Ann. Naturhist. Mus. Wien	101 B	155 - 161	Wien, Dezember 1999

Notes on Philippine *Potamometropsis* LUNDBLAD, 1933 (Insecta: Heteroptera: Gerridae)

H. Zettel*

Abstract

Potamometropsis sumaldei sp.n. from North Luzon, Philippines, is newly described, which was formerly confused (ZETTEL 1994) with a closely related species, *P. ikarus* ZETTEL, 1994 from South Luzon. Records on the other Philippine *Potamometropsis* species are presented, with first records of *P. ikarus* from Catanduanes, and *P. werneri aberrans* ZETTEL, 1994 from Biliran. Notes on the habitats of all species are presented. The Philippine *Potamometropsis* species are classed into two morphologically and ecologically defined groups (*P. hoogstraali* group, *P. werneri* group).

Key words: Heteroptera, Gerridae, *Potamometropsis*, new species, distribution, Philippines, Luzon, Catanduanes, Biliran.

Zusammenfassung

Potamometropsis sumaldei sp.n. aus Nord-Luzon, Philippinen, wird neu beschrieben. Diese Art ist früher mit *P. ikarus* ZETTEL, 1994 aus Süd-Luzon verwechselt worden (ZETTEL 1994). Fundmeldungen anderer philippinischer *Potamometropsis* Arten werden gemacht, mit Erstnachweisen von *P. ikarus* für Catanduanes und von *P. werneri aberrans* ZETTEL, 1994 für Biliran. Anmerkungen zu den Habitatpräferenzen aller Arten werden gegeben. Die philippinischen *Potamometropsis* Arten werden zwei morphologisch und ökologisch definierten Gruppen (*P. hoogstraali* Gruppe, *P. werneri* Gruppe) zugeordnet.

Introduction

The torrent striders of the Oriental genus *Potamometropsis* LUNDBLAD, 1933 are inhabitants of fast flowing streams and rivers. A taxonomic revision by the author (ZETTEL 1994) contains four species and one subspecies from the Philippine Islands; they are all endemic.

Potamometropsis ikarus ZETTEL, 1994 was described from material from South Luzon (Camarines Sur) and North Luzon (Ifugao). The more characteristic apterous morph of *P. ikarus* was only available from Camarines Sur, but all specimens from Ifugao were macropterous (mostly dealate). Recently, numerous apterous specimens were collected in North and South Luzon and in Catanduanes, which show several stable differences of the northern "populations". Formerly, some characters distinguishing the specimens from both regions were ascribed to the different morphs or to intraspecific variability (ZETTEL 1994); other differences are not at all present in macropterous specimens. Based on the new samplings, the characters have to be regarded as specifically diagnostic; the new species is named *Potamometropsis sumaldei* sp.n.

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

In addition, this paper presents new records of the other Philippine species and subspecies. First records in the distributional lists are marked with an asterisk (*). Further, the Philippine species are arranged into two species groups.

Specimens are apterous if not otherwise stated.

Repositories:

BPBM	B.P. Bishop Museum, Honolulu, Hawaii, U.S.A.
CSW	Coll. Franz Seyfert, Vienna, Austria
CNTN	Coll. Nico Nieser, Tiel, The Netherlands
CZW	Coll. Herbert Zettel, Vienna, Austria
JTPC	Colorado Entomological Museum [= Coll. John T. Polhemus], Englewood, Colorado, U.S.A.
NHMW	Natural History Museum Vienna, Austria
UPLB	Museum of Natural History, University of the Philippines, Los Baños, Laguna, Philippines

Potamometropsis sumaldei sp.n. (Figs. 1, 2, 4, 6, 8)

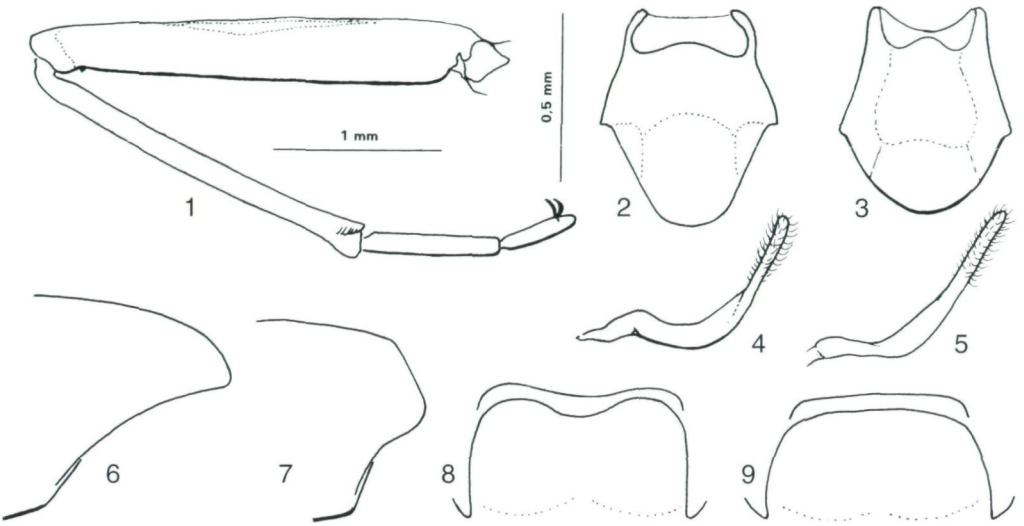
Potamometropsis ikarus ZETTEL, 1994: 95 (partim).

Holotype (♂): "Philippinen: LZ, Mount.Pr. [= Luzon, Mountain Province]\ 5km S Bontoc, Balitian Riv.\ 900 m, 27.2.1999\ leg. H. Zettel (190)" (UPLB); **paratypes:** 8 ♂♂, 8 ♀♀, same label data as the holotype (NHMW, UPLB); 11 ♂♂, 14 ♀♀, and 5 ♂♂, 10 ♀♀ (macropterous, dealate) "Philippinen: LZ, Benguet\ Asin Hot Springs\ W Baguio, 17.2.1999\ leg. H. Zettel (180)" (UPLB, CZW, NHMW, CNTN); 2 ♀♀, 1 ♀ (macropterous, dealate) same label data except "leg. F. Seyfert (4)" (CSW); 14 ♂♂, 20 ♀♀ "Philippinen: LZ, Mount.Pr.\ Chico River, Gonogon\ 1100 m, 21.2.1999\ leg. H. Zettel (184)" (UPLB, CZW); 1 ♂, 8 ♀♀ "Philippinen: LZ, Mount.Pr.\ Chico River, Gonogon\ 1100 m, 21.2.1999\ leg. F. Seyfert (8a)" (CSW, UPLB); 33 ♂♂, 22 ♀♀ (all macropterous, mostly dealate, labeled as paratypes of *P. ikarus*) "PHILIPPINES\ Ifugao Province\ Jacmal Bunhian\ 24 km E Mayoyao, 800-\ 1000m, 7-8.IV. [or: 9.-12.IV., 16.-18.IV., 19.-21.IV., 25.-26.IV., 25.-27.IV., 30.IV., 4.-6.V., 1.-10.V.] 1967", "H.M. [or: L.M.] Torrevillas\ Collector\ BISHOP MUSEUM" (BPBM, NHMW); 1 ♂ (macropterous, dealate, labeled as paratypes of *P. ikarus*) "PHILIPPINES\ Ifugao Prov., Liwo\ 8 km E Mayoyao, 1000-\ 1300m, 30.-31.V.1967", "L.M. Torrevillas\ Collector\ BISHOP MUSEUM" (BPBM); 1 ♂, 1 ♀ "ILOCOS NTE:\ PIDDIG: TANGA-\ DAN C. NURSERY\ PARAISO RE-\ FOR. PROJECT\ 21 OCT. 1976\ A.A. BARROSO" (CZW) (numerous specimens from this locality in UPLB, not examined for this study).

Description:

Apterous male: Body length 5.6 - 6.2 mm; body width 1.90 - 2.06 mm; length of second antennal segment 0.80 - 0.88 mm; length of mesofemur 8.0 - 8.4 mm.

Colour: Head yellow (in living specimens body marks are greenish, but turn to yellow after preservation), with two black marks on vertex not or hardly confluent, and clypeus, labrum, and antennal tubercles black; antenna completely black; rostrum yellow, except segment 4 blackish; pronotum dorsally black, with large yellow middle spot in posterior three fourths; meso- and metanotum without yellow marks; all thoracic nota with distinct greenish metallic shimmer; laterotergites and tergites 1 - 6 black; tergite 7 black, with narrow yellow hind margin; propleura yellow, meso- and metapleura black; venter black except prosternum, all acetabula, thin midline anteriorly on mesosternum, and line along hind margin of sternite 7 yellow; segment 8 yellow, dorsally with black roundish mark; pygophore yellow; proctiger yellow with large black mark; coxae, trochanters, profemur, and basal thirds to half of meso- and metafemora yellow; distal parts of legs black; profemur with a narrow black line on dorsal surface, rarely with an additional faded line on ventral surface.



Figs. 1 - 9: (1, 2, 4, 6, 8): *Potamometropsis sumaldei* sp.n., (3, 5, 7, 9): *P. ikarus*; (1) foreleg of male; (2, 3) proctiger of male; (4, 5) left paramere, lateral view; (6, 7) posterior margin of female sternite 7, in lateral view; (8, 9) middle lobe of female sternite 7, in ventral view, hind margin turned upward, upper lines showing variations.

Pilosity: Whole body covered with a relatively dense, short, whitish pubescence, which in several parts undulate, mostly decumbent to appressed, and only on sternites suberect, densest on venter and pleurae, least dense medianly on meso- and metanotum; additional silverish pubescence not very distinct from whitish pubescence, forming lines between thoracic nota and pleurae, two pairs of small roundish spots on mesonotum and at meso-metanotal suture, and indistinct marks in the lateral parts of tergites 1 - 7; without erect setae except rows along inner eye margin.

Structural characters: Head with very large eyes; synthlipsis 0.48 times head width; relative lengths of antennal segments 1 - 4 (segment 2 = 1) as 3.0 : 1 : 1.1 : 0.85.

Prothorax 1.25 times as wide as head, 2.1 times as wide as long; meso- and metanotum together distinctly longer than the abdomen until hind margin of segment 7 (1.45 times); profemur slender, 7.0 times as long as wide, 0.33 times as long as mesofemur, ventrally with numerous small denticles and row of black setae, with indistinct ventral depression and one very small tooth subapically (Fig. 1); protibia weakly flattened, 0.84 times profemur length, with a ventral row of black denticles; combined length of protarsal segments 0.55 times tibia length; second segment of protarsus 0.57 times as long as segment 1 (Fig. 1); metafemur length 0.95 times mesofemur length.

Abdomen: Laterotergites strongly upward directed; tergites 1 and 2 subequal in length and longer than each of tergites 3 - 6; tergite 7 wider than long (1.4 times) and as long as tergites 4 - 6 combined; segment 8 large; pygophore in posterior half with convergent sides; proctiger distally rounded, laterally with short projecting angles (Fig. 2); paramere distally slender, distinctly twisted, and set with numerous setae (Fig. 4).

Apterous female: Body length 7.5 - 7.9 mm; body width 2.49 - 2.75 mm; length of second antennal segment 0.84 - 0.90 mm; length of mesofemur 9.0 - 9.6 mm.

Colour similar as in male, but lighter: With large yellow mark along midline of mesonotum; antennal segment 1 with light brownish ring in basal fourth; lateral margins of laterotergites 3 - 7 yellowish; venter largely yellow, except two very large black marks anterolaterally on mesosternum.

Pilosity as in male, except thoracic pleurae additionally with thin, erect, whitish setae; and venter throughout with short appressed (not suberect) pubescence.

Structural characters differing from male as follows: General appearance broader, with much longer abdomen; prothorax 2.2 times as wide as long; meso- and metanotum together distinctly shorter than the abdomen until hind margin of segment 7 (0.85 times); profemur more slender, 10.0 times as long as wide, without ventral denticles, without subapical tooth; protarsus 0.75 times protibia length, second segment 0.52 times segment 1.

Abdomen elongate, similar as in *P. ikarus* (see ZETTEL 1994: fig. 64); tergite 2 medially longer than each of tergites 1, 3, 4, and 5, and subequal to tergite 6; tergite 7 longest, 1.0 - 1.15 times longer than basal width, and longer than tergites 5 and 6 combined; tergite 8 directed caudad, longly surpassing tergite 7; sternite 7 large, posteriorly with relatively small, short middle lobe with slightly to distinctly concave hind margin (Fig. 8), in lateral view with distinctly postward directed connexival corners (Fig. 6).

Macropterous morph: body length (until tip of abdomen) of male 5.9 - 6.3 mm, of female 7.5 - 8.0 mm; pronotal lobe large, broad, with prominent humeral angles and anteriorly weakly developed median carina, with thin greyish pubescence; most specimens dealate; wings yellowish brown with brown veins, venation see ZETTEL (1994: fig. 59).

Comparative notes: *Potamometropsis sumaldei* sp.n. is very closely related to *P. ikarus* from which it can be distinguished by the following characters:

character (+) = only in apterous morph	***Potamometropsis sumaldei* sp.n.**	***Potamometropsis ikarus***
dark mark on head:	two separated stripes	medianly confluent
profemur:	weakly infuscated (Fig. 1)	strongly infuscated
segment 2 of protarsus:	ca. 0.55 times segment 1	ca. 0.65 times segment 1
pilosity of thoracic nota (+):	thick, whitish	thin, greyish
♀: connexivum 7:	acute angle (Fig. 6)	obtuse angle (Fig. 7)
♀: lobe of sternite 7:	posteriorly concave (Fig. 8)	posteriorly straight or convex (Fig. 9)
♀: mesonotum (+):	with yellow midline	completely dark
♀: length of tergite 7:	equal or longer than basal width	shorter than basal width
♂: proctiger:	with obtuse lateral angles (Fig. 2)	with reduced lateral angles (Fig. 3)
♂: paramere:	distally slightly twisted (Fig. 4)	distally not twisted (Fig. 5)

Distribution: Luzon: Mountain Province*, Ifugao*, Benguet*, Ilocos Norte*.

Habitats: *Potamometropsis sumaldei* sp.n. is a species of large streams and rivers, where it inhabits the water surface behind large rock boulders, where the water velocity is reduced. There it lives in large swarms, both adults and larvae mixed. In the Balitian River, Mountain Province, it was found in a more open, evenly flowing area, where adult specimens were mostly found in couples; this habitat resembles that of *Cylindrostethus vittipes* STÅL, 1870, but it could be also the result of previous disturbence by the collecting or by fishing activities. Collecting data are from elevations between 800 - 1300 m.

Etymology: In friendship and with gratitude dedicated to Prof. Dr. Augusto C. Sumalde, director of the Museum of Natural History, University of the Philippines Los Baños, an Ilocano like this species.

Notes on the other Philippine species

Potamometropsis ikarus ZETTEL, 1994 (Figs. 3, 5, 7, 9)

Potamometropsis ikarus ZETTEL, 1994: 95 (partim).

Material examined: holotype (macropterous ♂, BPBM) and **paratypes** (2 ♂♂, 3 ♀♀, BPBM, 1 ♀ NHMW): "P.I., CAMARINES\ SUR. Mt. Iriga\ 500m, 25.III.1962", "H.M. Torrevillas\ Collector\ Bishop" (BPBM); **additional material:** 2 ♂♂, 9 ♀♀, and 2 ♀♀ (macropterous, alate) "Philippinen: LZ, Camarines\ Sur, Lupi, Alanao\ Bahi River, 3.3.1999\ leg. H. Zettel (191)" (NHMW, UPLB); 4 ♂♂, 5 ♀♀ same label data except "leg. F. Seyfert (18)" (CSW, UPLB); 13 ♂♂, 10 ♀♀ "Philippinen: LZ, Albay\ Malinao, Palali Falls\ 200 m, 14.3.1999\ leg. H. Zettel (201)" (NHMW, UPLB, JTPC); 35 ♂♂, 30 ♀♀ "Philippinen: Catanduanes\ N Bato, S San Miguel\ Balongbong Falls, 7.3.\ 1999, leg. H. Zettel (195)" (NHMW, UPLB, JTPC, CNTN); 5 ♂♂, 7 ♀♀, same locality data, except "leg. F. Seyfert (21)" (CSW, UPLB).

Revised distribution: Luzon: Camarines Sur, Albay*; Catanduanes*.

Habitats: similar as in *P. sumaldei* sp.n., but collected in lowlands and hilly areas from 50 - 500 m a.s.l.

Potamometropsis werneri werneri HUNGERFORD, 1957

Potamometropsis werneri HUNGERFORD 1957: 127.
Potamometropsis werneri werneri ZETTEL, 1994: 93.

Additional material examined: 3 ♂♂, 3 ♀♀, 1 ♂ (macropterous) "PHILIPPINEN: Mindanao\ Bukidnon, 8km NW Lantapan\ Sonka, Alanib River, 950m\ 8.11.1996, leg.Zettel (92)" (NHMW); 20 ♂♂, 18 ♀♀ "PHILIPPINEN: Mindanao\ Bukidnon, 4km NE Lantapan\ Kaatuan, Kulasihan Riv.,850m \9.11.1996, leg.H.Zettel (93)" (UPLB, NHMW).

Distribution: Mindanao: Misamis Oriental, Bukidnon*, South Cotabato, Sarangani.

Habitats: similar as for *P. sumaldei* sp.n., but also in middle sized streams, and collecting data from 450 - 950 m a.s.l.

Potamometropsis werneri aberrans ZETTEL, 1994

Potamometropsis werneri aberrans ZETTEL, 1994: 95.

Additional material examined: 6 ♂♂, 3 ♀♀, and 1 ♂ (macropterous, dealate) "Philippinen: Mindanao\ Misamis occ., W Ozamiz\ Tangub, Gala, Lobo River\ 7.3.1997,lg.Zettel (125)" (CZW, UPLB); 1 ♀ (macro-

pterous, dealate) "Philippinen: Mindanao\ Zamboanga d.Sur, 12 km\ N Pagadian, Alegria Falls\ 9.3.1997,lg. Zettel (126)" (CZW); 8 ♂♂, 8 ♀♀ "Philippinen: Mindanao, Zambo-\ anga d.Sur, 25 km NW Pagadian\ Deborok - Lourdes,Tubangan Riv.\ 11.3.1997, lg. H.Zettel (128)" (UPLB, CZW); 6 ♂♂, 11 ♀♀ "Philippinen: Biliran\ SE Almeria, Balagombong\ Falls, 14.3.1998\ leg. H. Zettel (161)" (UPLB, CZW).

Notes: The presence or absence of a metanotal tubercle in females (see ZETTEL 1994) varies in both subspecies and therefore is not useful to separate females, which can only be distinguished by the slightly different lengths of the antennal segment 2. Male diagnostic characters (see ZETTEL 1994) proved to be useful to distinguish all populations studied.

Distribution: Mindanao: Zamboanga del Norte, Zamboanga del Sur*, Misamis Occidental*; Leyte; Biliran*.

Habitats: similar as for the nominate subspecies, but also found in lower and higher altitudes; and, rarely, in relatively small streams.

Potamometropsis luzonica ZETTEL, 1994

Potamometropsis luzonica ZETTEL, 1994: 86.

Additional material examined: 7 ♂♂, 8 ♀♀ "Philippinen: LZ, Mount.Pr.\ Chico River, Gonogon\ 1100 m, 21.2.1999\ leg. H. Zettel (184)" (UPLB, CZW); 2 ♂♂, 6 ♀♀ "Philippinen: LZ, Mount.Pr.\ Chico River trib., Gonogon\ 1100 m, 21.2.1999\ leg. F. Seyfert (8b)" (CSW, UPLB); 8 ♂♂, 8 ♀♀ "Philippinen: LZ, Mount.Pr.\ NE Sagada, Banga'an\ Bomod-ok Wf., 22.2.1999\ 1500 m, leg.H.Zettel (185)" (UPLB, CZW); 2 ♂♂, 2 ♀♀, same label data, except "leg. F. Seyfert (9)" (CSW, UPLB); 4 ♂♂, 6 ♀♀ "Philippinen: LZ, Mount.Pr.\ Sagada, Echo Valley, Under-\ ground River, 23.-24.2.1999\ 1500 m, leg. H. Zettel (186)" (NHMW, UPLB); 5 ♂♂, 7 ♀♀ "Philippinen: LZ, Mount.Pr.\ S Sagada, Bagnen, slopes of \ Mt.Polis, 1600 m, 26.2.\ 1999, leg. H. Zettel (189)" (NHMW, UPLB); 1 ♂, 4 ♀♀ "Philippinen: LZ, Mount.Pr.\ S Sagada, Bagnen, slopes of\ Mt.Polis, 1550 m, 26.2.\ 1999, leg. H. Zettel (189b)" (NHMW, UPLB); 1 ♀ "Philippinen: LZ, Mount.Pr.\ 5km S Bontoc, Balitian Riv.\ 900 m, 27.2.1999\ leg. F. Seyfert (16)" (CSW); 5 ♂♂, 6 ♀♀ "PHILIPPINEN: Laguna Pr.\ Los Banos, Mt.Makiling\ Molawin Creek,Flat Stones\ 9.2.1996, leg.Zettel (75)" (CZW, UPLB); 3 ♂♂, 5 ♀♀ "Philippinen: Camarines Sur\ 20km E Naga, 5km E Carolina\ Mt. Isarog,nr. Malabsay Falls\ 4.3.1999, leg. Zettel (192)" (NHMW, UPLB).

Distribution: Luzon: Mountain Province*, Ifugao, Benguet, Laguna, Quezon, Camarines Sur.

Habitats: In or close to rushing currents of small and middle sized streams, collected in altitudes from 200 - 1600 m a.s.l. The habitat preferences of *P. luzonica* and *P. sumaldei* sp.n. could be best observed in Gonogon, Mountain Province, where *P. sumaldei* sp.n. inhabits the Chico River, but nearly all specimens of *P. luzonica* were collected in a small, rushing tributary.

Potamometropsis hoogstraali HUNGERFORD, 1957

Potamometropsis hoogstraali HUNGERFORD, 1957: 125. - ZETTEL 1994: 85.

Additional material examined: 3 ♂♂, 4 ♀♀ "PHILIPPINEN: Mindanao\ Bukidnon,8km NW Lantapan\ Sonka, Alanib River, 950m\ 8.11.1996, leg.Zettel (92)" (NHMW, UPLB).

Distribution: Mindanao: Misamis Oriental, Bukidnon, Davao.

Habitats: In or close to rushing currents of middle sized mountain streams in 950 - 1480 m a.s.l.

Classification

The Philippine *Potamometropsis* species can be classed into two groups, which are defined morphologically and ecologically as follows:

***Potamometropsis hoogstraali* group** (including *P. hoogstraali*, *P. luzonica*): relatively large, stout species (body length 8.2 - 10.8 mm); male with strongly enlarged forefemur and foretibia, slightly smaller (*P. hoogstraali*) or larger (*P. luzonica*) than female; thoracic nota with more extended greenish (yellowish in preserved specimens) marks. Species living in and close to rushing, turbulent currents, usually in small to middle sized streams. Several species from Borneo (see POLHEMUS & ZETTEL 1997) seem to be related with this group.

***Potamometropsis werneri* group** (including *P. werneri*, *P. ikarus*, *P. sumaldei*): relatively small, slender species (body length 5.9 - 8.1 mm); male with slender forefemur and foretibia, distinctly smaller than female; thoracic nota predominately black. Species living in fast, but less turbulently flowing middle sized to large streams. The relationship with *P. anomalis* CHEN & NIESER, 1992 from Sulawesi is doubtful.

Acknowledgements

I wish to thank Prof. Dr. V.P. Gapud (UP Los Baños), Dr. D.A. Polhemus (formerly BPBM), and Mag. F. Seyfert (Vienna) for the loan of material and gift of reference specimens used for this study. The continuous support of the PWBIP by Prof.Dr. A.C. Sumalde (UP Los Baños) is gratefully acknowledged. I further thank all my Philippine friends, who supported my work in the Philippines, especially Salvacion, Ana, and Ely Vichoso and Rowena Madrideo, who have taken me to the Bahi River area; and Dr. S. Schödl (NHMW) and Mag. F. Seyfert for the pleasant accompany during the 1999 trip. Finally my thanks are due to Prof. Dr. Carl W. Schaefer (Storrs) for a linguistic review, and to Prof.Dr. Pingping Chen (Beijing) and to an anonymous reviewer for helpful comments on the manuscript.

References

HUNGERFORD, H.B. 1957: Two new Gerrids from the Philippines (Hemiptera, Gerridae). – Journal of the Kansas Entomological Society 30(4): 125-130.

POLHEMUS, J.T. & ZETTEL, H. 1997: Five new *Potamometropsis* species (Insecta: Heteroptera: Gerridae) from Borneo. – Annalen des Naturhistorischen Museums in Wien 99B: 21-40.

ZETTEL, H. 1994: Revision der Gattung *Potamometropsis* LUNDBLAD (Insecta: Heteroptera: Gerridae). – Annalen des Naturhistorischen Museums in Wien 96B: 75-98.