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NOTES ON GEOGRAPHIC DISTRIBUTION

First record of *Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021 (Decapoda, Brachyura, Portunidae) from China

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Abstract. Recent taxonomic revisions of *Libystes* A. Milne-Edwards, 1867 species in the Western Indian Ocean have clarified the diagnostic characters of the type species, *L. nitidus* A. Milne-Edwards, 1867. Based on these findings and through comprehensive examination of a male specimen collected from the East China Sea, we report the first record of *L. senckenberg* Spiridonov, Naderloo & Apel, 2021 from Chinese waters. This newly recorded species can be distinguished from its two congeners, *L. edwardsi* Alcock, 1900 and *L. nitidus*, both previously documented from China, through several diagnostic morphological features.

Key words. East China Sea, *Libystes senckenberg*, *Libystes nitidus*, *Libystes edwardsi*.

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INTRODUCTION

Libystes A. Milne-Edwards, 1867 is a morphologically specialized group within the Portunidae Rafinesque, 1815 and is characterized by its lack of swimming ability. Currently, nine species are recognized as valid in this genus (WoRMS 2025). The taxonomy of *Libystes*, particularly concerning its type species *L. nitidus* A. Milne-Edwards, 1867, however, has long been problematic (Ng 2011). The species was originally described from a single female specimen collected from Zanzibar, and its male first gonopod (G1) remained inadequately illustrated until the work of Crosnier (1962). Despite numerous records of *L. nitidus* across the Indo-West Pacific (Stephensen 1946; Serène 1966; Apel and Spiridonov 1998; Yang et al. 2012), the conspecificity of these reports has been questioned due to inconsistent descriptions and illustrations.

Recent taxonomic revisions by Spiridonov et al. (2021a, 2021b) have significantly advanced our understanding of Western Indian Ocean *Libystes* species. Their comprehensive study not only redefined *L. nitidus* but also reinstated *L. alphonsi* Alcock, 1900 and described two new species: *L. vadosus* Spiridonov, Kamanli, Naruse & Clark, 2021 and *L. senckenberg* Spiridonov, Naderloo & Apel, 2021. In reference to these studies, we identified a male *Libystes* specimen collected from the East China Sea as *L. senckenberg*. This specimen represents the first record of this species in Chinese waters. We provide a detailed morphological description and illustrations of this newly recorded species based on the examined specimen.

METHODS

The specimen examined in this study was obtained from a macrobenthic sample collected using a sediment grab. Initially preserved onboard in a 5% formaldehyde solution alongside other macrobenthos, the specimen was later transferred to 75% ethanol in the laboratory for further analysis. Carapace width and length were measured with digital calipers (precision: 0.01 mm), and morphological characteristics were documented using a stereomicroscope. The voucher specimen has been deposited in the East China Sea Fisheries Research Institute (ECSFRI), Shanghai. The abbreviations G1 is used for the male first gonopod. Morphological terminology follows Ng (2011) and Spiridonov et al. (2021a).

RESULTS

Family Portunidae Rafinesque, 1815
Subfamily Carupinae Paulson, 1875
Genus *Libystes* A. Milne-Edwards, 1867

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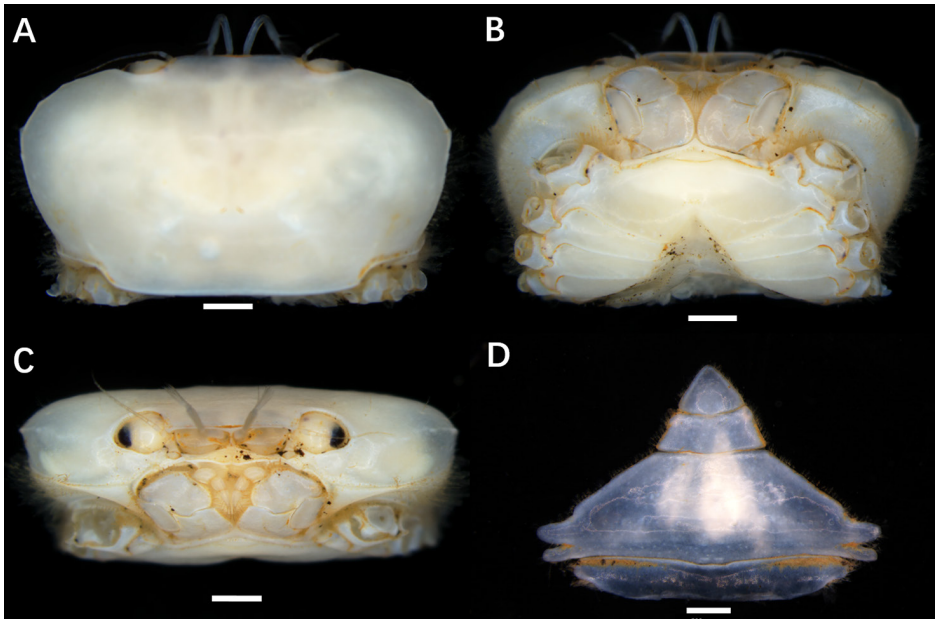

Figure 1. *Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021, male (6.80 mm × 3.85 mm) (ECSFRI 28365). **A.** Carapace, dorsal view. **B.** Carapace, ventral view. **C.** Carapace, frontal view. **D.** Abdomen. Scale bars: A–C = 0.75 mm; D = 0.50 mm.

***Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021**
Figures 1–3

Materials examined. EAST CHINA SEA, CHINA — Zhejiang Province • open sea; 29.191°N, 124.727°E; 70 m depth; silt; 01.XII.2024; Kan Deng leg.; 1♂, ECSFRI 28365.

Diagnosis. Carapace subquadrilateral, approximately 1.77× as broad as long, and exhibits a distinct convexity both dorsally and laterally. Dorsal surface smooth, lacking any transverse ridges or furrows, regions poorly defined (Figure 1A). Front straight and uninterrupted, about 0.3× breadth of carapace (Figure 1A, C). Anterolateral margin arcuate, with 3 angular prominences, last one largest. Posterolateral margin lined with granules. Posterior margin straight, as broad as the length of carapace (Figure 1A, B). Orbits fully occupied by eyestalks, with width roughly half that of front breadth, cornea pigmented (Figure 1C). Between subhepatic and pterygostomial regions, with granules ridge extending from outer margin of buccal cavity to posterolateral margin of carapace. A cluster of long, soft, plumose setae located on the abdominal posterolateral surface. Third maxillipeds nearly covering buccal cavern, merus as long as ischium, anterolateral corner distinctly expanded, exopod stout (Figure 1B).

Chelipeds stout and smooth, nearly equal, longer than other ambulatory legs. Merus longest, subcylindrical; inner anger of carpus obtuse; manus slightly swollen (Figure 2A, B); fingers slender (tips of left immovable finger and right dactylus is broken), slightly longer than manus, crossing over apically when closed, leaving narrow gap basally; cutting edges of fingers bearing several unequal, conical or papilliform teeth on both chelipeds (Figure 2C, D).

Ambulatory legs 2–4 similar, slender, with third leg slightly longer; all articles smooth, lacking any spines or granules but adorned sparse setae along their margins; merus longest, carpus constricting basally, and shorter than propodus; dactylus sword-shaped, longer than propodus. Last leg shortest, dactylus lanceolate, not paddle-like, sinuous in outline, with relatively long and sparse setae along margin, remaining articles similar to those of ambulatory legs 2–4 (Figure 3A).

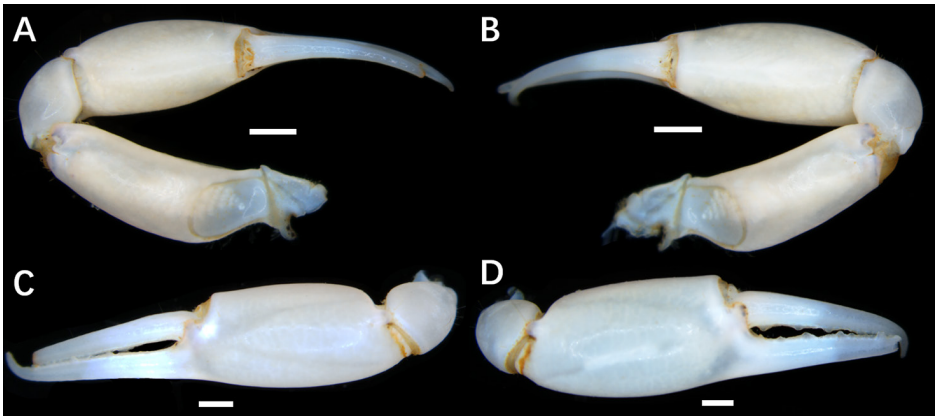

Figure 2. *Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021, male (6.80 mm × 3.85 mm) (ECSFRI 28365). **A.** Left chela, dorsal view. **B.** Right chela, dorsal view. **C.** Left chela, outer view. **D.** Right chela, outer view. Scale bars: A, B = 0.75 mm; C, D = 0.50 mm.

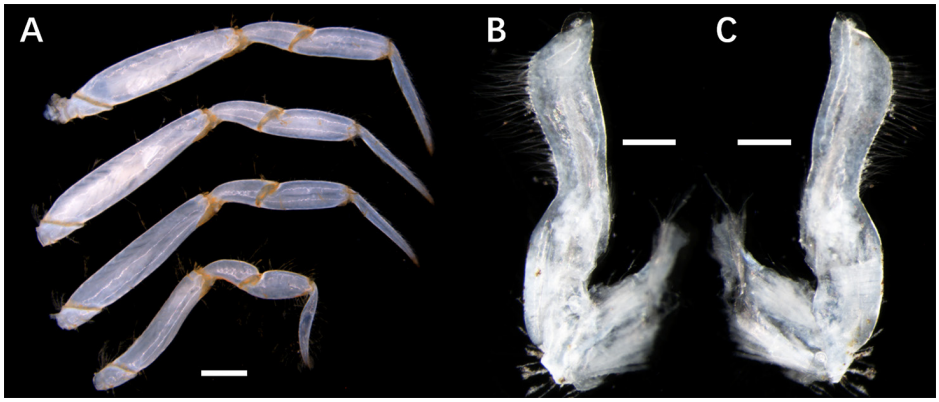

Figure 3. *Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021, male (6.80 mm × 3.85 mm) (ECSFRI 28365). **A.** Left ambulatory legs 2–5 (from top to bottom). **B.** Left G1, dorsal view. **C.** Left G1, ventral view. Scale bars: A = 0.75 mm; B, C = 0.25 mm.

Male abdomen subtriangular, somites 3–5 completely fused without any visible traces of borders. These fused somites also fused with somite 2 mostly but separated laterally by short notches, somite 6 trapezoidal, telson triangular (Figure 1D).

G1 short, stout; inner margin somewhat sinuous, while outer margin concave with noticeable contraction on median part; a row of long, regularly spaced setae along distal half of outer margin; tip widened, opening directed anteriorly (Figure 3B, C).

DISCUSSION

Libystes senckenberg was originally known from the type locality in the Persian Gulf, as well as the Gulf of Aden and the Andaman Sea (Spiridonov et al. 2021a). The present specimen collected from the East China Sea (Figure 4) represents both a significant range extension and the first record of this species in Chinese waters. The specimen is identified as *Libystes senckenberg* based on the widened tip of G1 and anterolateral margin with three angular prominences. Nevertheless, there are slight subtle differences from the holotype. First, the cutting edge of the immovable finger in the holotype bears two large spiniform teeth on the distal half (Spiridonov et al. 2021a: figure 2c), whereas no prominent large teeth are present in our specimen (Figure 2C). Second, the male abdomen of the holotype, as illustrated, shows a clear boundary between somite 2 and the fused portion of somite 3–5 (Spiridonov et al. 2021a: figure 2e), while that boundary is not visible in our specimen (Figure 1D).

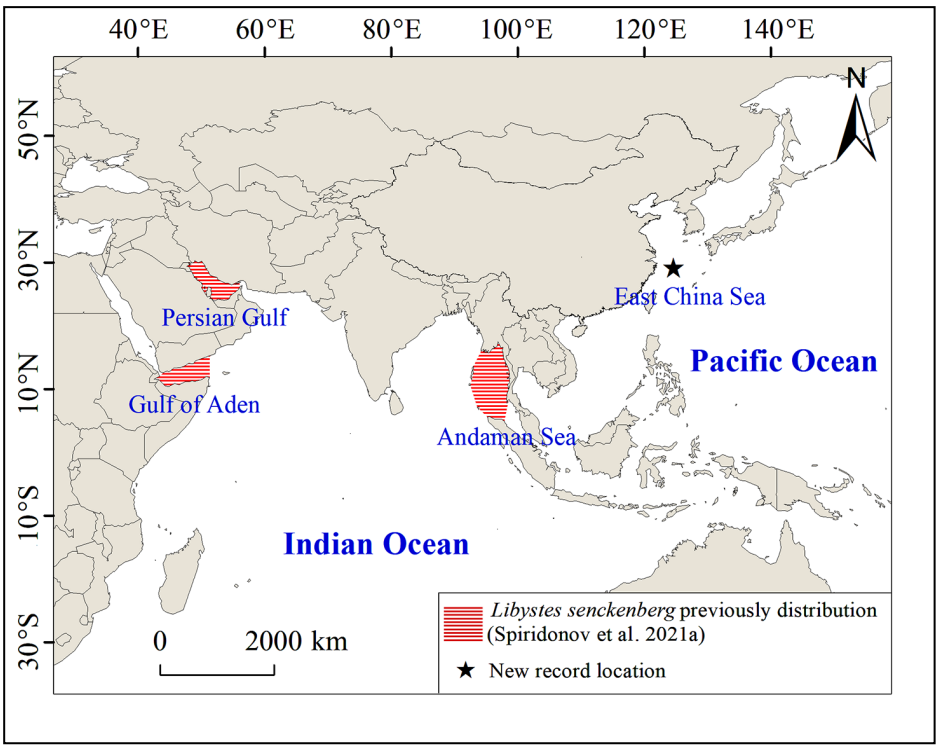

Figure 4. Geographic distribution of *Libystes senckenberg* Spiridonov, Naderloo & Apel, 2021.

Currently, there are nine valid *Libystes* species recognized worldwide: *L. alphonsi*, *L. edwardsi* Alcock, 1900, *L. lepidus* Miyake & Takeda, 1970, *L. nitidus*, *L. paucidentatus* Stephenson & Campbell, 1960, *L. senckenberg*, *L. vadosus*, *L. vietnamensis* Tien, 1969, and *L. villosus* Rathbun, 1924. Among these, *L. nitidus* and *L. edwardsi* have been previously reported from China sea (Dai et al. 1986; Liu 2008; Yang et al. 2012; Zhang and Xu 2023). *Libystes senckenberg* is newly recorded in China seas and resembles *L. nitidus* in carapace shape. It can be distinguished from the latter by its smaller size (carapace width not exceeding 7 mm in males vs. a maximum of 20 mm in males of *L. nitidus*), the presence of angular prominences on anterolateral margin vs. entire margin in *L. nitidus*, and stout G1 with a widened tip vs. elongated G1 with a tapering tip in *L. nitidus*. It can also be readily differentiated from *L. edwardsi* in having three angular prominences on anterolateral margin, lanceolate dactylus of the last ambulatory leg, whereas the latter possesses six or seven distinct anterolateral teeth and paddle-like dactylus.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

Author contributions

Conceptualization: WT and JZ. Data curation: WT. Methodology: WT. Software: WT. Visualization: WT and JCY. Writing – original draft: WT. Writing – review and editing: WT and JZ.

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Data availability

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

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