



## Key to the species of Ptilomerinae (Hemiptera: Heteroptera: Gerridae) of Thailand and review of the fauna of the Tennaserim Mountain Range

SAJEEMAT RARUANYSONG<sup>1</sup>, AKEKAWAT VITHEEPRADIT<sup>1,3</sup> & ROBERT W. SITES<sup>2</sup>

<sup>1</sup>Department of Entomology, Kasetsart University, Bangkok, THAILAND.

<sup>2</sup>Enns Entomology Museum, Division of Plant Sciences, University of Missouri, Columbia, Missouri 65211, USA.

<sup>3</sup>Corresponding author. E-mail: [agrawv@ku.ac.th](mailto:agrawv@ku.ac.th)

### Abstract

Water striders of the subfamily Ptilomerinae (Hemiptera: Heteroptera: Gerridae) are commonly found in lotic habitats such as streams, rivers and waterfalls. Eight species representing four genera were recorded from the Tennaserim Mountain Range, including a new country record of *Pleciobates tuberculatus* Esaki from Thailand. This paper provides illustrations and ecological notes on Ptilomerinae in the Tennaserim Mountain Range in Thailand and a taxonomic key for identification of all species throughout Thailand.

**Key words:** Ptilomerinae, Gerridae, Tennaserim Mountain Range, Thailand

### Introduction

The family Gerridae are semiaquatic true bugs commonly known as pond-skaters or water striders. In general, they are found on the water surfaces, marginal areas of aquatic systems, and vertical rock faces of waterfalls (Andersen 1982). Gerrids are predators, feeding on captured prey by piercing and sucking body fluid from them.

Seven of the eight subfamilies of Gerridae have been reported from Thailand (Chen et al. 2005, Vitheepredit 2008). The subfamily Ptilomerinae comprises more than 100 species representing 15 genera and is distributed from Pakistan eastward to New Guinea with the highest diversity in the Southeast Asian mainland (Chen et al. 2005, Zettel 2009). More specifically, 14 species representing 6 genera of this subfamily have been reported from Thailand (Chen & Zettel 1998, Chen & Nieser 2002, Vitheepredit & Sites 2007, Zettel 2009). The genera in Thailand include *Pleciobates* Esaki, *Pleciogonus* Chen, Nieser, & Wattanachaiyingcharoen, *Ptilomera* Amyot & Serville, *Ptilomerella* Zettel, *Rheumatogonus* Kirkaldy, and *Rhyacobates* Esaki. Members of *Pleciobates*, *Pleciogonus*, *Ptilomera*, and *Rheumatogonus* are widely distributed throughout the country, whereas members of *Ptilomerella* are known only from southern Thailand (Zettel 2009) and *Rhyacobates* only from northern Thailand (Vitheepredit 2008).

Although much taxonomic research on the Gerridae of Thailand has been conducted during the last several decades, which has resulted in numerous descriptions of new species (e.g., Polhemus 2001; Chen et al. 2002; Zettel 2002, 2009; Vitheepredit & Sites 2007), most of the studies focused on reviewing particular taxonomic groups or describing new species. As a result, faunistic studies on the water striders in extensive areas in Thailand are still lacking. Presented here are a taxonomic key to the species of Ptilomerinae of Thailand and faunistic assessment with ecological notes on the taxa of the Tennaserim Mountain Range in Thailand.

### Material and methods

The study area focused on montane aquatic habitats (e.g., streams, waterfalls) of the Tennaserim Mountain Range in Thailand (Fig. 1). All totaled, 39 collections (Fig. 2) were made during various projects from April 2002 through

## References cited

- Andersen, N.M. (1967a) The genus *Ptilomera* Amyot & Serville in Thailand, with a new species from the north (Hemiptera: Gerridae). *Entomologiske Meddelelser*, 35, 309–314.
- Andersen, N.M. (1967b) A contribution to the knowledge of Philippine semiaquatic Hemiptera-Heteroptera. *Entomologiske Meddelelser*, 35, 260–282.
- Andersen, N.M. (1982) *The semiaquatic bugs (Hemiptera, Gerromorpha). Phylogeny, adaptations, biogeography and classification. Entomonograph. Vol. 3.* Scandinavian Science Press Ltd., Klampenborg, Denmark, 546 pp.
- Chen, P.-P. & Nieser, N. (2002) Taxonomic characters of the male endosomal structure in the genus *Rheumatogonus* Kirkaldy (Hemiptera: Gerridae), with descriptions of four new species from Borneo and Sri Lanka. *Zoologische Mededelingen Leiden*, 76, 371–409.
- Chen, P.-P., Nieser, N. & Wattanachaiyingcharoen, W. (2002) A new genus, *Pleciogonus* and four new species of semiaquatic and aquatic bugs from Thailand. (Heteroptera: Gerromorpha, Nepomorpha). *Tijdschrift voor Entomologie*, 14, 193–212.
- Chen, P.-P., Nieser, N. & Zettel, H. (2005) *The aquatic and semi-aquatic bugs (Heteroptera: Nepomorpha & Gerromorpha) of Malesia. Fauna Melesiana Handbook 5.* E. J. Brill, Netherlands, 546 pp.
- Chen, P.-P. & Zettel, H. (1998) Key to 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. & Fernando, C.H. (1969) A taxonomic study of the Malayan Gerridae (Hemiptera: Heteroptera) with notes on their biology and distribution. *Oriental Insects*, 3, 97–160.
- Cheng, L., Yang, C.M. & Andersen, N.M. (2001) Guide to the aquatic Heteroptera of Singapore and peninsular Malaysia. I. Gerridae and Hermatobatidae. *Raffles Bulletin of Zoology*, 49, 129–148.
- Esaki, T. (1930) New or little-known Gerridae from continental Malaysia. *Journal of the Federated Malay States Museum*, 16, 13–24.
- Hungerford, H.B. (1933) Some aquatic and semiaquatic Hemiptera from Sumatra. *Miscellanea Zoologica Sumatrana*, 75, 1–5.
- Hungerford, H.B. & Matsuda, R. (1965) The genus *Ptilomera* Amyot and Serville (Gerridae: Hemiptera). *University of Kansas Science Bulletin*, 45, 397–515.
- Nieser, N. & Chen, P.-P. (1992) Notes on Indonesian waterbugs (Nepomorpha & Gerromorpha). *Storkia*, 1, 30–40.
- Polhemus, D.A. (1998) Two new species of water striders (Heteroptera: Gerridae) from the Philippines. *Proceedings of the Entomological Society of Washington*, 100, 261–268.
- Polhemus, D.A. (2001) A review of the genus *Ptilomera* (Heteroptera: Gerridae) in Indochina, with descriptions of two new species. *Journal of New York Entomological Society*, 109, 214–234.  
[http://dx.doi.org/10.1664/0028-7199\(2001\)109\[0214:arotgp\]2.0.co;2](http://dx.doi.org/10.1664/0028-7199(2001)109[0214:arotgp]2.0.co;2)
- Polhemus, D.A. & Polhemus, J.T. (2001) A revision of the genus *Ptilomera* (Heteroptera: Gerridae) on New Guinea and nearby islands. *Journal of the New York Entomological Society*, 109, 81–166.  
[http://dx.doi.org/10.1664/0028-7199\(2001\)109\[0081:arotgp\]2.0.co;2](http://dx.doi.org/10.1664/0028-7199(2001)109[0081:arotgp]2.0.co;2)
- Polhemus, J.T. (1991) Nomenclatural notes on aquatic and semiaquatic Heteroptera. *Journal of Kansas Entomological Society*, 64, 438–443.
- Schmidt, E. (1926) Neue *Ptilomera*-Arten aus dem Stettiner Museum (Hemipt.-Heteropt.). *Entomologische Mitteilungen*, 15 (1), 63–66.
- Tran, A.D. & Yang, C.M. (2004) The aquatic bugs (Heteroptera) of the Anambas and Natuna Islands, Indonesia. *Raffles Bulletin of Zoology, Supplement*, 11, 55–59.
- Uhler, P.R. (1860) Hemiptera of the North Pacific Exploring Expedition under Com'rs Rodgers and Riaggold. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 12, 221–231.
- Vitheepradit, A. (2000) The aquatic and semiaquatic Heteroptera of the Phu Pan and Phetchabun mountain ranges of Thailand. M.S. Thesis. University of Missouri, Columbia, Missouri, USA. [the total page number unknown]
- Vitheepradit, A. (2008) The semiaquatic Heteroptera (Gerromorpha) of Thailand: Faunistics, Biogeography, and Phylogeography. Ph.D. Dissertation, University of Missouri, Columbia, Missouri, USA. [the total page number unknown]
- Vitheepradit, A. & Sites, R.W. (2007) A review of *Ptilomera* (Heteroptera: Gerridae) of Thailand with descriptions of three new species. *Annals of the Entomological Society of America*, 100, 139–151.
- Zettel, H. (2002) Description of *Amemboa heissi* sp.n. (Heteroptera: Gerridae) from south Thailand. *Linzer Biologische Beiträge*, 34, 1531–1534.
- Zettel, H. (2003) *Ptilomera* (s.str.) *occidentalis* sp. n. (Heteroptera: Gerridae) aus Nordwest-Indien. *Linzer Biologische Beiträge*, 35, 1131–1134.
- Zettel, H. (2009) Three genera of Ptilomerinae (Hemiptera: Heteroptera: Gerridae) from Southeast Asia. *Zootaxa*, 2046, 26–42.
- Zettel, H. & Chen, P.-P. (1996) Beitrag zur Taxonomie und Faunistik der Gerridae Vietnams mit Neubeschreibungen der Gattung *Andersenius* gen. nov. aus der Unterfamilie Ptilomerinae und weiterer Arten (Insecta: Heteroptera: Gerridae). *Entomologische Abhandlungen des Museums für Tierkunde Dresden*, 57, 149–182.
- Zettel, H. & Thirumalai, G. (2000) *Stridulobates anderseni*, a new genus and species of ptilomerine Gerridae (Hemiptera: Heteroptera) with 'stridulatory devices' from south India. *Insect Systematics and Evolution*, 31, 433–439.  
<http://dx.doi.org/10.1163/187631200x00462>