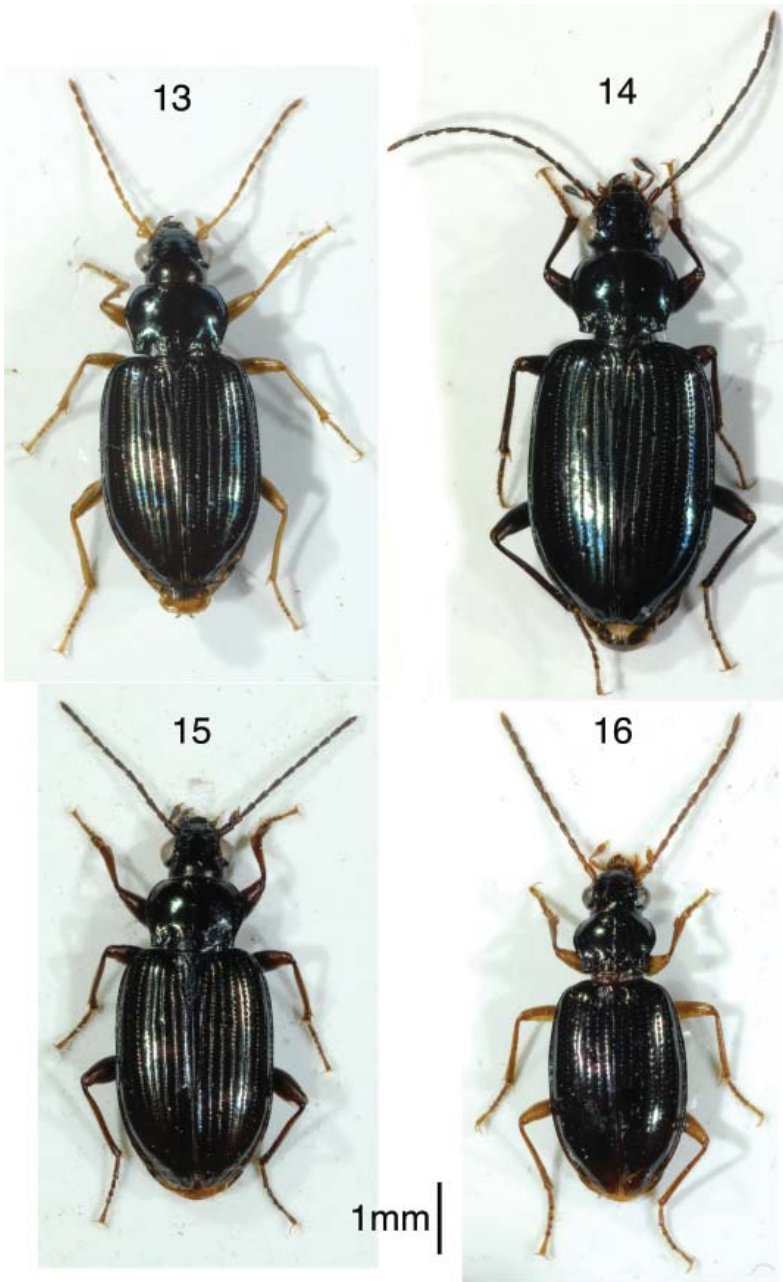
Head wide, with convex eyes, frontal furrows slightly convergent, deep and slightly rugose, antennomeres elongate (bl / al = 1.75–1.87).

Pronotum (pw/pl = 1.34–1.37) (Fig. 11) less transverse than in the other Taiwanese species of *Trichoplataphus* except for *B. miwai* (in *B. miwai*, pw/pl = 1.22) and narrower than in the other species (ew/pw = 1.59–1.62). Sides rounded, slightly sinuate before the almost square hind angles. Lateral channel narrow in anterior third, then wider and flat, restricted only at hind angle. Anterior transverse impression and median line superficial, posterior transverse impression deeper, slightly rugose. Basal foveae very small, situated at each end of posterior transverse impression, laterally delimited by slightly raised, rugose area. Posterior margin almost straight with sides slightly oblique.

Elytra rather wide (el/ew = 1.50–1.55), suboval, convex, with well marked humeri, striae 1–7 complete, punctate-sulcate, scutellar and apical stria long, apical one connected with stria 5, two discal elytral pores in interval 3 adjoining stria 3.

Microsculpture distinct as small, convex, isodiametric cells on head, visible as superficial, very slightly transverse, flat cells on pronotum and almost absent on elytra, visible only in some areas of elytral apex as superficial, extremely narrow, transverse cells.

Male genitalia (Fig. 23). Very similar to those of *B. eurygonum* Bates, 1883. Median lobe widest at about midlength, apex gently bent ventrally. Viewed from the left side, apicoven-




Figs. 13–16. *Bembidion* and *Sinechostictus* spp., habitus. 13 – *B.* (*Ocydromus*) *chloreum* Bates, 1873, specimen from Taiwan; 14 – *B.* (*Ocydromus*) *shunichii* Habu, 1973; 15 – *B.* (*Ocydromus*) *peleum* Jedlička, 1933, specimen from Taiwan; 16 – *S.* (*Pseudolimnaeum*) *chuji* Jedlička, 1951.

tral process of main sclerite shaped as a mirror image of letter "C", more extended and less sclerotized than the structure in *B. seijii* sp. nov.

**Intraspecific variability.** One female paratype has three discal elytral pores on the right elytron, once more demonstrating that the number of discal elytral pores is not a good supraspecific indicator in the Bembidiina (Toledano & Sciaky 2004).

**Etymology.** Dedicated to my friend Dr. Josef Jelínek, accomplished specialist in sap beetles (Coleoptera: Nitidulidae) and fellow of many interesting conversations about entomology and other topics, enriched by his incredible knowledge of foreign languages and his subtle humour.

**Distribution.** So far known only from Taipei Hsien, Taiwan.

**Remarks.** *Bembidion jelineki* sp. nov. seems phylogenetically closely related to the Japanese species *B. eurygonum*. I was able to compare the new species with several specimens of *B. eurygonum*, including the type specimen (BMNH), which have a lighter, dark brown to piceous elytral colour and sulcate but not punctate elytral striae. The male genitalia of *B. jelineki* sp. nov. and *B. eurygonum*, however, look almost identical. At present I am unable to state if *B. jelineki* sp. nov. could be a subspecies of *B. eurygonum* instead of a sister species.

## *Ocydromus* sensu lato complex
## Subgenus *Ocydromus* Clairville, 1806 sensu lato
## *Bembidion lulinense* Habu, 1973 species group

### *Bembidion* (*Ocydromus*) *lulinense* Habu, 1973

*Bembidion* (*Peryphus*) *lulinense* Habu, 1973:110.
*Bembidion* (*Peryphanes*) *lulinense*: Marggi et al. (2003): 259; Lorenz (2005): 231.
*Bembidion lulinense*: Terada et al. (2005): 170; Terada (2006): 12.

**Systematic notes.** The species was described in the subgenus *Peryphus* Stephens, 1828. Habu (1973) explained that the presence of endophallic sclerites protruding from the basal opening of median lobe agrees with that of *Peryphanes* Jeannel, 1941, but he preferred to follow Uéno (1954) and placed the species in *Peryphus*. In fact the endophallus is extremely similar to *Peryphanes*, which seems to me as one of the best candidates to be considered as a good subgenus, among the species groups of *Ocydromus* s. l. In the Checklist of the Palaearctic Carabidae (Marggi et al. 2003), *B. lulinense* is attributed to *Peryphanes*. Until a thorough revision of the group leads to a decision in this matter, *B. lulinense* is ranked here in an independent species group of *Ocydromus* s. l.

**Distribution.** Taiwan (Nantou Hsien).

## *Bembidion lenae* Csiki, 1928 species group

### *Bembidion* (*Ocydromus*) *chloreum* Bates, 1873

(Figs. 13, 25)

*Bembidium chloreum* Bates, 1873: 332 (incorrect spelling of the generic name).
*Bembidion* (*Peryphus*) *chloreum*: Netolitzky (1943–44): 51; Jedlička (1965): 146.
*Bembidion* (*Ocydromus*) *chloreum*: Toledano (2000): 66.
*Bembidion* (*Asioperyphus*) *chloreum*: Marggi et al. (2003): 243; Lorenz (1998): 215; Lorenz (2005): 231.

**Material examined. TAIWAN:** Chihpenchi, Taitung, Taitung Hsien, 25.xi.2001, Terada lgt., 2 ♂♂ 2 ♀♀ (KTHJ, CTVR).

Type (China) seen (BMNH).

**Distribution.** China, Korea, Japan, and Taiwan.

**Remark.** This is the first report of this species from Taiwan. The Japanese specimens seem to differ slightly from the Chinese ones, and they could be possibly referred to *B. sapporense* Jedlička, 1951 (S. Morita, pers. comm.). Since *B. chloreum* was cited from China, Foochow [= Fudzhou] (Kirschenhofer 1984), its presence in Taiwan seems plausible because a similar distribution is already known for *B. foochowense* (see above). In any case, the complex of these species should be revised.

### *Bembidion* (*Ocydromus*) *shunichii* Habu, 1973

(Figs. 14, 26)

*Bembidion* (*Peryphus*) *shunichii* Habu, 1973: 112.
*Bembidion* (*Ocydromus* incert.) *shunichii*: Lorenz (1998): 217; Lorenz (2005): 234.
*Bembidion* (incertae sedis) *shunichii*: Marggi et al. (2003): 271.
*Bembidion shunichii*: Terada et al. (2005): 171; Terada (2006): 12.

**Material examined. TAIWAN:** Nanshichi, Wulai, Taipei Hsien, 23.xii.2001, Terada lgt., 2 ♂♂ 2 ♀♀ (KTHJ, CTVR).

**Remarks.** The species was originally described on the basis of three female specimens. This is the first description of the male genitalia (Fig. 26). Median lobe of aedeagus rather thick, with pointed apex. Endophallus with spiral flagellum typical of the *lenae*-group, not forming a complete loop as in *B. peleum*; well-sclerotized stylet placed dorsally and parallel to anterior part of flagellum. Flagellum tubular, its basal end slightly protruding from basal opening of median lobe.

In the original description, Habu (1973) described the species as completely lacking elytral microsculpture, while the specimens examined here show distinct microsculpture with extremely sharp and transverse cells, giving a strong, iridescent, bluish reflection to the elytra. The specimens otherwise completely agree with the original description.

**Distribution.** Taiwan (Taichung Hsien, Taipei Hsien).

### *Bembidion* (*Ocydromus*) *peleum* Jedlička, 1933

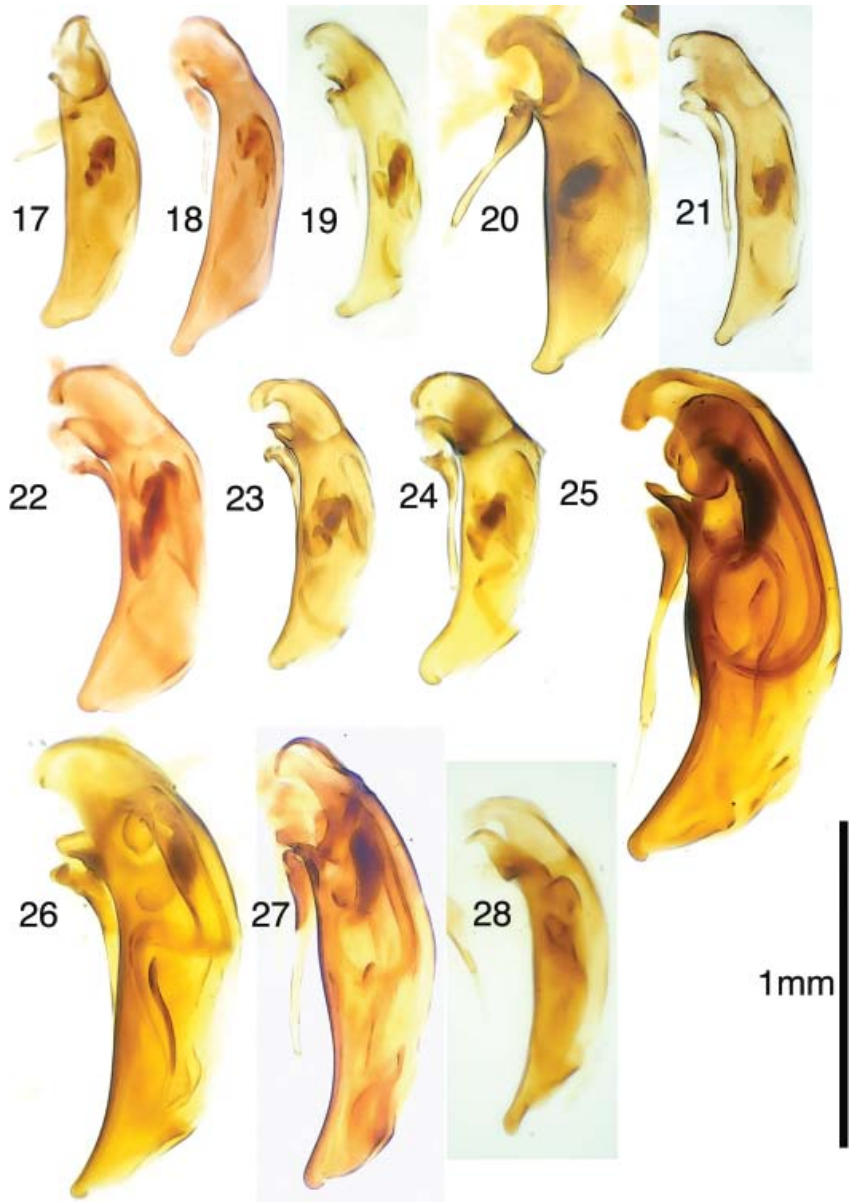
(Figs. 15, 27)

*Bembidion* (*Peryphus*) *peleum* Jedlička, 1933: 98.
*Bembidion* (*Peryphus*) *peleum*: Jedlička (1965): 145.
*Bembidion* (*Ocydromus*) *peleum*: Toledano (2000): 42, 67; Toledano (2008a): 21; Toledano (2008c): 99.
*Bembidion* (*Asioperyphus*) *peleum*: Marggi et al. (2003): 244; Lorenz (1998): 215; Lorenz (2005): 231.
*Bembidion nanpingense* Kirschenhofer, 1984: 67.

**Material examined. TAIWAN:** Hsiashuangchi, near Fulung, Taipei Hsien, 14.iii.2002, Terada lgt., 4 ♂♂ 4 ♀♀ (KTHJ, CTVR).

Type (China, Sichuan) seen (NMPC).

**Systematic notes.** The Taiwanese specimens recorded here are identical with the Chinese specimens of *B. peleum*, including details of the endophallus, except a slightly angulate ventral surface of the apex of the aedeagus (Fig. 27). I refrain from describing here a new




Figs. 17–28. *Bembidion* and *Sinechostictus* spp., median lobe of the aedeagus. 17 – *B.* (*Desarmatocillenus*) *foochowense* Lindroth, 1980; 18 – *B.* (*Odontium*) *fusiforme* Netolitzky, 1914; 19 – *B.* (*Plataphus*) *takasagonis* Habu, 1973; 20 – *B.* (*Blepharoplataphus*) *teradai* sp. nov., holotype; 21 – *B.* (*Trichoplataphus*) *miwai* Jedlička, 1946; 22 – *B.* (*Trichoplataphus*) *taiwanum* Netolitzky, 1939; 23 – *B.* (*Trichoplataphus*) *jelineki* sp. nov., holotype; 24 – *B.* (*Trichoplataphus*) *seijii* sp. nov., holotype; 25 – *B.* (*Ocydromus*) *chloreum* Bates, 1873, specimen from Taiwan; 26 – *B.* (*Ocydromus*) *shunichii* Habu, 1973; 27 – *B.* (*Ocydromus*) *peleum* Jedlička, 1933, specimen from Taiwan; 28 – *S.* (*Pseudolimnaeum*) *chuji* Jedlička, 1951.

taxon based on this difference and I prefer to regard it as population-level characteristics. *Bembidion peleum* is moreover identical in all morphological characters to *B. gotoense* Habu, 1973 from Japan (K. Terada, pers. comm.). Both species might be synonymous, even though I am unable to state it with certainty since I have seen only an immature male specimen (CTVR) but not the type of *B. gotoense*.
**Distribution**. Known from several localities in China (Jedlička 1965, Toledano 2000) and northern Taiwan. First record from Taiwan.

## Genus *Sinechostictus* Motschulsky, 1864

### Subgenus *Pseudolimnaeum* Kraatz, 1888

**Systematic notes.** Following my former treatment of some Oriental species of the group (Toledano 2008b), I treat the name *Pseudolimnaeum* Kraatz, 1888 as a subgenus of the genus *Sinechostictus* Motschulsky, 1864.

#### *Sinechostictus* (*Pseudolimnaeum*) *chuji* (Jedlička, 1951)

(Figs. 16, 28)

*Bembidion* (*Pseudolimnaeum*) *Chuji* Jedlička, 1951: 111.
*Bembidion* (*Pseudolimnaeum*) *chujoi*: Jedlička (1965): 147, 149 (incorrect subsequent spelling, unavailable).
*Bembidion* (*Pseudolimnaeum*) *chuji*: Lorenz (1998): 219.
*Bembidion* (*Sinechostictus*) *chujoi*: Maggi et al. (2003): 267.
*Bembidion* (*Sinechostictus*) *chuji*: Lorenz (2005): 235.
*Bembidion chuji*: Terada et al. (2005): 170; Terada (2006): 12.

**Type material examined.** Holotype: ♂, 'Formosa / (Y. Miwa) // TYPUS (red) // Mus. Nat. Pragae / Inv. 24006 [handwritten, orange] // chujoi sp.n. [handwritten] det. Ing. Jedlička [pink]' (NMPC).
**Additional material examined. TAIWAN:** A Li Shan, 17.–26.vi.1995, P. Moravec lgt., 1 ♂ (CTVR).

**Nomenclatorial note.** Jedlička (1951) in the original description reports the name of this species as "*Chuji*", probably due to lapsus calami; the type specimen is labelled as "*chujoi* sp.n.". Unfortunately, Jedlička (1951) did not give any etymology and used the name "*Bembidion chuji*" only once in the original description (and on page 112 of the same paper, he described another species *Sofota chuji* from the tribe Lebiini without giving any etymology and not using the name again in the paper). Later, Jedlička (1965) used the spelling "*chujoi*" referring to the original description but, however, he did not cite the original spelling "*chuji*" and did not mention that he emends a mistake and adopts "*chujoi*" instead of "*chuji*". The original spelling "*chuji*" is in prevailing usage (see above). Under these circumstances, "*Bembidion chuji*" can be regarded as the correct original spelling according to ICZN (1999: Art. 32.2) and "*Bembidion chujoi*" as an incorrect subsequent spelling according to ICZN (1999: Art. 33.3) and thus an unavailable name for the purpose of zoological nomenclature.
**Remarks.** Among the eastern Palaearctic species of *Pseudolimnaeum*, *S. chuji* is perhaps most similar to *S. cameroni* Andrewes, 1922 distributed in several subspecies in the Himalayas and south-western China. This similarity pertains to the habitus as well as the male genitalia.
**Distribution.** Known from one locality in Taiwan (A Li Shan); the label of the holotype provides only a general indication of the island.

## Checklist of the Taiwanese Bembidiina

In the following list, an exclamation mark means that the species is new to the fauna of Taiwan. Letter E means that the species is endemic to Taiwan.

*Bembidion taiyuanense* Kirschenhofer, 1984, *B. varium* Olivier, 1795, *B. rufotibiellum* Fairmaire, 1888 and *B. tenellum pseudoplaga* Netolitzky, 1943 were mistakenly reported from Taiwan by Marggi et al. (2003) based on Kirschenhofer's (1984) records. These records do not come from Taiwan but from Taiyuan, Shanxi Province, China. Therefore, these four species are omitted from the following checklist and key.

**Genus *Asaphidion* Gozis, 1886**
=*Tachypus* Dejean, 1821
=*Pseudelaphrus* Acloque, 1896
=*Asaphidium* Jacobson, 1906
=*Basaphidion* Netolitzky, 1935

*A. domonense* Minowa, 1932 (E)

**Genus *Bembidion* Latreille, 1802**
=*Tachys* Schönherr, 1806 nec Dejean, 1821
=*Bembidium* Gyllenhal, 1810
=*Lopha* Dejean, 1821
=*Bembecidium* Agassiz, 1847
=*Taractus* Gistel, 1856
=*Bembidicidium* Gemminger & Harold, 1868

*Cillenus* Samouelle, 1819 complex
**Subgenus *Armatocillenus* Dupuis, 1912**

*B. formosanum* Dupuis, 1912 (E)
*B. sauteri* Jedlička, 1954 (E)

**Subgenus *Desarmatocillenus* Netolitzky, 1942**

*B. foochowense* Lindroth, 1980 (!)

*Odontium* LeConte, 1848 complex
**Subgenus *Odontium* LeConte, 1848**
=*Ocys* Gistel, 1848 nec Stephens, 1828
=*Cylindrobracteon* Netolitzky, 1939

*B. fusiforme* Netolitzky, 1914 (E)

*Bembidion* Latreille, 1802 complex
**Subgenus *Notaphocampa* Netolitzky, 1914**
=*Notaphomimus* Netolitzky, 1931

*B. niloticum batesi* Putzeys, 1875

**Subgenus *Taiwanobembidion* Habu, 1973**

*B. aliense* Habu, 1973 (E)

**Subgenus *Neoemphanes* Habu, 1978**

*B. satoi* Morita, 1993

*Plataphus* complex
**Subgenus *Plataphus* Motschulsky, 1864**
=*Micromelomalus* Casey, 1918
=*Trachelonepha* Casey, 1918

*B. takasagonis* Habu, 1973 (E)

**Subgenus *Blepharoplataphus* Netolitzky, 1920**

*B. teradai* sp. nov. (E, !)

**Subgenus *Trichoplataphus* Netolitzky, 1914**
=*Triporus* Andrewes, 1921

*B. jelineki* sp. nov. (E, !)
*B. miwai* Jedlička, 1946 (E)
*B. seijii* sp. nov. (E, !)
*B. taiwanum* Netolitzky, 1939 (E)

*Ocydromus sensu lato* complex
**Subgenus *Ocydromus* Clairville, 1806 sensu lato**

**Group *B. lenae* Csiki, 1928**
*B. chloreum* Bates, 1873 (!)
*B. peleum* Jedlička, 1933 (!)
*B. shunichii* Habu, 1973 (E)

**Group *B. lulinense* Habu, 1973**
*B. lulinense* Habu, 1973 (E)

**Genus *Sinechostictus* Motschulsky, 1864**
=*Synechostictus* Bedel, 1879

**Subgenus *Pseudolimnaeum***
**Kraatz, 1888**

*S. chuji* Jedlička, 1951 (E)

## Key to the Taiwanese Bembidiina

I was unable to study specimens of *Asaphidion domonense*, *Bembidion aliense* and *Bembidion lulinense* and therefore base the key for them only on the literature. The same applies to *B. satoi*, a species described from Japan and found also in Taiwan (Morita 2007).

1 Dorsal surface covered by dense pubescence (Genus ***Asaphidion*** Gozis, 1886). ..... ***A. domonense*** Minowa, 1932
– Dorsal surface without dense pubescence (Genera ***Bembidion*** Latreille, 1802 and ***Sinechostictus*** Motschulsky, 1864). ..... 2
2 Head large with long mandibles. Coastal species (*Cillenus* complex). ..... 3
– Species with normal head and mandibles. Found in different habitats. ..... 5
3 Body completely pale, eyes black; metatrochanter longer than half of metafemur. ..... 4
– Body with dark head and pronotum and dark, diffuse median spot on elytra; metatrochanter shorter than half of metafemur (Figs. 2, 17). ..... ***B. foochowense*** Lindroth, 1980
4 Sides of pronotum not sinuate. ..... ***B. formosanum*** Dupuis, 1912
– Sides of pronotum slightly sinuate (Fig. 1). ..... ***B. sauteri*** Jedlička, 1954
5 Elytral margin clearly angulate and carinate at humeri (*Odontium* complex) (Figs. 3, 18). ..... ***B. fusiforme*** Netolitzky, 1914
– Elytral margin not angulate or carinate at humeri. .....6
6 Elytra with light apical spots. .....7
– Elytra unicoloured. .....8
7 Frontal furrows converging and extending on clypeus, frons strongly convex between furrows; pronotum strongly cordate; body metallic green, matt, with C-shaped apical elytral spots. ..... ***B. niloticum batesi*** Putzeys, 1875
– Frontal furrows convergent, not extending on clypeus; pronotum weakly cordate; body black with faint iridescence and small, somewhat triangular lateroapical spot. ..... ***B. aliense*** Habu, 1973
8 Median line of pronotum deep, extending to pronotal base (Genus ***Sinechostictus*** Motschulsky, 1864) (Figs. 16, 28). ..... ***S. chuji*** Jedlička, 1951
– Median line of pronotum shallow, not extending to pronotal base (Genus ***Bembidion*** Latreille, 1802). ..... 9
9 Last three abdominal sternites with at least one transversal row consisting of many short setae. ..... 10
– Abdominal sternites only with the usual pair of long setae. ..... 14
10 Body black, without iridescence on elytra; antennomere 1 black (Figs. 5, 20). ..... ***B. teradai* sp. nov.**

– Body black, dark reddish or piceous, with iridescence on elytra; antennomere 1 red. .... ....11
11 Body reddish to piceous, legs red; antennomeres extremely elongate (Figs. 6, 21). ..... ..... ***B. miwai*** Jedlička, 1946
– Body black, legs dark; antennomeres weakly elongate. ..... 12
12 Pronotum large and strongly transverse (ew/pw = 1.46–1.57; pw/pl = 1.40–1.43), sides almost straight before near hind angles; median lobe of aedeagus widest at anterior fourth; endophallus with large and elongate sclerites (Figs. 7, 10, 22). ..... ..... ***B. taiwanum*** Netolitzky, 1939
– Pronotum smaller and less transverse (ew/pw = 1.54–1.62; pw/pl = 1.34–1.40), sides more visibly sinuous before hind angles. .....13
13 Pronotum narrow (pw/pl = 1.34–1.37), with obtuse and short hind angles; frontal furrows slightly convergent; median lobe of aedeagus with apex bent ventrally and strongly reinforced ventrally; endophallus with C-shaped apicoventral process of main sclerite (Figs. 8, 11, 23). ..... ***B. jelineki*** **sp. nov.**
– Pronotum wide (pw/pl = 1.40), with almost square, long hind angles; frontal furrows parallel; median lobe of aedeagus with apex not bent ventrally and weakly reinforced ventrally; endophallus with apicoventral process of main sclerite triangular (Figs. 9, 12, 24). ..... ***B. seijii*** **sp. nov.**
14 Elytra depressed, with slightly foveate discal pores; elytral striae sulcate and intervals strongly convex; endophallus without long flagellum (Figs. 4, 19). ..... ..... ***B. takasagonis*** Habu, 1973
– Elytra convex, discal pores not foveate; elytral striae punctate and intervals flat; endophallus with long flagellum. .....15
15 Legs pale. .....16
– Legs dark, piceous brown. .....18
16 Body small (3.41–3.77 mm); discal elytral pores usually in interval 3. ..... ..... ***B. satoi*** Morita, 1993
– Body larger (> 4.50 mm); discal elytral pores adjoining stria 3. ..... 17
17 Pronotum cordate with base narrower than anterior margin, hind angles square; body black. ..... ***B. lulinense*** Habu, 1973
– Pronotum strongly convex with base wider than anterior margin, hind angles obtuse; body brown to piceous with some metallic, greenish blue reflections (Figs. 13, 25)..... ..... ***B. chloreum*** Bates, 1873
18 Body piceous with bronze reflections; pronotum more transverse; antennomeres less elongate (Figs. 15, 27). ..... ***B. peleum*** Jedlička, 1933
– Body black with bluish reflections; pronotum less transverse; antennomeres more elongate (Figs. 14, 26). ..... ***B. shunichii*** Habu, 1973

## Discussion and conclusions

The Taiwanese Bembidiina show a high degree of endemism. More than 70 % of the species currently recorded are endemic and one of them, *B. teradai*, belongs to the subgenus

*Blepharoplataphus*, which usually includes species with very wide distribution and relatively low tendency to differentiation.

Several colonization events by Japanese and Chinese lineages seem to have constituted the Taiwanese fauna. Most of the species in Taiwan show systematic affinities with species present in Japan; *B. jelineki* sp. nov. seems to be a sister species or subspecies of the Japanese *B. eurygonum* and *B. teradai* is possibly a sister species of the Japanese *B. nirasawai*. Three species known from nearby regions (China, Korea and Japan) might have reached Taiwan rather recently: *B.* (*Ocydromus*) *chloreum*, *B. niloticum batesi* and *B. peleum*, described from mainland China and perhaps a senior synonym of *B. gotoense* known from Japan). On the other hand, *B. foochowense* could have reached the coast of south-eastern China from Taiwan rather than vice versa: the *Cillenus* complex in Asia seems more confined to the islands, with *B. foochowense*, *B. sinicum* (Andrewes, 1938) and another undescribed species being the only three species of the group known to me from the coast of Chinese mainland.

Moreover, *B. foochowense* seems closely related to Japanese species, while the remaining two intertidal species of the *Cillenus* complex in Taiwan (*B. formosanum* and *B. sauteri*) are closely related to each other and seem to be more different than *B. foochowense* from the Japanese and Chinese species of the complex. This suggests that *B. formosanum* and *B. sauteri* derived from a common ancestor that reached Taiwan.

In general, the phylogenetic relationships of the species of the *Cillenus* complex present on the sea shores in south-eastern China and in Taiwan are difficult to understand. *Bembidion sinicum* seems, at least in the habitus, the most isolated taxon of the complex known from the Asian mainland, but the male genitalia (see Lindroth 1980) reveal a close relationship with the bulk of the *Cillenus* complex and both the male genitalia and habitus are similar to the Australian *B. albovirens* Sloane, 1903. It is well possible that life in the intertidal environment lead to convergence in external morphology in this species complex. More generally, the relationships of the Asian and western Palaearctic *Cillenus* should be investigated in detail in order to understand whether they all belong to a single ancient genus of Tethidean origin, distributed from the western Palaearctic region (Atlantic coasts of Europe) to the Pacific Islands (New Hebrides).

Such studies will be undoubtedly hampered by the extreme scarcity of available specimens. Except for *B. foochowense*, collected by Terada in Taiwan in 2001, all the remaining species of the group from the Chinese Mainland and Taiwan are known only from old specimens. This could mean that these species are extinct and formerly lived in environments that are now polluted or destroyed, as was the case of *B. palosverdes* Kavanaugh & Erwin, 1992 from California (Kavanaugh & Erwin 1992).

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