Zootaxa 3914 (3): 275–300
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3914.3.3
http://zoobank.org/urn:lsid:zoobank.org:pub:6702C153-354E-4108-990E-2C78D9BD77A1

On three new species of non-marine ostracods (Crustacea: Ostracoda) from Northeast Thailand

SUKONTHIP SAVATENALINTON
Biology Department and Plant and Invertebrate Taxonomy and its Applications Research Unit, Faculty of Science, Mahasarakham University, Mahasarakham 44150, Thailand. E-mail: sukonthip.s@msu.ac.th

Abstract

Three new species of non-marine ostracods, *Strandesia martensi* **n. sp.**, *Strandesia pholpunthini* **n. sp.** and *Oncocypris rostrata* **n. sp.**, are here described from the Northeastern part of Thailand. *Strandesia martensi* **n. sp.** is similar to *Strandesia perakensis* Victor & Fernando, 1981 and to *Strandesia sanoamuangae* Savatenalinton & Martens, 2010. It can be distinguished from these two species by the presence of a large dorsal hump on both valves, large anterior overlapping, the general shape of valve, the ornamentation of valve surface and the markedly long proximal seta of caudal ramus. The main distinguishing characters of *Strandesia pholpunthini* **n. sp.** are the compression on the right valve at the posterior extremity and the fact that left valve overlaps right valve anteriorly, while right valve overlaps left valve posteriorly. This results in unequal anterior and posterior extremities, which can be seen clearly in the dorsal view. *Oncocypris rostrata* **n. sp.** is the first record of this genus in Thailand. It obviously differs from others in the beak-like anterior extremity in dorsal view, the valve structure in interior view, the valve ornamentation comprising of large pustules and large pits and the morphology of male reproductive organ, especially the first segment of the right prehensile-palp bearing a long apical spine and a large protrusion on the distal margin toward the second segment. A note on morphology, chorology and a key to the species of *Oncocypris* are given.

Key words: *Strandesia*, *Oncocypris*, freshwater, Cypricercinae, Oncocypridinae

Introduction

Ostracods are amongst the most diverse crustacean groups. A total of 62,000 extant and fossil species have been recorded (Kempf 2006). There are about 2,000 species belonging to 200 genera of Recent non-marine ostracods worldwide (Martens *et al*. 2008). Of these, 208 species were recorded from the Oriental region (Martens and Savatenalinton 2011). Studies on ostracods from Thailand were carried out sporadically, resulting in only a few papers so far. The first report on Thai ostracods was made by Vávra (1906), who encountered three species, two of which (*Hungarocypris gawemuelleri* Vávra, 1906 and *Stenocypris bimucronata* Vávra, 1906) were described new. Since then, no further records of ostracods from Thailand have been published for 76 years. Victor & Fernando (1982) mentioned Vávra's study in their summary on the distribution of ostracods in Southeast Asia. Almost 30 years later, a series of papers on Thai ostracods was published (Savatenalinton *et al*. 2008, Savatenalinton & Martens 2008, 2009a,b, 2010, 2013, Savatenalinton 2014). Recent studies on the ostracod fauna of Thailand have revealed that a large number of species found belongs to the subfamily Cypricercinae (Savatenalinton & Martens 2009b 2010). The present contribution deals with three (two *Strandesia* and one *Oncocypris*) new species of non-marine ostracods from the Northeastern part of Thailand.

Material and methods

An extensive survey of ostracods in the northern part of Northeast Thailand was carried out from January to December 2011. Samples were collected and preserved in 70% ethanol and sorted with an Olympus SZ-PT stereo-

Accepted by R. Matzke-Karasz: 11 Dec. 2014; published: 28 Jan. 2015

number of ZAHNBORSTEN in the genus is four or five. This feature differs from the other genus in the subfamily Oncocypridinae, *Neozonocypris*, which has the two ZAHNBORSTEN typical of the Cyprididae.

In *O. rostrata* **n. sp.**, the terminal claw of T2 is distally furcated. This feature was also mentioned in *O. debundshae* (see Green 1973). However, it cannot be seen at lower (400 times), but possible only at higher (1000 times) magnification of a compound microscope. This character may thus have been overlooked in other species.

Most of the limb features mentioned above are insufficient for a comparison amongst all *Oncocypris* species and is therefore not taken into account in the identification key presented below. The key to the species of this genus given here is thus based mainly on the morphology of valves (see below).

Zoogeography

Oncocypris rostrata **n. sp.** is the third species of the genus, which was found in the Oriental region and the second one in Southeast Asia. The two species previously recorded from the Oriental region are *O. voeltzkowi* and *O. bhatiai*. The former was found from the Philippines (as *Oncocypris brehmii*; Tressler 1937) and from South India (as *Oncocypris pustulosa*; Victor and Fernando 1981b), the latter was encountered from India (Battish 1982). The distribution of the genus *Oncocypris* is restricted to Afrotropical and Oriental regions only (Fig. 13). Their distribution strategy is enigmatic, but there seem to be two lineages in this genus, with regard to zoogeographical regions: the African- and the Oriental lineages. As the Indian subcontinent was connected to East Africa during the Upper Cretaceous and as most *Oncocypris* species (six out of eight species) are presently found in Africa, the Oriental lineage would have be evolved from the African ancestral *Oncocypris* after the Upper Cretaceous and *Oncocypris voeltzkowi* could be the oldest of the Oriental-lineage as it is found in both zoogeographical regions. This means that the African-lineage is more primitive and its first occurrence should be expected at 66–100 million years before present. However, the presently known fossils of *Oncocypris* are of Miocene-Holocene age (see Cohen et al. 1983; Gebru et al. 2013). As *Oncocypris* fossils have thus far been reported scarcely and only from the Eastern part of the African continent, further studies of the fossil record in both regions are needed to confirm this evolutionary account.

Acknowledgements

This study was supported by Mahasarakham University, Mahasarakham, Thailand (contract number 5505004/2555). Prof. Dr. Koen Martens (Royal Belgian Institute of Natural Sciences, Brussels) is acknowledged for valuable suggestions on earlier version of the manuscript. Dr. Renate Matzke-Karasz (Universität München, Germany) provided important literature. The editor and Dr. Robin Smith (Lake Biwa Museum, Japan) are sincerely thanked for useful comments on the manuscript. Nual-arnong Nakkong (Mahasarakham University, Thailand) and Chaiburin Savatenalinton offered assistance with SEM micrographs and collection of the samples, respectively.

References

Battish, S.K. (1982) Freshwater ostracods of the subfamily Cypridopsinae from Punjab, India, with the description of two new species. *Journal of Natural History*, 16, 83–94.
http://dx.doi.org/10.1080/00222938200770061

Brady, G.S. (1886) Notes on Entomostraca collected by Mr A. Haly in Ceylon. *Journal of the Linnean Society of London, Zoology*, 19, 293–317.
http://dx.doi.org/10.1111/j.1096-3642.1886.tb02227.x

Broodbakker, N.W. & Danielopol, D.L. (1982) The chaetotaxy of Cypridacea (Crustacea, Ostracoda) limbs: proposals for a descriptive model. *Bijdragen tot de Dierkunde*, 52 (2), 103–120.

Chang, C.Y., Lee, J. & Smith, R. (2012) Nonmarine ostracods (Crustacea) from South Korea, including a description of a new species of *Tanycypris* Triebel (Cyprididae, Cypricercinae). *Zootaxa*, 3161, 1–19.

Cohen, A.S., Dussinger, R. & Richardson, J. (1983) Lacustrine paleochemical interpretations based on Eastern and Southern African ostracodes. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 43, 129–151.
http://dx.doi.org/10.1016/0031-0182(83)90051-2

Daday, E. (1898) Mikroskopische Süsswassertiere aus Ceylon. *Természetrajzi Füzetek,* supplement 21, 1–123.

Deb, M. (1983) Brief descriptions of new species of Ostracoda: Crustacea from Maharashtra state (India). *Records of the Zoological Survey of India*, 81, 135–166.

De Deckker, P. (1979) Comparative morphology and review of Australian Notodromadinae Kaufmann, 1900 (Crustacea: Ostracoda). *Senckenbergiana Biologica*, 59 (5/6), 417–463.
Gebru, T., Viehberg, F.A., Foerster, V., Asrat, A. & Schäbitz, F. (2013) Climatic and hydrological instability in East Africa during the Holocene: Ostracod evidence from lake Chamo, South Ethiopia. *Naturalista sicil*, 37 (1), 145–146.
George, S. & Martens, K. (1993) Two new species of freshwater Ostracoda of the genus *Strandesia* Stuhlmann, 1888 from Kerala, India. *Journal of Natural History*, 27, 255–265. http://dx.doi.org/10.1080/00222939300770121
Green, J. (1973) A new species of *Oncocypris* (Ostracoda) from a crater lake in West Cameroon. *Journal of Zoology, Proceedings of the Zoological Society of London*, 171, 251–256. http://dx.doi.org/10.1111/j.1469-7998.1973.tb02219.x
Grochmalicki, J. (1915) Beiträge zur Kenntnis der Süβwasserfauna Javas: Phyllopoda, Copepoda und Ostracoda. *Bulletin International de l'Académie des Sciences de Cracovie, Classe des Sciences Mathématiques et Naturelles, Serie B: Sciences Naturelles*, 1915, 217–242.
Harshey, D.K. & Shrivastav, A.K. (1987) A new species of *Strandesia* Vávra, 1895 (Crustacea, Ostracoda) from India. *Biovigyanam*, 13, 104–106.
Hartmann, G. (1964) Asiatische Ostracoden. Systematische und zoogeographische Untersuchungen. *Internationale Revue der gesamten Hydrobiologie, Systematische Beihefte*, 3, 1–155.
Hartmann, G. & Petersen, H.E.E. (1985) Homonyms of recent and fossil Ostracoda (Crustacea) and the Introduction of three new names. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 82, 263–267.
Karanovic, I. (2012) *Recent Freshwater Ostracods of the world*. Springer-Verlag, Heidelberg, Berlin, 608 pp.
Kempf, E.K. (2006) Fossil and Living Ostracoda of the world. Index and Bibliography of Nonmarine Ostracoda 16, Index D: recent non-marine Ostracoda of the world, CD-ROM Edition, Cologne, Germany (published by the author).
Klie, W. (1932) Die Ostracoden der Deutschen Limnologischen Sunda-Expedition. *Archiv für Hydrobiologie, Supplementband*, 11, 447–502.
Klie, W. (1938) Ostracoden aus Formosa. *Bulletin of the Biogeographical Society of Japan*, 8 (2), 21–33.
Klie, W. (1939) Ostracoden aus dem Kenia-Gebiet, vornehmlich von dessen Hochgebirgen. *Internationale Revue der Gesamten Hydrobiologie und Hydrographie*, 39 (1/2), 99–161. http://dx.doi.org/10.1002/iroh.19390390106
Martens, K. (1987) Homology and functional morphology of the sexual dimorphism in the antenna of *Sclerocypris* Sars, 1924 (Crustacea, Ostracoda, Megalocypridinae). *Bijdragen tot de Dierkunde*, 57(2), 183–190.
Martens, K. & Behen, F. (1994) A checklist of the non-marine ostracods (Crustacea, Ostracoda) from South-American inland waters and adjacent islands. *Travaux Scientifiques du Musée d'Histoire Naturelle de Luxembourg*, 22, 1–81.
Martens, K. & Savatenalinton, S. (2011) A subjective checklist of the Recent, free-living, non-marine Ostracoda (Crustacea). *Zootaxa*, 2855, 1–79.
Martens, K., Schön, I., Meisch, C. & Horne, D.J. (2008) Global diversity of ostracods (Ostracoda, Crustacea) in freshwater. *In*: Balian, E. *et al*. (Eds.), Freshwater animal diversity assessment. *Hydrobiologia*, 595, 185–193. http://dx.doi.org/10.1007/s10750-007-9245-4
Meisch, C. (2000) Freshwater Ostracoda of Western and Central Europe. Spektrum Akademischer Verlag GmbH: Heidelberg, Berlin, 522 pp.
Moniez, R. (1892) Entomostracés d'eau douce de Sumatra et de Célébes-2: Ostracodes. *In*: Weber, M. (Ed.), Zoologische Ergebnisse einer Reise in Niederlaendisch Ostindien, Leiden, The Netherlands. pp. 129–135.
Müller, G.W. (1906) Ostracoden aus Java, Gesammelt von Prof. K. Kraepelin. *Mitteilungen aus dem Naturhistorischen Museum in Hamburg*, 23, 139–142.
Nagler, C., Geist, J. & Matzke-Karasz, R. (2014) Revision of the genus *Tanycypris* (Ostracoda, Cypricercinae) with the description of *Tanycypris alfonsi* n. sp., and an identification key to the genus. *Zootaxa*, 3821 (4), 401–424. http://dx.doi.org/10.11646/zootaxa.3821.4.1
Sars, G.O. (1903) Freshwater Entomostraca from China and Sumatra. *Archiv for Mathematik og Naturvidenskab*, 25, 1–44.
Savatenalinton, S. (2014) Ostracods (Crustacea: Ostracoda) from the floodplain of the Chi River, Mahasarakham Province, Northeast Thailand, with first record of male *Tanycypris siamensis* Savatenalinton & Martens, 2009. *Zootaxa*, 2828, 195–206.
Savatenalinton, S., Borgonie, G. & Martens, K. (2008) On *Thaicythere srisumonae* n. gen., n. sp. (Ostracoda) from Thailand, with notes on the phylogeny of the subfamily Timiriaseviinae Mandelstam, 1960. *Crustaceana*, 81, 411–432. http://dx.doi.org/10.1163/156854008783797543
Savatenalinton, S. & Martens, K. (2008) Redescription of *Hemicypris mizunoi* Okubo, 1990 (Crustacea, Ostracoda) from Thailand, with a reassessment of the validity of the genera *Hemicypris* and *Heterocypris*. *Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen, Biologie,* 78, 17–27.
Savatenalinton, S. & Martens K. (2009a) On a freshwater species of the genus *Sanyuania* Zhao and Han, 1980 (Crustacea, Ostracoda, Loxoconchidae) from Thailand, with a discussion on morphological evolution of the freshwater Loxoconchidae. *Journal of Natural History*, 43, 259–285. http://dx.doi.org/10.1080/00222930802590885
Savatenalinton, S. & Martens, K. (2009b) Generic revision of Cypricercinae McKenzie, 1971 (Crustacea, Ostracoda), with

description of three new genera and one new species and phylogenetic analysis of the subfamily. *Hydrobiologia*, 632 (1), 1–48.
http://dx.doi.org/10.1007/s10750-009-9826-5
Savatenalinton, S. & Martens, K. (2010) On the subfamily Cypricercinae McKenzie, 1971 (Crustacea, Ostracoda) from Thailand, with the description of six new species. *Zootaxa*, 2379, 1–77.
Savatenalinton, S. & Martens, K. (2013) On *Callistocypris thailandensis* sp. nov. (Ostracoda, Crustacea) from Thailand. *Zootaxa*, 3686 (5), 578–586.
http://dx.doi.org/10.11646/zootaxa.3686.5.6
Tressler, W.L. (1937) Ostracoda: Mitteilung 18 von der Wallacea-Expedition Woltereck 1931–32. *Internationale Revue der Gesamten Hydrobiologie und Hydrographie*, 34 (3–5), 188–207.
http://dx.doi.org/10.1002/iroh.19370340112
Vávra, W. (1906) Ostracoden von Sumatra, Java, Siam, den Sandwich-Inseln und Japan. *Zoologische Jahrbücher*, 23, 413–438.
Victor, R. & Fernando, C.H. (1979) On some freshwater ostracod type specimens from Indonesia. *Canadian Journal of Zoology*, 57, 6–12.
http://dx.doi.org/10.1139/z79-002
Victor, R. & Fernando, C.H. (1980) Two new species of the genus *Strandesia* (Ostracoda, Crustacea) from Kerala, Southern India. *Canadian Journal of Zoology*, 585, 727–734.
http://dx.doi.org/10.1139/z80-104
Victor, R. & Fernando, C.H. (1981a) Freshwater ostracods (Crustacea: Ostracoda) of the genus *Strandesia* Vavra, 1895 from Malaysia, Indonesia and the Philippines. *Archiv für Hydrobiologie, Supplements*, 58 (4), 469–522.
Victor, R. & Fernando, C.H. (1981b) *An illustrated key to the freshwater ostracod genera of the Oriental region*. Department of Biology, University of Waterloo, Canada, 92 pp.
Victor, R. & Fernando, C.H. (1982) Distribution of freshwater Ostracoda (Crustacea) in Southeast Asia. *Journal of Biogeography*, 9, 281–288.
http://dx.doi.org/10.2307/2844715

Key to species of *Oncocypris*

1.	Penultimate segment of T2 undivided	2
-	Penultimate segment of T2 divided	4
2.	Carapace in dorsal view with beak-like anterior part, postero-dorsal margin of LV with a small round flange	*O. bhatiai*
-	Carapace in dorsal view without beak-like anterior part	3
3.	Carapace in lateral view with evenly arched, valve surface without large pits	*O. chappuisi*
-	Carapace in lateral view without evenly arched, valve surface with large pits and covered by large pustules	*O. voeltzkowi*
4.	Carapace in dorsal view with beak-like anterior part	5
-	Carapace in dorsal view without beak-like anterior part	7
5.	Carapace in lateral view with unevenly arched dorsal margin, valve surface with concentric ridges	*O. euglypha*
-	Carapace in lateral view with evenly arched dorsal margin, valve surface without concentric ridges	6
6.	Carapace in dorsal view with LV margin shorter than RV margin and both not curved, first segment of right prehensile palp with oblique distal margin towards to tip of second segment	*O. debundshae*
-	Carapace in dorsal view with LV and RV margins subequal and curved rightward, first segment of right prehensile palp with large protrusion on distal margin towards to second segment	*O. rostrata* **n. sp.**
7.	Carapace in dorsal view pear-shape, carapace in lateral view with broad rounded posterior end	*O. muelleri*
-	Carapace in dorsal view subquadrate, carapace in lateral view with angulated posterior end	*O. schoutedeni*