

# First record of *Mysidopsis gemina* Price, Heard & Vargas, 2019 (Crustacea, Peracarida, Mysida, Mysidae) on the west coast of Mexico

## Primer registro de *Mysidopsis gemina* Price, Heard & Vargas, 2019 (Crustacea, Peracarida, Mysida, Mysidae) en la costa oeste de México

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### ABSTRACT

*Mysidopsis gemina* Price, Heard & Vargas, 2019, a species of mysid shrimp recorded for Pacific Costa Rica, was collected in western Mexico on October 19<sup>th</sup>, 2022, at the entrance of the Gulf of California. This is the first record north of Costa Rica and it represents a distribution range extension to the north of approximately 13 degrees of latitude. A comparison of the diagnostic morphological features of the Costa Rican and Mexican specimens is given.

**Keywords:** Mysidae, sandy beach, East Pacific, Gulf of California, new record.



### RESUMEN

*Mysidopsis gemina* Price, Heard & Vargas, 2019, una especie de camarón misidáceo registrada para el Pacífico de Costa Rica, fue recolectada en el occidente de México, el 19 de octubre de 2022, en la entrada del golfo de California. Este es el primer registro al norte de Costa Rica y representa una extensión del intervalo de distribución hacia el norte de unos 13 grados de latitud. Se proporciona una comparación entre los caracteres morfológicos diagnósticos del material de Costa Rica y de México.

**Palabras clave:** Mysidae, playa de arena, Pacífico Oriental, golfo de California, nuevo registro.

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## INTRODUCTION

Eastern Pacific mysid shrimp, also known as opossum shrimp, is poorly known south of California, and many species are known from a single locality or from a reduced area (Price, 2004; Hernández-Payán & Hendrickx, 2020). In the case of western Costa Rica, according to Price *et al.* (2019) only four species of Mysidae had been reported until 2019. Based on samples collected in 2010 and 2012 in two locations on the Pacific coast of northern Costa Rica (Puntarenas and Guanacaste), Price *et al.* (2019) described a new species of the genus *Mysidopsis*, *M. gemina* Price, Heard & Vargas, 2019. This species was recently collected during sampling operations along a sandy beach in western Mexico, representing the first record outside of Costa Rica, thus extending considerably its distribution range in the eastern Pacific.

## MATERIALS AND METHODS

Samples were collected in the surf zone of a sandy beach on October 19th, 2022 with a small zooplankton net (mesh aperture 0.5 mm), preserved in a 70% ethanol solution and analyzed in the laboratory. Mature specimens of *M. gemina* were separated from the rest of the samples, examined for details, and illustrated using a Nikon

SMZ-10A and Leica MZ6 dissecting microscope, and a Leica DM LS2 compound microscope equipped with a camera lucida. Illustrations were compared with the original description by Price *et al.* (2019). CL, carapace length. Material was deposited in the Regional Collection of Marine Invertebrates (CRIM), Unidad Académica Mazatlán, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, in Mazatlán, Mexico (ICML-EMU).

## RESULTS

Order Mysida Haworth, 1825

Family Mysidae Haworth, 1825

Subfamily Leptomysinae Czerniavsky, 1882

Tribe Mysidopsini Wittmann, Ariana & Lagardère, 2014

Genus *Mysidopsis* G. O. Sars, 1864

*Mysidopsis gemina* Price, Heard & Vargas, 2019

(Figures 1, 2)

*Mysidopsis gemina* Price *et al.* 2019:2, Figs. 1-3.

Material examined. Isla de la Piedra (23° 18' N, 106 °41' W), Mazatlán, Mexico, Oct 19, 2022, 1 male (CL 1.62 mm, TL 4.86 mm) and 1 female (CL 1.76 mm, TL 5.28 mm), about 1 m depth (ICML-EMU-13457).

Comments. The specimens collected in the Mazatlán area fit well with the original description provided

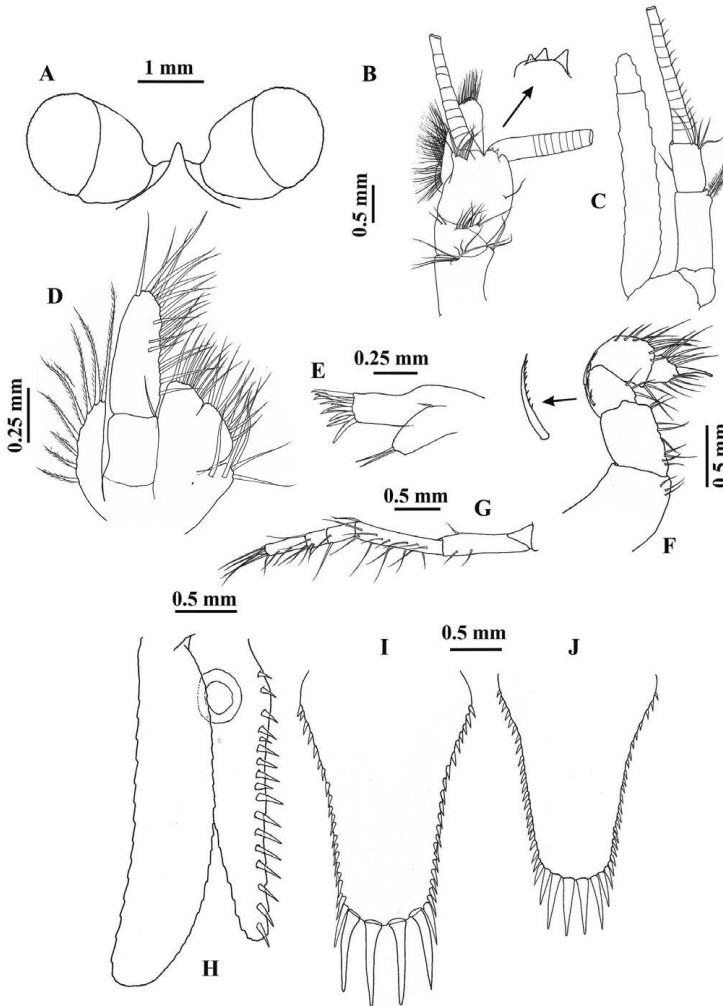


Fig. 1. *Mysidopsis gemina* Price, Heard & Vargas, 2019 (ICML-EMU-13457). A-I, K, male (CL 1.62 mm, TL 4.86 mm). J, female (CL 1.76 mm, TL 5.28 mm). A, frontal part of cephalothorax in dorsal view; B, antennular peduncle; C, antennal peduncle and scale; D, maxilla; E, maxillule; F, thoracic endopod 1; G, thoracic endopod 8; H, uropods in dorsal view; I, telson in dorsal view; J, telson in dorsal view. Scales as indicated

Fig. 1. *Mysidopsis gemina* Price, Heard & Vargas, 2019 (ICML-EMU-13457). A-I, K, macho (LC 1,62 mm, LT 4.86 mm). J, hembra (LC 1,76 mm, LT 5.28 mm). A, parte frontal del cefalotórax en vista dorsal; B, pedúnculo antenular; C, pedúnculo antenal y escala; D, maxila; E, maxilula; F, endópodo torácico 1; G, endópodo torácica 8; H, urópodos en vista dorsal; I, telson en vista dorsal; J, telson en vista dorsal. Escalas indicadas

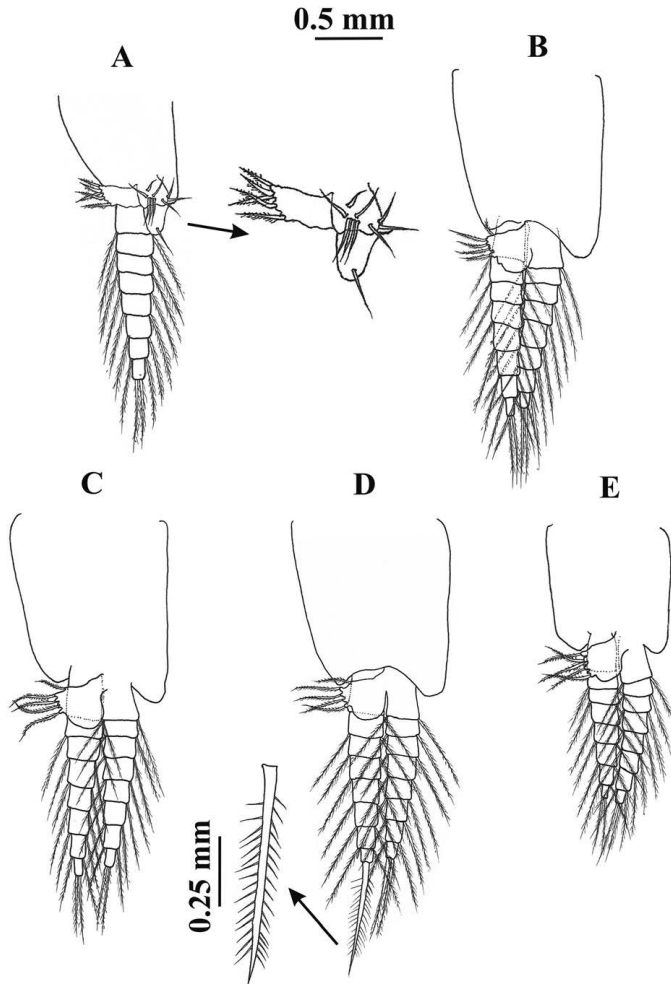


Fig. 2. *Mysisidopsis gemina* Price, Heard & Vargas, 2019 (ICML-EMU-13457). Male (CL 1.62 mm, TL 4.86 mm). A, Pleopod 1, endopod enlarged (arrow). B, pleopod 2. C, pleopod 3. D, pleopod 4, exopod terminal seta enlarged (arrow). E, pleopod 5. Scale as indicated

Fig. 2. *Mysisidopsis gemina* Price, Heard & Vargas, 2019 (ICML-EMU-13457). Macho (LC 1.62 mm, LT 4.86 mm). A, pleópodo 1, endópodo magnificado (flecha). B, pleópodo 2. C, pleópodo 3. D, pleópodo 4, seta terminal del exópodo magnificada (flecha). E, pleópodo 5. Escala indicada

by Price *et al.* (2019). Diagnostic characters of *M. gemina*, as defined in the original description, were illustrated (Figs. 1, 2) to corroborate identification. Details are provided below for each of these characters.

- 1) Cephalothorax in dorsal view. Basically, similar to the illustration of Price *et al.* (2019: Fig. 1A). The carapace has an anterior margin produced into an acutely pointed triangular rostrum (Fig. 1A); cornea is large, globular and broader than eye-stalk (Fig. 1A).
- 2) Antennular peduncle (Fig. 1B). It matches the description of Price *et al.* (2019: Fig. 1B): shorter than the antennal scale, 3 articles, article 1 subequal in length to article 3, and article 2 shorter than the other two. The male appendix masculina is also large and densely setose, as in the original description. Price *et al.* (2019) referred that the distal border of the peduncle possesses a dorso-medial lobe bearing two tooth-like processes; however, in the material examined there are 3 tooth-like, conical processes (Fig. 1B, arrow).
- 3) Antennal peduncle and scale (Fig. 1C). Proportion of peduncle and scale lengths are similar to the description of Price *et al.* (2009: Fig. 1C). The antennal scale is slender, lanceolated, extending well beyond the antennal peduncle, with the outer margin slightly concave, suture present on the distal edge.
- 4) Maxilla (Fig. 1D). The shape and proportions are similar to that reported by Price *et al.* (2019: Fig. 1G). The exopod is relatively narrow, with 8 plumose setae; the endopod is 2-articulated, the distal article is oval, with the 3 submarginal setae considerably longer than those described by Price *et al.* (2019: Fig. 1G), and the proximal article features a simple seta on the distal margin, as illustrated by Price *et al.* (2019: Fig. 1G); the sympod consists of 3 endites (Fig. 1D).
- 5) Maxillule (Fig. 1E). The form of this appendage and the number of setae matches the description of *M. gemina* (Price *et al.* 2019: Fig. 1F), including the 9 strong serrate setae on the outer lobe apex, and the inner lobe with two apical setae and one medial, short setae on outer margin.
- 6) Thoracic endopod 1 (Fig. 1F). The size, relative length of articles, and shape of the thoracic endopod 1 are similar to the original description by Price *et al.* (2019: Fig. 2A). This appendage is short

and robust, as typical for the genus, ischium and merus are fused and equivalent to 2 x the carpus length, carpus with three serrate setae along the outer margin; the propodus is bent inward, with several simple setae and one serrate seta on the inner distolateral margin; the dactylus bears one strong, curved, terminal seta.

- 7) Thoracic endopods 3-8. The shape and size of thoracopod 8 (Fig. 1G) match the diagnosis of Price *et al.* (2019: Fig. 3A). The carpopropodus of thoracic endopods 3-7 (not illustrated herein) are 3-articulated, as in Price *et al.* (2019: Figs. 2C-G).
- 8) Uropods (Fig. 1H). Proportion and size of both the uropodal exopod and endopod are similar to what was illustrated by Price *et al.* (2019: Fig. 3I), with the exopod slightly longer than the endopod. The number (17) and robustness (strong) of the spine-like setae in the endopod inner margin is similar to the original description, and the series extends from the statocyst level to the apex of the endopod, as in the original description.
- 9) Telson (Fig. 1I, J). Price *et al.* (2019) reported a marked sexual dimorphism in the diagnostic characters. In both cases (male and female), the telson is short, wide, linguiform, and features a rounded to truncated apex. In the case of the female, the lateral margins present 17-20 short, robust setae increasing in length towards the tip, and the apex bears two pairs of subequal, long, stout spiniform setae (Price *et al.* 2019: Fig. 3G), all of these characters being similar to the Mexican material (Fig. 1I). The male telson in the original description possesses 20-23 short spiniform setae increasing in length towards the apex; the apex has three pairs of fairly stout spiniform setae (Price *et al.* 2019: Fig. 3H), and this is again similar to the Mexican material (Fig. 1J).
- 10) Pleopods of male (Fig. 2A-E) well developed. Pleopod 1 of the Mexican material (Fig. 2A) shares the 2-articulated endopod observed by Price *et al.* 2019 (Fig. 3D, E); the first article bears a rectangular pseudobranchial lobe with 5 setulose setae (as in the type), and a series of 9 simple setae (vs. 7-10 in the type material) on the anterior face; the second article is oval, with a long, simple terminal seta, as in the type. Pleopods 2-5 (Fig. 2B-E) are biramous, with endopod and exopod 8-articulated as in the original description (Price *et al.* 2019, Fig. 3F); the pseudobranchial lobes are well devel-

oped, larger than the pseudo-branchia of pleopod 1, and bear 5 setulose setae each as in the type. Exopod of pleopod 4 of the type is described as bearing a long (equivalent to the length of the 4-5 terminal articles of the exopod), apical, spiniform seta, barbed on one margin (Price *et al.* 2019: 3F). This clearly matches the Mexican specimen (Fig. 2D), also bearing a proportionally similar spiniform seta, except it is barbed on both margins.

**Distribution.** From the type locality, Playa Caldera (09° 92' 75" N 84° 71' 64" W), Puntarenas, Costa Rica, to Isla de la Piedra (23° 18" N, 106° 41" W), Mazatlán, Mexico. The lack of records between Costa Rica and Mexico is most likely due to lack of samplings combined with little attention paid to these small, "shrimp-like" organisms. Further sampling will certainly demonstrate that *M. gemina* is a well distributed, shallow-water species in the region.

**Habitat.** The material from Costa Rica was collected from sandy beaches in depths of 0.5 to 1.0 m. The Mexican material was collected in the surf zone of a sandy beach, in about 1.0 m depth.

**Final Remarks.** According to Price *et al.* (2019: Table 2), three distinctive characters are found separately or in combination in nine species of *Mysidopsis*, setting these apart from

the other 42 nominal species of the genus: sexually dimorphic telson (4 species); male pleopod 1 with biarticulated endopod (6 species); and enlarged pseudobranchial lobes (pseudopodia) (5 species). Of these species, only *M. gemina* possesses these three characters (Price *et al.* 2019: Figs. 3G, H, D-F) which were also observed in the Mexican material (Figs. 1I, J, 2A-E).

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## REFERENCES

- Hernández-Payán, J. C. & Hendrickx, M. E. (2020). Revaluación de la fauna de Lophogastrida y Mysida (Crustacea: Peracarida) del Pacífico mexicano. *Geomare Zool.*, 2(3), 49-59.
- Price, W. W. (2004). An annotated checklist for the order Mysida (Crustacea: Malacostraca: Peracarida) from the Pacific coasts of the Americas (Alaska to Chile). In M. E. Hendrickx, (Ed.), *Contributions to the study of East Pacific Crustaceans*, 3 (pp. 53-77). Universidad Nacional Autónoma de México, México D. F.
- Price, W. W., Heard, R. W. & Vargas, R. (2019). *Mysidopsis gemina* n. sp. (Crustacea: Mysida: Mysidae) from the northern Pacific coast of Costa Rica. *Nauplius*, 27, 1-12. <https://doi.org/10.1590/2358-2936e2019016>

