

Ann. Naturhist. Mus. Wien	103 B	273 - 282	Wien, Dezember 2001
---------------------------	-------	-----------	---------------------

# **Re-establishment of the ptilomerine genus *Jucundus* DISTANT, 1910 (Insecta: Heteroptera: Gerridae), with redescription of the type species *Jucundus custodiendus* DISTANT, 1910 from South India and notes on *J. vittatus* (ESAKI, 1928) comb.n. from Sri Lanka**

H. Zettel\* & G. Thirumalai\*

## **Abstract**

The genus *Jucundus* DISTANT, 1910 is removed from synonymy with *Rheumatogonus* KIRKALDY, 1909. *Jucundus* is defined and compared with other genera of Ptilomerinae. The type species *J. custodiendus* DISTANT, 1910 from South India is redescribed, and a lectotype is designated. *Jucundus vittatus* (ESAKI, 1928) is a new combination for *Rheumatogonus vittatus* ESAKI, 1928 from Sri Lanka.

**Key words:** Heteroptera, Gerridae, Ptilomerinae, *Jucundus*, *Rheumatogonus*, *Jucundus custodiendus*, *Jucundus vittatus*, valid genus, new combination, description, lectotype, India, Sri Lanka.

## **Zusammenfassung**

Die Synonymie der Gattung *Jucundus* DISTANT, 1910 mit *Rheumatogonus* KIRKALDY, 1909 wird aufgehoben. *Jucundus* wird definiert und mit anderen Gattungen der Ptilomerinae verglichen. Die Typus-Art *J. custodiendus* DISTANT, 1910 aus Südindien wird wiederbeschrieben, und ein Lectotypus wird designiert. *Jucundus vittatus* ESAKI, 1928 ist eine neue Kombination für *Rheumatogonus vittatus* (ESAKI, 1928) aus Sri Lanka.

## **Introduction**

Recently, several papers have appeared dealing with the taxonomy and species diversity of the subfamily Ptilomerinae: e.g., ANDERSEN & CHEN (1995) on *Rhyacobates* ESAKI, 1930; ZETTEL (1994, 1999) and POLHEMUS & ZETTEL (1997) on *Potamometropsis* LUNDBLAD, 1933; ZETTEL & CHEN (1996) on *Pleciobates* ESAKI, 1930 and *Andersenius* ZETTEL & CHEN, 1996; and ZETTEL & THIRUMALAI (2001) on *Stridulobates* ZETTEL & THIRUMALAI, 2001. A few additional genera, all from the Oriental Realm, have been recognized as undescribed and are still awaiting description. Most ptilomerine genera are quite well delimited (except *Potamometropsis*), but the last phylogenetic system of the genera by MATSUDA (1960) is already outdated.

The genus *Jucundus* has been erected by DISTANT (1910) for two new species, *J. custodiendus* from South India and *J. burmanus* from Upper Burma. *Jucundus burmanus* is

\* Dr. Herbert Zettel, Naturhistorisches Museum in Wien, 2. Zoologische Abteilung, Burgring 7, A-1014 Vienna, Austria.

\*\* Dr. G. Thirumalai, Zoological Survey of India, Southern Regional Station, 100, Santhome High Road, Chennai 600 028, India.

based on two "apterous forms" which have turned out to be larvae of a species of *Ptilomera* (ESAKI 1927). *Jucundus custodiendus* was described from one macropterous female and one apterous male. Both have been deposited in the collection of the British Museum, London, but now the male is not in the collection (M. Webb, pers. comm.); earlier Esaki could not find it there (ESAKI 1927), and it is probably lost. The illustrations and description of *J. custodiendus* are based on the macropterous female. DISTANT (1910) writes: "The above description is taken from a macropterous female specimen; in a second male apterous example ...". *Jucundus custodiendus* is the type species by original designation, because DISTANT (1910) comments on *J. burmanus*: "They differ from the type [!] *J. custodiendus* in ... the anterior pronotal area or lobe a little longer ...". Comparison of the anterior pronotal lobe must be between specimens of the same (= the apterous) morph. The phrase "... type *J. custodiendus* ...", therefore, must be interpreted in the sense of "type species" and not of "type specimen." To avoid any future taxonomic problems in case that the nearly unknown male type specimen is discovered (and eventually belongs to another species) and to fix the type for the genus *Jucundus* and for the species *custodiendus*, the macropterous female type is here formally designated as the lectotype.

Already ESAKI (1927) had set *Jucundus* in synonymy with *Rheumatogonus* KIRKALDY, 1909, a genus widely distributed in the Oriental Realm, from Sri Lanka to the Philippine Islands. Several authors (e.g., MATSUDA 1960, ANDERSEN 1982) have followed this interpretation. "*Rheumatogonus custodiendus*" has even been recorded from West Malaysia by ESAKI (1927) and CHENG & FERNANDO (1969), but these records refer to a true species of *Rheumatogonus*, probably to *R. intermedius* HUNGERFORD, 1933 (CHENG & al., in press). Indeed, the type specimen of *J. custodiendus*, a macropterous female, has few characteristics to distinguish it from several species of *Rheumatogonus*, except the characteristic of the stout processes and the lack of the medial lobe of sternite 7. However, study of the male and the apterous morph gained from South Indian samplings deposited in the Natural History Museum Vienna and in the Zoological Survey of India, makes clear that *Jucundus* is very different from *Rheumatogonus* in several generically diagnostic characteristics, e.g., in the paramere and the foreleg of the male, the connexival process of the female, and a long spine on the metanotum of the apterous female. Although *Jucundus* seems to be closely related to this genus (see Discussion), the generic validity of *Jucundus* can be confirmed; it has also been recognized by Dr. Nils M. Andersen (pers. comm.).

This paper gives a description of the apterous morphs of *Jucundus custodiendus* and a diagnosis of the genus, which allows comparison with other genera. *Rheumatogonus vittatus* ESAKI, 1928 is transferred to *Jucundus*. Possible relationships of *Jucundus* are discussed, but must be proved in a phylogenetic analysis of the whole subfamily.

### Repositories:

- BMNH The Natural History Museum [= former British Museum (Natural History)], London, United Kingdom
- NHMW Naturhistorisches Museum Wien, Vienna, Austria
- ZMUC Zoological Museum, University of Copenhagen, Denmark
- ZSIC Zoological Survey of India, Southern Regional Station, Chennai, India
- ZSIT Zoological Survey of India, Calicut, India

### Genus *Jucundus* DISTANT, 1910

*Jucundus* DISTANT, 1910: 143; DISTANT 1911: 145 (repeating description); ESAKI 1927: 265 (synonymy with *Rheumatogonus*); MATSUDA 1960: 283 (as synonym of *Rheumatogonus*); ANDERSEN 1982: 413 (as synonym of *Rheumatogonus*).

**Type species:** *Jucundus custodiendus* DISTANT, 1910 (by original designation).

**Diagnosis:** Each of the following characteristics (or combinations of characteristics) is unique for *Jucundus*, those marked with an asterisk are most probably autapomorphies of the genus (characteristics of female based on the type species):

- 1) Meso- and metanotum of apterous morph yellowish with one or three complete black longitudinal stripes\* and pronotum of apterous morph posteriorly not constricted (Figs. 1 - 3, 11);
- 2) Profemur only in proximal half with dense row of stout bristles\* (Figs. 6, 8, 12);
- 3) Meso- and metanotum of apterous female with dorsolateral edge\* (Figs. 1, 3);
- 4) Metanotum of apterous female with long spinelike process (Figs. 1, 3) (much shorter processes or tubercles occur in several other genera);
- 5) Tergite 1 of apterous female with a pair of large, black, ovate, slightly raised areas\* (Fig. 3);
- 6) Female with body length less than 7 mm and sternite 7 distally with long, apically obliquely truncate process and connexival margin with short process, and without ventrodistal lobe (Figs. 1, 3);
- 7) Body length of male less than 5.5 mm and paramere of male elongate, weakly curved\* (Figs. 10, 16; not hookshaped as in Fig. 17).

**Description** (characteristics of female based on the type species): size relatively small, length of female (5.6 - 6.3 mm) distinctly larger than length of male (4.6 - 5.2 mm), body relatively slender in both sexes; ground colour yellowish, thorax of apterous morph with one or three black longitudinal stripes on meso- and metanotum (Figs. 1, 11) and black patches on mes- and metacetaula or only on metacetaula; body without silvery or golden pilosity; head anteriorly deflected (Figs. 1, 11), in dorsal view with hardly developed antennal tubercles; eyes very large (Figs. 1 - 4, 11); antennomere 1 shorter than antennomeres 2 - 4 together, antennomeres 2 and 3 subequal in length (Fig. 7) or antennomere 3 slightly longer than second (1.2 times), antennomere 4 ventroapically with whitish sulcus; rostrum without conspicuous long pilosity; pronotum of apterous morph with parallel sides, without posterior constriction (Figs. 3, 11); meso- and metanotum of apterous female with dorsolateral edge; metanotum of apterous female with long posteriad directed spine (Figs. 1, 3); thoracic venter without modifications in both sexes; metacetaula without spines; profemur in both sexes slender, with a dense row of long, stout bristles in basal third to half, and without subapical tooth; protarsus short, in both sexes 0.35 - 0.40 times length of protibia, first protarsomere distinctly longer than second, in both sexes without modification (Figs. 6, 8, 12); claws of foreleg with indentations; mesofemur without fringe of hairs or conspicuous spines in both sexes, slightly shorter than metafemur; mesotibia but not mesotarsus with swimming hairs; metacoxa not distinctly longer than wide; metafemur in male ca. 3 times, in female ca. 2.5 times as long as metatibia, basally not flattened; metatarsomeres fused;

claws of middle leg very small, of hind leg lacking; forewing venation reduced (Fig. 5); abdomen elongate and straight in both sexes; tergite 2 much longer than tergite 1 or tergite 3 (Fig. 3); male: tergite 7 convex, in lateral view posterior portion elevated over connexival margin (Fig. 2); segment 8 large; genitalia rather small; pygophore short, distally broadly rounded; paramere medium-sized, directed caudad, nearly straight or weakly curved, somewhat twisted, distally bare (Figs. 10, 16); proctiger relatively wide, with rounded lateral lobes (Figs. 9, 15); female: tergite 1 with pair of large, black, ovate, slightly raised areas, not fused with tergite 2 (apterous morph) (Fig. 3); metasternum and sternites 2 - 6 of female more or less fused, sutures medially weakly developed; connexivum 6 without process; sternite 7 of female elongate, without middle lobe, with short slender process at connexivum (Fig. 3) and with long stout dorsodistal process (Figs. 1, 3); tergite 7 long, with straight hind margin; tergite 8 relatively long, directed caudad; proctiger simple, directed caudad; segment 8, proctiger and gonocoxae laterally and ventrally enclosed by segment 7.

**Comparative notes:** see Diagnosis (above) and Discussion (below).

**Diversity and Distribution:** Two species from South India and Sri Lanka.

### *Jucundus custodiendus* DISTANT, 1910 (Figs. 1 - 10)

*Jucundus custodiendus* DISTANT, 1910: 143; DISTANT 1910: 145 (repeating description).

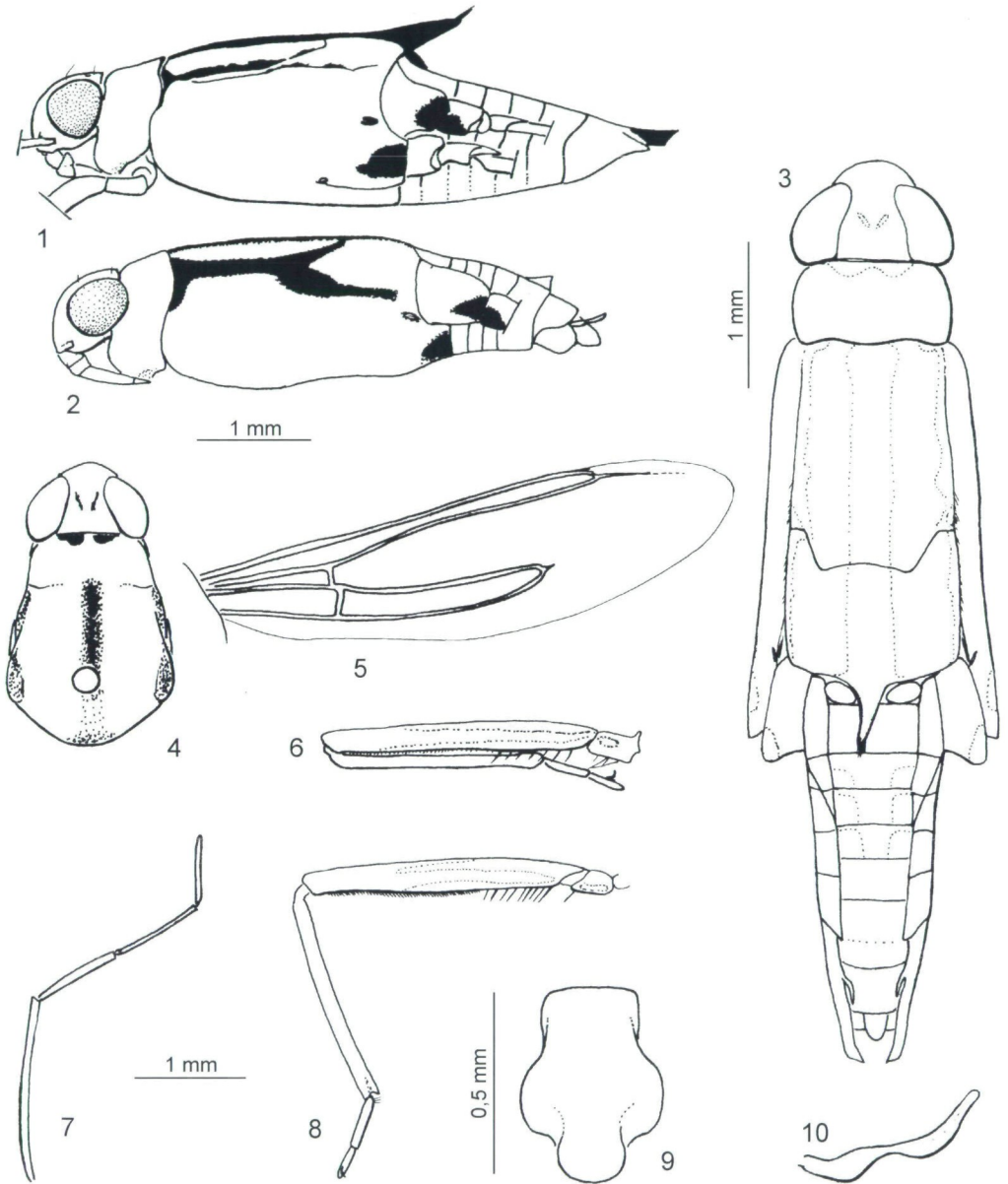
*Rheumatogonus custodiendus* (DISTANT, 1910): ESAKI 1927: 267; LUNDBLAD 1933: 372 (listed).

*Pleciobates tuberculatus* ESAKI, 1930: THIRUMALAI 1992: 173 (male only!; misidentification).

**Material examined: lectotype** (macropterous female, present designation): "Type\ H.T.", "Annadale. [oblique]\ Maddathoray\ W. base of\ W. Ghats.\ Travancore\ 18-XI-09.", "Jucundus\ custodiendus\ type Dist.", "LECTOTYPE\ Jucundus\ custodiendus\ Dist.\ 1991\ Det. N. Møller Andersen" [unpublished] (BMNH); **additional material examined:** 1 male, 1 female (apterous) "S.INDIA, KERALA, 1250 m\ 15km SW Munnar, 1.-9.V.1997\ 10°02'N 75°58'E, Kallar Valley\ Dembicky & Pacholatko leg." (NHMW); 1 male (macropterous, dealate) "INDIA: Kerala, 31.12.1998\ 30km NNE Trivandrum, 400m\ SW Munnar, Kallar Bridge, 08°45'N 77°05'E\ leg. D. Boukal (31)" (NHMW); 1 male (apterous) "INDIA: Nilgiri Biosphere\ Reserve, Gundalur-Nadugani\ 1000 m, 29 March 1991\ leg. G. Thirumalai" (ZSIC Reg.No. I/H1050); 1 female (apterous) "INDIA: Kasargod Distr.\ Kerala, Parappa Reserve Forest, Santhimala\ 283 m, 24 September, 1993, leg.K.C.Gopi" (ZSIT, Reg.No. 6309); 1 female (apterous) "INDIA: Wynad Distr. \ Noolpuzha\ 969 m, leg. C.Radhakrishnan" (ZSIT, Reg.No. 7207); 1 male, 1 female (apterous), 2 immatures "INDIA: Dashanna, Kannada Distr.\ Karnataka, road to Hundia\ Subramania, 16 April 1999\ 100 m, leg. G. Thirumalai" (ZSIC Reg.No. I/H 1051).

**Material not examined:** Dr. Nils Møller Andersen (Copenhagen) provided the following distribution data based on material deposited in ZMUC: 15 males, 8 females (apterous), 6 immatures, India, Karnataka, Kotigehar W of Mudigere, ca. 900 m, loc. 9, stream pools, 2.-10.XI.1977, leg. N.M. Andersen; 1 male, 1 female (apterous), 3 females (macropterous), India, Karnataka, Gersoppa (Jog) Falls, ca. 600 m, loc. 32, stream with rocks, 18.-22.XI.1977, leg. N.M. Andersen; 4 males, 1 female (apterous), 1 immature, INDIA, Karnataka, Mavingundi, 5 km from Jog, ca. 600 m, loc. 35, small stream, 20.XI.1977, leg. N.M. Andersen; 13 males, 5 females (apterous), 3 males (macropterous, 2 dealated), 1 nymph, India, Karnataka, Mavingundi, 5 km from Jog, ca. 600 m, loc. 36-38, stream with rocks, 20.-22.XI.1977, leg. N.M. Andersen.

**Description: Apterous male:** Body length 4.9 - 5.0 mm; maximum width (on mesothorax) 1.48 - 1.53 mm; head yellow, vertex with two small black spots between eyes; antenna black; thorax yellow, pronotum with two black confluent marks in middle of anterior margin, mesonotum and metanotum with three black longitudinal lines, meso-metanotal suture black, acetabula with blackish marks (weak on proacetabulum) (Fig. 3);



Figs. 1 - 10: *Jucundus custodiendus*, (1, 3) apterous female, (4 - 6) macropterous female (lectotype), (2, 7 - 10) apterous male: (1, 2) habitus (without appendages), lateral view; (3) same, dorsal view; (4) head and pronotum, dorsal view (circle indicating pin hole); (5) forewing; (6) foreleg; (7) antenna; (8) foreleg; (9) proctiger, dorsal view; (10) left paramere, lateral view.

laterotergites and tergites 1 - 5 blackish, tergites 6 - 7 yellowish brown; segment 8 brownish; proctiger blackish; ventral surface yellowish to leucine; legs with coxae, trochanters and profemora yellowish, meso- and metafemora, tibiae and tarsi brown to black; metacoxa

ventrally blackish; all trochanters with brownish streak; profemur dorsally with two black streaks; pubescence generally thin and short; silvery or golden pubescence absent.

Head with large eyes; synthlipsis 0.44 of head width (1.05 mm), length of antennomeres 1 - 4 (in mm), 1.79 : 0.88 : 0.92 : 0.70 (Fig. 7); antennomere 1 without long bristles, antennomere 4 with distoventral sulcus extending two fifths of length.

Prothorax 0.96 times head width, 2.0 times as wide as long; meso- and metanotum together somewhat longer than abdomen including segment eight (1.1 times); mesosternum simple, without impression; profemur slender, 9.5 times as long as wide, on inner side basally with row of long black setae, distally with short, dense, proximad directed pilosity (Fig. 8); protibia not distinctly flattened, 0.80 times as long as profemur, on inner side without modifications; first protarsomere (length 0.46 mm) 5.0 times as long as wide, 1.5 times as long as second, basally with some long hairs; combined length of tarsus 0.40 times protibia length; mesofemur length 0.96 times metafemur length, 1.4 times body length, on anterior ("ventral") side with row of very short black denticles, these evanescent beyond middle; mesotibia with swimming hairs.

Abdomen: connexivum strongly bent upward; tergites 1 and 3 - 6 almost equal in length, 2 and 7 much longer (1.9 and 2.2 times as long as tergite 6), tergite 7 1.0 times as wide as long, convex, posteriorly elevated above connexival margin (Fig. 2); segment 8 in dorsal view about 1.3 times as long as tergite 7, and 1.1 times as wide as long; pygophore short, distally rounded, not surpassing proctiger; proctiger (suranal plate) rounded distally and laterally (Fig. 9); paramere long, slender, weakly curved, with constriction in middle of length, distally bare (Fig. 10).

**Apterous female:** Body length 5.6 - 6.3 mm; maximum width (on mesacetabula) 1.54 - 1.80 mm; general appearance slender as in male, abdomen 1.0 times as long as meso- and metanotum combined (without spine, 3.11 mm) (Figs. 1, 3); coloration similar to male, except meso-metanotal suture less infuscated, metanotal spine black, tergites 1 - 7 yellowish, tergite 1 with two ovate black marks, tergites 2 - 6 laterally and tergite 7 distally infuscated; processes of segment 7 brownish.

Antenna relatively shorter than in male, length of antennomeres 1 - 4 (in mm), 1.95 : 0.88 : 0.92 : 0.70; meso- and metanotum with dorsolateral edge unevenly set with some black hairs (Figs. 3); metanotum with very long postero-dorsad directed, evenly tapered spine (Figs. 1, 3); profemur slender, length 10.4 times width, short pilosity not directed proximad; protarsus 0.40 times as long as protibia, first protarsomere 1.3 times as long as second; mesofemur 1.2 times body length; abdomen not folded, laterotergites 1 - 2 directed latero-dorsad, 3 - 7 directed dorsad; connexivum 7 with short, slender process (Fig. 3); tergites not fused; tergite 1 with one pair of ovate swellings; tergite 2 medianly 1.5 times as long as tergite 3; tergites 3 - 5 subequal in length, 6 slightly longer, 7 longest, 1.5 times as long as 6th, 0.8 times as long as broad, covering only base of tergite 8 (Fig. 3); tergites 7 and 8 and proctiger directed posteriad, without modifications; sternites 2 - 6 without modifications; sternite 7 large, about as long as lengths of sternites 4 - 6 taken together, without terminal lobe, dorsocaudad with long, relatively broad, apically obliquely truncate processes (Fig. 1); gonocoxa concealed within segment 7.

**Macropterous female:** body length excluding wings 6.0 mm, including wings 7.5 mm; pronotal lobe large (as typical for Ptilomerinae), in anterior part medially weakly infuscated (Fig. 4); forewing venation reduced (Fig. 5).

**Notes:** The lectotype is in rather poor condition, as antennal segments 3 and 4, left middle and hind legs, and left wings are lacking; forelegs are glued on the label, on which the specimen is pinned. Specific congruence with the apterous female can be confirmed by the characteristic posterior appendages of the connexiva, and by the structures of head and legs.

**Macropterous male:** body length excluding wings 5.2 mm; pronotal lobe large, with infuscated margins and blackish median line posteriorly incomplete; otherwise as in apterous male.

**Habitats:** *Jucundus custodiendus* has been collected in stream pools and flowing streams with rocks running in shade at moderate altitudes, 600 - 900 m a.s.l. (Andersen, pers. comm.).

**Distribution:** South India: Karnataka, Kerala.

### ***Jucundus vittatus* (ESAKI, 1928) comb.n. (Figs. 11, 12, 15, 16)**

*Rheumatogonus vittatus* ESAKI, 1928: 505-508.

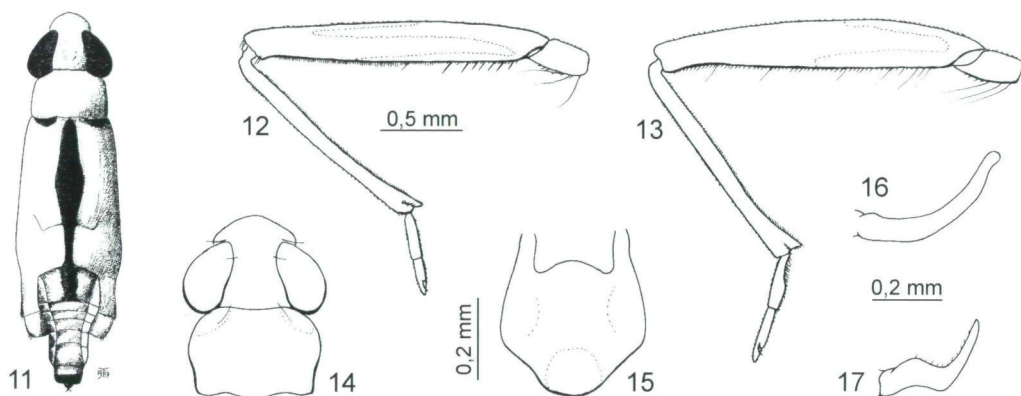
**Material examined:** holotype (apterous male): "Kitulgala\ Ceylon. 12-IV-27", "*Rheumatogonus\ vittatus* Esaki\ det. Teiso Esaki", "Brit. Mus.\ 1928- 341", "Type", "comb. n.\ *Jucundus\ vittatus* (ESAKI)\ det. H. Zettel 2001" (BMNH).

**Notes:** After finishing the manuscript on *Jucundus custodiendus*, the first author has been informed by Dr. Nils Møller Andersen (ZMUC) that a second *Jucundus* species occurs in Sri Lanka (males and females in the John T. Polhemus Collection), which is probably conspecific with *Rheumatogonus vittatus* ESAKI, 1928. By the kind help of Mr. M.D. Webb (BMNH) the first author was able to study the male holotype and one of the two teneral female paratypes of *R. vittatus* and to illustrate some important characteristics of the male just before printing of this volume. Obviously, the female paratype is not conspecific with the male and a typical *Rheumatogonus*. The male, however, on which the original description is based (ESAKI 1928), shares some important characteristics with *Jucundus custodiendus*: one (but not three) complete black longitudinal stripes on the meso- and metanotum (Fig. 11); the parallel-sided pronotum (Fig. 11); the short row of rather stout bristles at the base of the profemur (Fig. 12); the simple first protarsomere (Fig. 12); the relatively broad proctiger (Fig. 15); and relatively elongate parameres, but which are weakly curved, lack a constriction, and have the apex bent mediad (Fig. 16) (not "hook-like" as wrongly stated by ESAKI 1928). The last six characteristics exclude *vittatus* from *Rheumatogonus*, and set this species in *Jucundus*. Some of the probable autapomorphies of *Jucundus* (see above) are found only in the female. It will be necessary to adjust the definition of *Jucundus* after the description of the female of *Jucundus vittatus*.

**Comparative notes:** *Jucundus vittatus* strongly differs from *J. custodiendus*, e.g., in colour pattern (comp. Figs. 2 and 11), shape of proctiger (comp. Figs. 9 and 15), and shape of paramere (comp. Figs. 10 and 16). Further, the male of *J. vittatus* is slightly smaller (length 4.6 mm) and has a longer antennomere 3 (1.2 times length of antennomere 2) than the male *J. custodiendus*.

**Distribution:** Sri Lanka.





Figs. 11 - 17: (11, 12, 15, 16) *Jucundus vittatus*, holotype, apterous male; (13, 14, 17) *Rheumatogonus luzonicus* (KIRKALDY, 1909), apterous male: (11) habitus (without appendages), dorsal view (from ESAKI 1928), (12, 13) foreleg; (14) head and prothorax, dorsal view; (15) proctiger, dorsal view (pilosity omitted); (16, 17) left paramere, lateral view.

## Discussion

The subfamily Ptilomerinae presently consists of eleven recognized genera, whose species are mostly uniform in their sets of characteristics. Some additional genera are still undescribed: New genera should be erected for "*Rhyacobates*" *imadatei* MIYAMOTO, 1967, from Borneo, and probably also for "*Pleciobates*" *indicus* THIRUMALAI, 1986, which do not fit the diagnoses of *Rhyacobates* and *Pleciobates*, respectively (ANDERSEN & CHEN 1995, POLHEMUS & ZETTEL 1997, ZETTEL & THIRUMALAI 2001). One undescribed genus from Thailand ("Genus 1" in CHEN & ZETTEL 1998) is still awaiting description, and *Potamometropsis* s. auct. may turn out to be polyphyletic. Most of the accepted genera have been revised at the species level (HUNGERFORD & MATSUDA 1965, ANDERSEN & CHEN 1995, ZETTEL 1994, ZETTEL & CHEN 1996, POLHEMUS & ZETTEL 1997, ZETTEL & THIRUMALAI 2001), and of all Oriental genera only the species diversity of the genus *Rheumatogonus* KIRKALDY, 1909, is still poorly understood. However, the last attempt to make a natural system of all genera, by MATSUDA (1960), includes only eight genera, and is also outdated because some relationships are based on obviously plesiomorphic characteristics. Presently, the understanding of the phylogenetic system of the Ptilomerinae is still little developed and must be discussed in a more comprehensive analysis. The detailed description of *Jucundus* presented in this paper is one of the requirements for such an analysis.

*Jucundus* shares with *Rheumatogonus*, with which it has been synonymized for more than seventy years, several important characteristics: The yellowish (green in living *Rheumatogonus* and *Jucundus*; Andersen, pers. comm.) ground colour of the body (also found in some *Potamometropsis* species), the strongly deflected head (also in *Stridulobates*), the relatively short antennal segment 1, a row of strongly developed indentations on the claws of the foreleg, the fusion of metatarsomeres, the reduction of the claws of the hind leg (also, e.g., in *Pleciobates*, *Andersenius*, *Rhyacobates*, and *Stridulobates*), the reduced



venation of the forewing, and the rather short, distally bare paramere. However, some of these features may turn out to be plesiomorphies or convergencies. Many other characteristics separate *Jucundus* and *Rheumatogonus*. Possible autapomorphies of *Jucundus* are listed in the Diagnosis (above). The modified (shortened and ventrally concave) first tarsomere of the foreleg of males (Fig. 13), the posteriorly constricted pronotum of the apterous morph (Fig. 14), and the basally flattened metafemur of the female seem to be good autapomorphies of *Rheumatogonus*. The female terminalia of both genera are very different, but similar structures are known from several other genera; e.g., a thin connexival spine as in *Jucundus* is only found in *Ptilomera*, a genus regarded to be relatively basic in the Ptilomerinae and differing from *Jucundus* is most of the main characteristics. The phylogenetic position of the ptilomerine genus *Jucundus* must be proved in an phylogenetic analysis of the subfamily. To the present knowledge, *Jucundus* seems to be the adelphotaxon of *Rheumatogonus*.

### Acknowledgements

The authors wish to thank: the Director Zoological Survey of India, Calcutta, and the Officer In Charge, Zoological Survey of India, Southern Regional Station, Chennai, for permission and facilities; Mr. C. Radhakrishnan, Scientist SE and Officer In Charge, Zoological Survey of India, Western Ghats Regional Station, Calicut, Kerala, for access to aquatic bugs from the Tropical Rain Forest, Coorg-Waynad; Mr. M.D. Webb (London) for sending type specimens for study; Dr. David Boukal (Ceske Budejovice, Czech Republic), Lubos Dembicky (Brno, Czech Republic), and Petr Pacholatko (Brno, Czech Republic) for leaving material of aquatic bugs to the NHMW; Prof. Dr. Carl W. Schaefer (Storrs, U.S.A.) for the linguistic review of the manuscript; and Dr. Nils Møller Andersen (Copenhagen) and Dr. Ping-ping Chen (Tiel) for very useful remarks and additions to an earlier version of the manuscript.

### References

- ANDERSEN N.M., 1982: The Semiaquatic Bugs (Hemiptera, Gerromorpha). – Entomograph 3: 455 pp.
- ANDERSEN N.M. & CHEN P.P., 1995: A taxonomic revision of the Ptilomerine genus *Rhyacobates* ESAKI (Hemiptera: Gerridae), with five new species from China and adjacent countries. – Tijdschrift voor Entomologie 138: 51-67.
- CHEN P.P. & ZETTEL H., 1998: Key to the genera and subgenera of Gerridae (Gerromorpha) of Thailand and adjacent countries, with a check-list of species known from Thailand. – Amemboa 2: 24-41.
- CHENG L. & FERNADO C.H., 1969: A taxonomic study of the Malayan Gerridae (Hemiptera: Heteroptera) with notes on their biology and distribution. – Oriental Insects 3: 97-110.
- CHENG L., YANG C.M. & ANDERSEN N.M., in press: Guide to aquatic Heteroptera of Singapore and Peninsular Malaysia. I. Gerridae and Hermatobatidae. – Raffles Bulletin of Zoology.
- DISTANT W.L., 1910: Some undescribed Gerrinae. – Annals and Magazine of Natural History (VIII. series) 5: 140-153.
- DISTANT W.L., 1911: The fauna of British India, including Ceylon and Burma. Rhynchota Vol. V. Heteroptera: Appendix: 156-158.
- ESAKI T., 1927: Revision of the *Ptilomera*-group of the Gerridae, with descriptions of three new species. – EOS Revista Espanola de Entomologia 3: 251-268.
- ESAKI T., 1928: New or little known Gerridae. – I. Ceylonese species. – Annals and Magazine of Natural History (X. series) 2: 505-513.

- HUNGERFORD H.B. & MATSUDA R., 1965: The genus *Ptilomera* AMYOT & SERVILE (Gerridae: Hemiptera). – The Kansas University Science Bulletin 45: 397-515.
- LUNDBLAD O., 1933: Zur Kenntnis der aquatilen und semiaquatilen Hemipteren von Sumatra, Java und Bali. – Archiv für Hydrobiologie, Suppl. 12: 1-195, 263-489, 21 Tafeln.
- MATSUDA R., 1960: Morphological evolution and a classification of the Gerridae (Hemiptera-Heteroptera). – The Kansas University Science Bulletin 41: 25-632.
- POLHEMUS J.T. & ZETTEL H., 1997: Five new *Potamometropsis* species (Insecta: Heteroptera: Gerridae) from Borneo. – Annalen des Naturhistorischen Museums in Wien 99B: 21-40.
- THIRUMALAI G., 1992: A new record of *Pleciobates tuberculatus* ESAKI from India with a key to the known species of *Pleciobates* ESAKI (Gerridae: Heteroptera: Insecta). – Hexapoda 4(2): 170-174.
- ZETTEL H., 1994: Revision der Gattung *Potamometropsis* LUNDBLAD (Insecta: Heteroptera: Gerridae). – Annalen des Naturhistorischen Museums in Wien 96B: 75-98.
- ZETTEL H., 1999: Notes on Philippine *Potamometropsis* LUNDBLAD, 1933 (Insecta: Heteroptera: Gerridae). – Annalen des Naturhistorischen Museums in Wien 101B: 155-161.
- ZETTEL H. & CHEN P.P., 1996: Beitrag zur Taxonomie und Faunistik der Gerridae Vietnams mit Neubeschreibungen der Gattung *Andersenius* gen.n. aus der Unterfamilie Ptilomerinae und weiterer Arten. – Entomologische Abhandlungen Staatliches Museum für Tierkunde Dresden 57 (6): 149-182.
- ZETTEL H. & THIRUMALAI G., 2001: *Stridulobates anderseni*, a new genus and species of ptilomerine Gerridae (Hemiptera: Heteroptera) with "stridulatory devices" from South India. – Insect Systematics & Evolution 31: 433-439.

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Annalen des Naturhistorischen Museums in Wien](#)

Jahr/Year: 2001

Band/Volume: [103B](#)

Autor(en)/Author(s): Zettel Herbert, Thirumalai G.

Artikel/Article: [Re-establishment of the ptilomerine genus Jucundus DISTANT, 1910 \(Insecta: Heteroptera: Gerridae\), with redescription of the type species Jucundus custodiendus DISTANT, 1910 from South India and notes on J. vittatus \(ESAKI, 1928\) ..... 273-282](#)