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NOTES ON GEOGRAPHIC DISTRIBUTION

First record of *Tanycypris alfonsi* Nagler et al., 2014 (Crustacea, Ostracoda) from India

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Abstract. The freshwater ostracod *Tanycypris alfonsi* Nagler et al., 2014, was originally described from Germany, where it was considered an alien species. We report the first confirmed occurrence of *T. alfonsi* Nagler et al., 2014 in India, where it was found in a natural habitat, which indicates that India lies within its native geographic range.

Key words. Cypricercinae, distribution, freshwater ostracod, Maharashtra, microcrustaceans

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INTRODUCTION

The subfamily Cypricercinae is one of the diverse subfamilies of the family Cyprididae, which belongs to the class Ostracoda (subphylum Crustacea), currently comprises 172 species worldwide (Meisch et al. 2024). This subfamily of ostracod has a distinct set of diagnostic characters for identification, which were revised by Savatenalinton and Martens (2009). The leading characteristic for identifying the subfamily is the presence and position of Triebel's loop on the caudal ramus attachment. Currently, the genus *Tanycypris* Triebel, 1959 is classified within the tribe Nealecypridini (Savatenalinton and Martens 2009) and comprises six species—*T. alfonsi* Nagler, Geist & Matzke-Karasz, 2014, *T. centa* Chang, Lee & Smith, 2012, *T. eugenkempfi* Savatenalinton, 2017, *T. madagascarensis* (Müller, 1898), *T. gonia* Smith & Ozawa, 2024, *T. pellucida* (Klie, 1932), *T. siamensis* Savatenalinton & Martens, 2009—and one infraspecific taxon, *Tanycypris pellucida* var. *saloica* (Akatova, 1950); these are distributed across three zoogeographical regions: Afrotropical, Oriental, and Palaearctic (Meisch et al. 2024; Smith et al. 2024).

Tanycypris alfonsi was discovered by Nagler et al. (2014) in the greenhouse of the botanical garden in Munich, Germany. Since then, this species has been reported from only three locations, in South Korea (Smith et al. 2014), eastern China (Ma and Yu 2018), and Japan (Smith 2023). We report the first confirmed occurrence of *T. alfonsi* in India, where it was found in a natural habitat, which indicates that India lies within its native geographic range.

METHODS

Samples were collected from a pool near the Tapi River in the Jalgaon District of Maharashtra, India (21°05′17.9″N, 075°58′34.1″E). Samples were collected using a simple hand net with a mesh size of 150 µm, placed in 100 ml containers, and preserved in 4% formaldehyde solution. In the laboratory, the samples were rinsed under tap water and preserved in 70% alcohol. The specimens were isolated, their valves separated, and dissection was performed using tungsten needles under a stereomicroscope (Magnus MS24). The separated valves were mounted on a stub for examination using a scanning electron microscope (JEOL Analytical Scanning Electron Microscope). The dissected soft parts were mounted in polyvinyl lactophenol and illustrated using a camera lucida attached to a Lawrence and Mayo LM-52-1802 microscope. These drawings were digitized using Inkscape v. 1.3.2. Images were processed using GIMP v. 3.0.4. A distribution map was created using QGIS v. 3.22.6 (QGIS 2022).

The terminology used for soft-part anatomy and chaetotaxy was derived from Broodbakker and Danielopol (1982), revised chaetotaxy for A2 by Martens (1987) and Meisch (2000). The specimens were deposited

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in the crustacean collection of the Zoological Survey of India, Western Regional Centre, Pune, under the accession numbers ZSI-WRC C.2650, ZSI-WRC C.2660.

Abbreviations of valves and soft parts. RV = right valve; LV = left valve; limbs. A1 = first antenna; A2 = second antenna; Md = mandibula; Mxl = maxillula; TI = first thoracopod; T2 = second thoracopod; T3 = third thoracopod; CR = caudal ramus; CRa = caudal ramus attachment.

RESULTS

Tanycypris alfonsi **Nagler, Geist & Matzke-Karasz, 2014**
Figure 1A–C

New record. INDIA — MAHARASHTRA • Jalgaon District, pool near Tapi river; 21°05′17.9″N, 075°58′34.1″E; 210m elevation; 0.5 m depth; 18.XI.2023; Renuka Khairnar leg.; 3♀, 70% alcohol, ZSI-WRC C.2650 & ZSI-WRC C.2660.

Description. The carapace (Figure 1A–C) is 1280–1320 µm long, and 600–620 µm high. The carapace is yellow, and the eye is prominent. The surface of the valves bear sparsely distributed hairs and a roof-tile-like structure at the posterior end (Figure 1A). The carapace is elongate in the lateral view, thin in the dorsal view, and has the greatest width at the middle. The ends of the valves are rounded, the dorsal margin is straight, and the ventral margin is slightly concave in front of the middle. The LV and RV have broad inner lamellae at the anterior and posterior ends, without an inner list. A groove is present along the anteroventral margin in the LV (Figure 1B), whereas the RV lacks a groove (Figure 1B). The inner margins of both valves are rounded at the anterior end but slightly curved at the posteroventral end.

A1 (Figure 2A) has a large, 7-segmented first segment and bears a long dorso-apical sensory Wouters organ, one short dorsal apical seta, and two long subapical ventral distal setae. The second segment has a long ventral Rome organ and a short dorsal seta. The third segment has one seta on each side, and the fourth segment has two long dorso-apical and one short ventral apical seta. The fifth segment has five setae (two long dorso-apical, one long (medial), and two short ventral setae); one ventral seta reaches slightly beyond the next segment, and the second reaches almost the mid-length of the next segment. The sixth segment has four long setae and one short thin seta that does not reach the distal end of the terminal segment. The seventh segment has two long setae, one sensory seta ya, and one short accompanying seta. Aesthetasc ya and the accompanying seta are almost of same length.

A2 (Figure 2B): the first protopodal segment has three setae (one proximally, two more distally), and the second has one very long basal seta situated at the center. The exopod was reduced with three setae (one long and two short). The first endopodal segment bears the sensory aesthetasc Y, which consists of three distally located segments, one long hairy seta, and five long natatory setae, which reach the distal end of the claws, with one short accompanying seta. On the second segment dorsally, there are two and

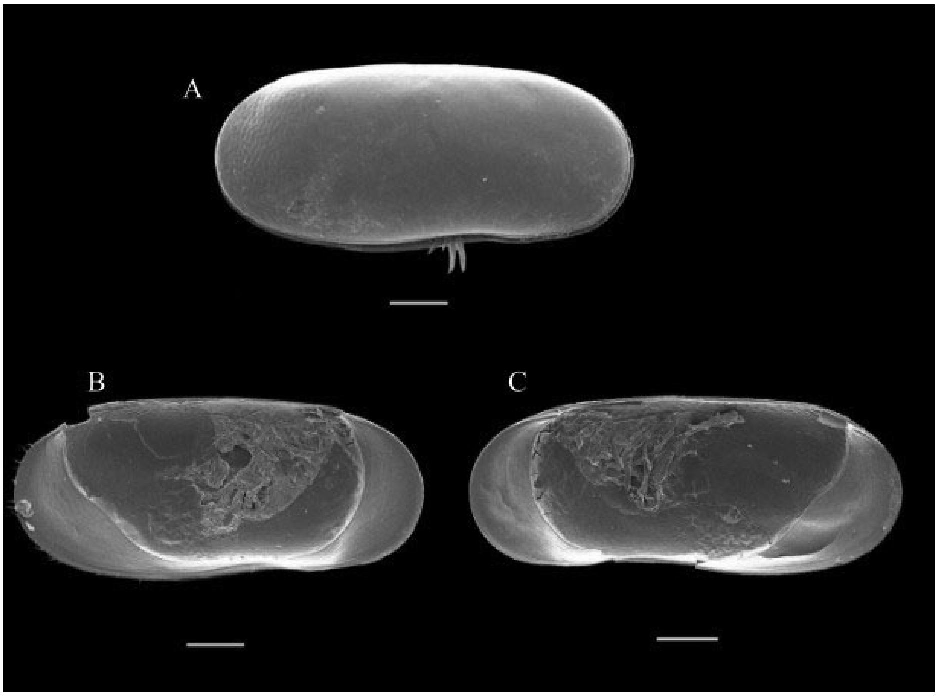

Figure 1. *Tanycypris alfonsi* Nagler et al., (2014). **A.** Lateral view of carapace. **B.** Left valve internal view. **C.** Right internal view. Scale bars: 200 µm.

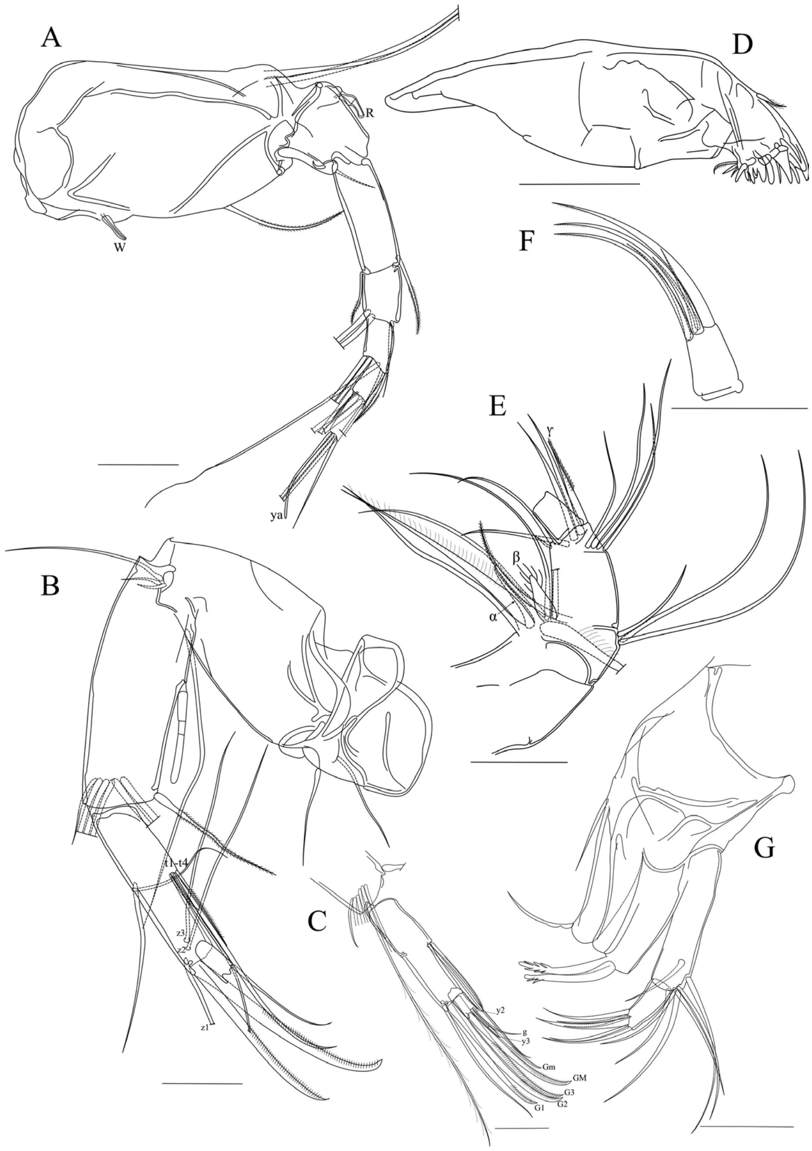

Figure 2. *Tanycypris alfonsi* Nagler et al., (2014). **A.** First antenna. **B.** Second antenna. **C.** Detail of last segment of second antenna. **D.** Mandibular coxa. **E.** Mandibular palp. **F.** Terminal segment of Mandibular palp. **G.** Maxillula. Scale bars: A–C, E–G = 50 µm; D = 100 µm.

on ventrally, four unequally long t-setae (t1–t4). At the distal end of the same segment, three serrated claws G1–G3 (with G2 smaller than the others), three long z-setae (z1–z3), and a small y2 reaching almost the distal end of the terminal segment are present. The terminal segment bears claw GM and Gm, aesthetasc y3, and seta g. The g is longer than y3.

Md-coxa (Figure 2C): as shown in the figure.

Md-palp (Figure 2D): 4-segmented. The first segment was broad, bearing two long, setulated s1 and s2 setae and one short, thin, alpha (α) seta. The second segment has three types of setae on the ventral side: one short, conical, densely hairy beta (β) seta; one medium-length hairy seta; and three long, slim setae on the ventral side. Dorsally, it bears three setae of different lengths (two long reaching beyond the claws of the terminal segment and one short). The third segment has four dorso-subapical setae (two long and two short). Vetro-distally, one long and one short seta. At the distal end of the same segment, three long setae, including one hairy gamma (γ) seta, were present, which was twice the length of the terminal segment. The terminal segment bears three claws and three setae.

Mxl (Figure 2E): palp 2-segmented. The basal segment bears one medial seta (reaching beyond the mid-length of the next segment), one subapical seta, and five apical setae of different lengths that extended beyond the distal end of the terminal segment. The terminal segment is elongate and bears three claws and three setae. The third endite bears one strongly serrated and another slightly serrated "Zahnborsten" (tooth bristles).

T1 (Figure 3A): the protopodite has two a-setae, one b and d seta, at the distal end of the segment; 14 setae are present, all of which are hairy distally. The endopodite bears three setae of unequal length.

T2 (Figure 3B): the basal segment bears d1 and d2 (with d1 longer than d2). The first segment bears e

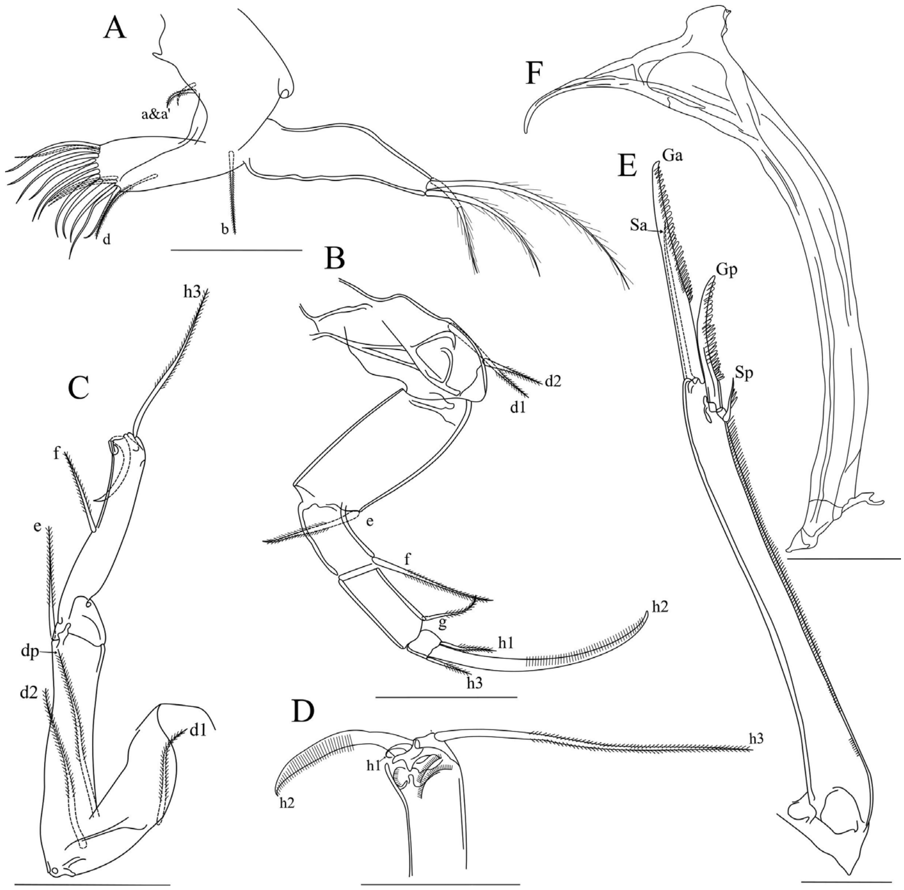

Figure 3. *Tanycypris alfonsi* Nagler et al., (2014). **A.** First thoracopod. **B.** Second thoracopod. **C.** Third thoracopod. **D.** Pincer organ. **E.** Caudal ramus. **F.** Caudal ramus attachment. Scale bars: A–C, E, F = 100 µm; D = 50 µm.

setae, and the second segment is markedly separated, bearing a middle f seta and distal g seta. The fourth segment was short, bearing seta h1 and h3 (of almost equal size), and a long, curved claw serrated at the distal end.

T3 (Figure 3C, D): the basal segment bears long d1, d2, and dp setae (with d2 longer than d1). The first segment has a long e seta. The second segment medially bears f setae (reaching the distal end of the terminal segment). The terminal segment bears an apical pincer h2, a short h1 seta, and a subapical h3 seta. The CR (Figure 3E) was symmetrical with strongly serrated Ga and Gp claws. The Sa seta is smooth and extends beyond the mid-length of the claw Ga. Seta Sa is longer than claw Gp. Sp seta is short and slightly serrated. The ventral margin is serrated along almost its entire length.

CR attachment (Figure 3F): the tribbles loop is at the middle, the dorsal branch is thin, elongate, and bent at the distal end, and the ventral branch is wide, stubby, and rounded.

Taxonomic remarks. Our Indian specimens resemble *T. alfonsi* as originally described, but they also show significant morphological differences in the shape of the carapace, A1, and CR. The intersection of postero-dorsal margin in German specimens is slightly depressed while in Indian specimens this margin is smoothly curved. Even the shape of the inner margin is different in both populations. In the original description of the species (Nagler et al. 2014), the Wouters organ was noted as being relatively small and inconspicuous. In contrast, our Indian specimens have a markedly elongate Wouters organ, approximately the same length as the Rome organ. Additionally, the dorsal seta of our specimens is considerably longer. It arises proximally at the base of the Wouters organ, in contrast to the original description in which this seta is short and subapical. Furthermore, the Sp seta on the CR in German specimens is slender and smooth, whereas in Indian and Chinese specimens (Ma and Yu 2018), it has a broader base and a brush-like distal end.

DISCUSSION

The genus *Tanycypris* is known from three zoogeographical regions. *Tanycypris alfonsi* was originally described from Germany, where it is considered an alien species (Nagler et al. 2014), and it has since been reported from small bodies of water bodies on Jeju Island, South Korea (Smith et al. 2014), in eastern China (Ma and Yu 2018), and in the Oriental part of the Nansei Islands, Japan (Smith 2023). Here, we report *T. alfonsi* for the first time from India, where it was found in a riverine ecosystem. This species was previously known

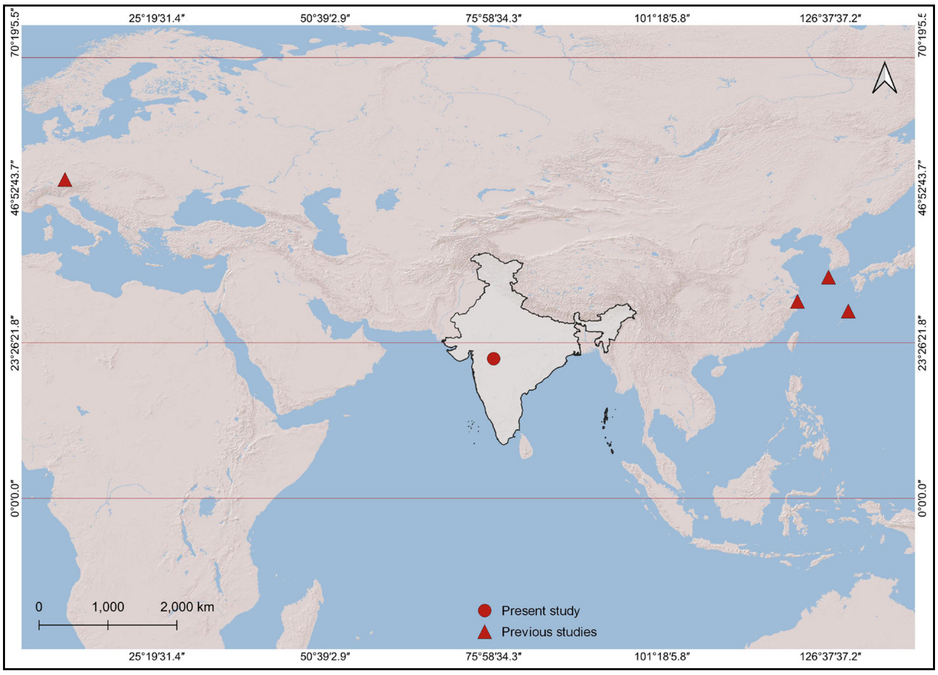

Figure 4. Distribution map of *T. alfonsi* Nagler et al., 2014.

only from regions north of the Tropic of Cancer; however, the new record from India is the first from south of this latitude (Figure 4).

We hypothesise that *T. alfonsi* is possibly an East Asian species which has been introduced to Germany, or that the Indian population (our record identified as *T. alfonsi*) may represent a distinct, undescribed species. Genetic analysis of these populations would solve the taxonomic uncertainty. Until molecular data are available, we provisionally refer to the Indian specimens as *T. alfonsi*. Until now, of the genus *Tanycypris*, only *T. pellucida* has been reported from India (Harshey and Shrivastav 1983). A report of *T. pellucida* by Shinde (2012) was re-examined and its identification is corrected here as *T. alfonsi*.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

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Author contributions

Conceptualization: RRK, YSS. Investigation: RRK, YSS. Methodology: RRK, YSS. Resources: YSS. Supervision: YSS, Visualization: RRK. Writing – original draft: RRK, YSS. Writing – review and editing: RRK, YSS.

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Data availability

All data that support the findings of this study are available in the main text.

REFERENCES

Broodbakker NW, Danielopol DL (1982) The chaetotaxy of Cypridacea (Crustacea, Ostracoda) limbs: proposals for a descriptive model. Bijdragen tot de Dierkunde 52 (2): 103–120. https://doi.org/10.1163/26660644-05202003

Harshey DK, Srivastava AK (1983) Some new records of freshwater Ostracoda (Crustacea: Entomostraca) from India. Current Science 52 (15): 741–772.

Ma S, Yu N (2018) Freshwater ostracods (Crustacea) from Tiantong National Forest Park and Dongqian Lake, eastern China, with descriptions of two new species, Journal of Natural History 52 (27–28): 1825–1868. https://doi.org/10.1080/00222933.2018.1489085

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. https://doi.org/10.1163/26660644-05702003

Meisch C (2000) Freshwater Ostracoda of Western and Central Europe. Spektrum Akademischer Verlag, Heidelberg, Berlin, 522pp.

Meisch C, Smith R, Martens K (2024) An updated subjective global checklist of the extant non-marine Ostracoda (Crustacea). European Journal of Taxonomy 974: 1–144. https://doi.org/10.5852/ejt.2024.974.2767

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. https://doi.org/10.11646/zootaxa.3821.4.1

QGIS (2022) Geographic Information System. QGIS Association. http://www.qgis.org/ Accessed on: 2025-25-07.

Savatenalinton S, Martens K (2009) Generic revision of Cypricercinae McKenzie, 1971 (Crustacea, Ostracoda) with the description of three new genera and one new species and a phylogenetic analysis of the subfamily. Hydrobiologia 632: 1–48. https://doi.org/10.1007/s10750-009-9826-5

Shinde YS (2012) Studies on freshwater Ostracoda (Crustacea) of Pune District, Maharashtra. PhD thesis, Savitribai Phule Pune University, Pune, India, 304pp.

Smith RJ (2023) Descriptions of two Cypridopsinae (Ostracoda, Crustacea) species from the Nansei Islands, Japan, with the first records of non-marine ostracods from the Daito Islands. Zootaxa 5293 (2): 294–316. https://doi.org/10.11646/zootaxa.5293.2.5

Smith RJ, Lee J, Chang CY (2014) Nonmarine Ostracoda (Crustacea) from Jeju Island, South Korea, including descriptions of two new species. Journal of Natural History 49 (1–2): 37–76. https://doi.org/10.1080/00222933.2014.946110

Smith RJ, Ozawa H, Nishida S, Nakai S (2024) Non-marine Ostracoda (Crustacea) collected from pet shops and a hobbyist's aquaria in Japan, including two new species. Zootaxa 5410 (4): 451–494. https://doi.org/10.11646/zootaxa.5410.4.1