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ORIGINAL ARTICLE

A new species of *Austinixa* Heard and Manning 1997 (Decapoda: Pinnotheridae) and new records of *A. felipensis* (Glassell, 1935) from the Mexican Pacific

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ABSTRACT

A new species of the pinnotherid crab genus *Austinixa* from La Cruz de Huanacaxtle, Nayarit, Mexico is described. The new species is closely related to *Austinixa roblesi* Palacios Theil and Felder, 2020, however these can be distinguished mainly by the shape of the male pleon and telson, gonopod and chelae. In addition, four new records of distribution of *Austinixa felipensis* Glassell, 1935 are added. The species is known previously from the type locality to the north of the Gulf of California and the Pacific coast of El Salvador and Nicaragua. The new collection sites are located on the eastern coast of the Gulf of California and the states of Nayarit and Jalisco, Mexico.

KEYWORDS

Brachyura, Nayarit, Pea crabs, Pinnixinae, western Mexico

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Introduction

Among pinnotherid crabs of the subfamily Pinnixinae Števčić, 2005, the species of *Austinixa* Heard and Manning, 1997 can be distinguished by having a very broad carapace, a transverse ridge, located posterior to the cardiac region that completely crosses the carapace, chelae with strongly deflected dactyli, and highly developed legs, particularly the third pair. The genus currently includes 12 american species, of which ten have been recorded on the Atlantic coast and only *Austinixa felipensis* (Glassell, 1935) and *Austinixa cuestai* Palacios Theil and Felder, 2020a are recorded from the Pacific coast (Palacios Theil and Felder, 2020a). It seems that the low number of pinnotherid species known from the Pacific coast could be due to low numbers of studies on these infaunal crustaceans. This Atlantic/Pacific coast difference has been gradually decreasing and studies on pinnotherids and other infaunal species, specifically Pacific coast ones, have progressively increased and the knowledge of new species, species hosts or their distributions have also been augmented (*e.g.*, Zmarzly, 1992; Thoma *et al.*, 2005; Campos and Vargas-Castillo 2014; Salgado-Barragán, 2015; Campos, 2016; Salgado-Barragán *et al.*, 2018; Palacios Theil and Felder, 2020a; 2020b). The current work refers to two species of pinnotherid crabs of the genus *Austinixa* collected in a series of samplings in four locations on the Pacific coast of Mexico. Fifty-eight crabs of the genus *Austinixa* were collected in association with burrows of "ghost shrimps" (Callianassidae *sensu* Poore *et al.*, 2019) or from unknown hosts. Most of the specimens belonged to *A. felipensis* and were collected in all four locations. The species is currently found on the Pacific coast, in San Felipe, upper Gulf of California, Mexico, Coral de Mulas, El Salvador and Las Enramadas, Nicaragua (Glassell, 1935; Bott, 1955; Palacios Theil and Felder, 2020a) (Fig. 1).

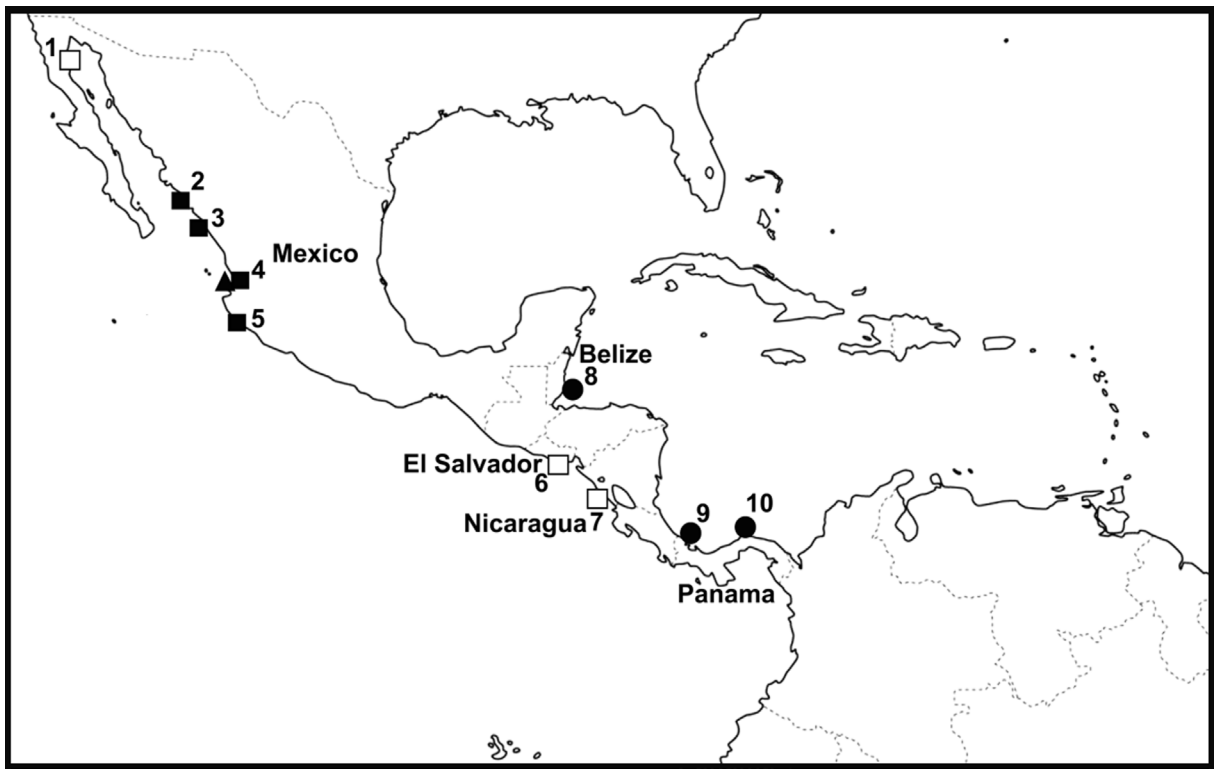

Figure 1. Localities in which the *Austinixa* species indicated in this study have been collected. *Austinixa marianae* sp. nov. = dark triangle, *A. roblesi* (according to Palacios Theil and Felder (2020a)) = dark circles, and *A. felipensis* = squares. The dark squares correspond to the collection locations in this study, the empty squares indicate the localities of collection, according to Glassell (1935), Bott (1955), and Palacios Theil and Felder (2020a). The numbers correspond to: 1, San Felipe, Baja California; 2, Santa María - La Reforma, coastal lagoon, Sinaloa; 3, Mazatlán, Sinaloa; 4, La Cruz de Huanacaxtle, Nayarit; 5, Bahía Chamela, Jalisco; 6, Coral de Mulas and La Chepona, El Salvador; 7, Las Enramadas, Nicaragua; 8, Dangriga, Belize; 9, Bocas del Toro, Panama; 10, Isla Grande, Panama.

Seven males and three females of an undescribed species were collected in the intertidal zone from the Marina at La Cruz de Huanacaxtle, Mexico. The new species has a resemblance to *Austinixa roblesi* Palacios Theil and Felder, 2020a, from Belize and Panama, and eastern coast of Central America, but can be clearly separated by differences in the shape of the pleon, telson, chelae, and the first gonopod. In this work we present the description of a new species of *Austinixa* and new distributional records of *A. felipensis* along the Gulf of California and central coast of the Mexican Pacific.

Material and Methods

Fifty-eight pinnotherid specimens of the genus *Austinixa* were collected at four locations in the SW portion of the Gulf of California and the central Mexican Pacific coast. Bahía Santa María - La Reforma coastal lagoon and Isla de La Piedra, Sinaloa, SE Gulf of California, the marina at La Cruz de Huanacaxtle, Nayarit and Chamela Bay, Jalisco in the central region of the Mexican Pacific from February 2009 to August 2020 (Fig. 1). Santa María - La Reforma coastal lagoon is a large coastal lagoon located on the NW coast of Mexico in the state of Sinaloa that is identified as one of the richest and most productive in the region, with considerable importance for shrimp, swimming crab (*Callinectes* Stimpson, 1860) and fish landings in the Gulf of California (Ruiz-Luna *et al.,* 2010) and also as a support system for seabird populations (Castillo-Guerrero *et al.*, 2014). Isla de La Piedra is a peninsula, approximately 15 km in length, located SE of the city of Mazatlán, Sinaloa. The collection site is a fine sand beach located in the NW and is partially protected from the waves by the breakwater at the entrance to the port of Mazatlán and by a small island called Isla Cardones. The marina at La Cruz de Huanacaxtle, called Marina Riviera Nayarit, is a medium-sized marina, with approximately 350 docks, located in the NW of Bahía Banderas, at the end of the state of Nayarit. It is a semi-closed site with an entrance protected by breakwaters on the eastern side and whose bottom is covered almost entirely by rocks. The collection site is a small beach of fine sand located in a protected zone near the entrance, in front of "Mercado del Mar". Chamela Bay is a sanctuary, or protected natural area, located on the central coast of the state of Jalisco in the central Mexican Pacific. It corresponds to a cove of approximately 13 km in length with 11 islands. The sampling area was located near the mouth of the Pérula estuary, in the NW portion of the cove. It is a semi-protected beach area with medium to fine sand.

All specimens were collected using a "yabby" type suction pump operated at 0–50 cm depth. Specimens were deposited in the Regional Collection of Marine Invertebrates, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, in Mazatlán, Sinaloa, Mexico (ICML-EMU), and in the Collection of Crustacea of the Laboratorio de Ecosistemas Marinos y Acuicultura (LEMA-CCR), Universidad de Guadalajara, Zapopan, Mexico. Specimens were examined and illustrated under a Leica MZ6 stereomicroscope equipped with a camera lucida. The third maxilliped and gonopods of the new species were examined and illustrated under a Leica DM LS2 compound microscope also equipped with a camera lucida. The composite digital image (Fig. 2) was made with a Canon Powershot S3 IS digital camera attached to a Leica MZ6 stereomicroscope. Between 5–15 photographs were taken at different focal planes and combined using Combine ZP free processing software package for creating extended depth of field images. Drawings were scanned and edited with Paint Tool Sai 2 Illustrator®. Measurements were recorded by ocular micrometer to the nearest 0.1 mm. Abbreviations are: JSB: José Salgado-Barragán; MAP: Manuel Ayón-Parente; ARH: Alma R. Raymundo-Huizar; CL: carapace length; CW: carapace width; coll.: collector; Car: Caribbean Sea; NE FL; Northeastern Florida coast; E Pac: Eastern Pacific; GMx: Gulf of Mexico; NW Atl: Northwestern Atlantic; SW Atl: Southwestern Atlantic. Measurements are in millimeters.

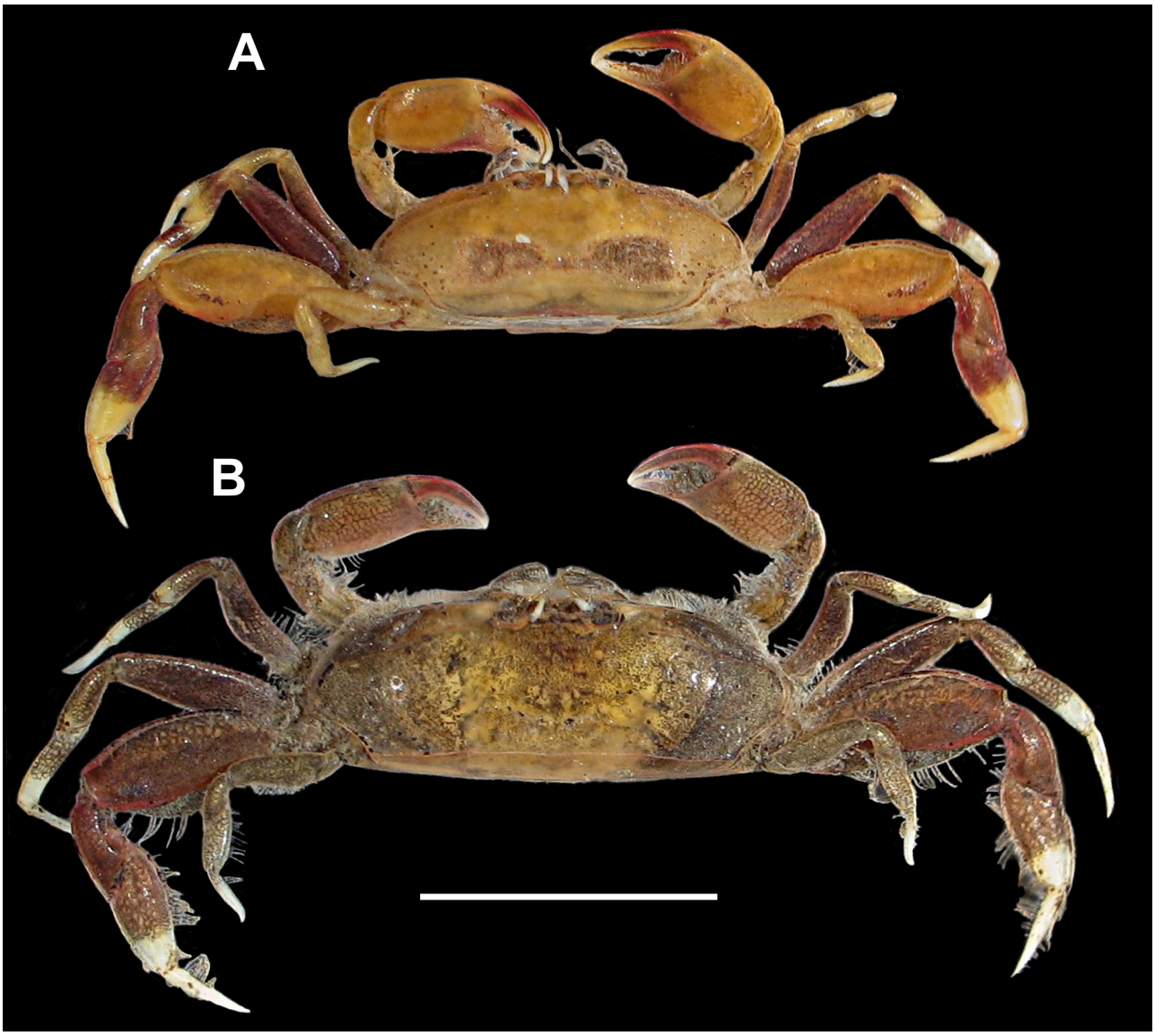

Figure 2. *Austinixa marianae* n. sp., color in life. **A**, Male paratype ICML-EMU 12532; **B**, female paratype, ICML-EMU 12532. Scale bar = 5 mm.

Systematics

Order Decapoda Latreille, 1802

Family Pinnotheridae De Haan, 1833

Genus *Austinixa* Heard and Manning, 1997

***Austinixa marianae* sp. nov.**

(Figs. 1–3)

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Material examined. All from Marina Riviera Nayarit at La Cruz de Huanacaxtle, Nayarit (20°45'N 105°24'W). Holotype: male, CW 5.7, CL 2.2 mm (ICML-EMU 12530), intertidal, fine sand, 2 September 2018, coll. R. García de Quevedo, ARH, MAP and JSB. Paratypes: 1 male CW 6.7, CL 2.4 mm and 1 ovigerous female, CW 6.8, CL 2.6 mm (ICML-EMU 12531), same collection data as in the holotype. 1 male, CW 6.5, CL 2.1 mm (LEMA-CCR 650), 27 May 2020, coll. MAP. 2 males CW 4.3–5.4, CL 1.7–1.9 mm and 1 ovigerous female, CW 7.1, CL 2.9 mm (ICML-EMU 12532), 22 August 2020, coll. R. García de Quevedo and ARH, 2 males CW 4.4–6.0, CL 1.8–2.1 mm and 1 ovigerous female, CW 7.9, CL 2.7 mm (ICML-EMU 12533), 23 August 2020, coll. R. García de Quevedo and ARH.

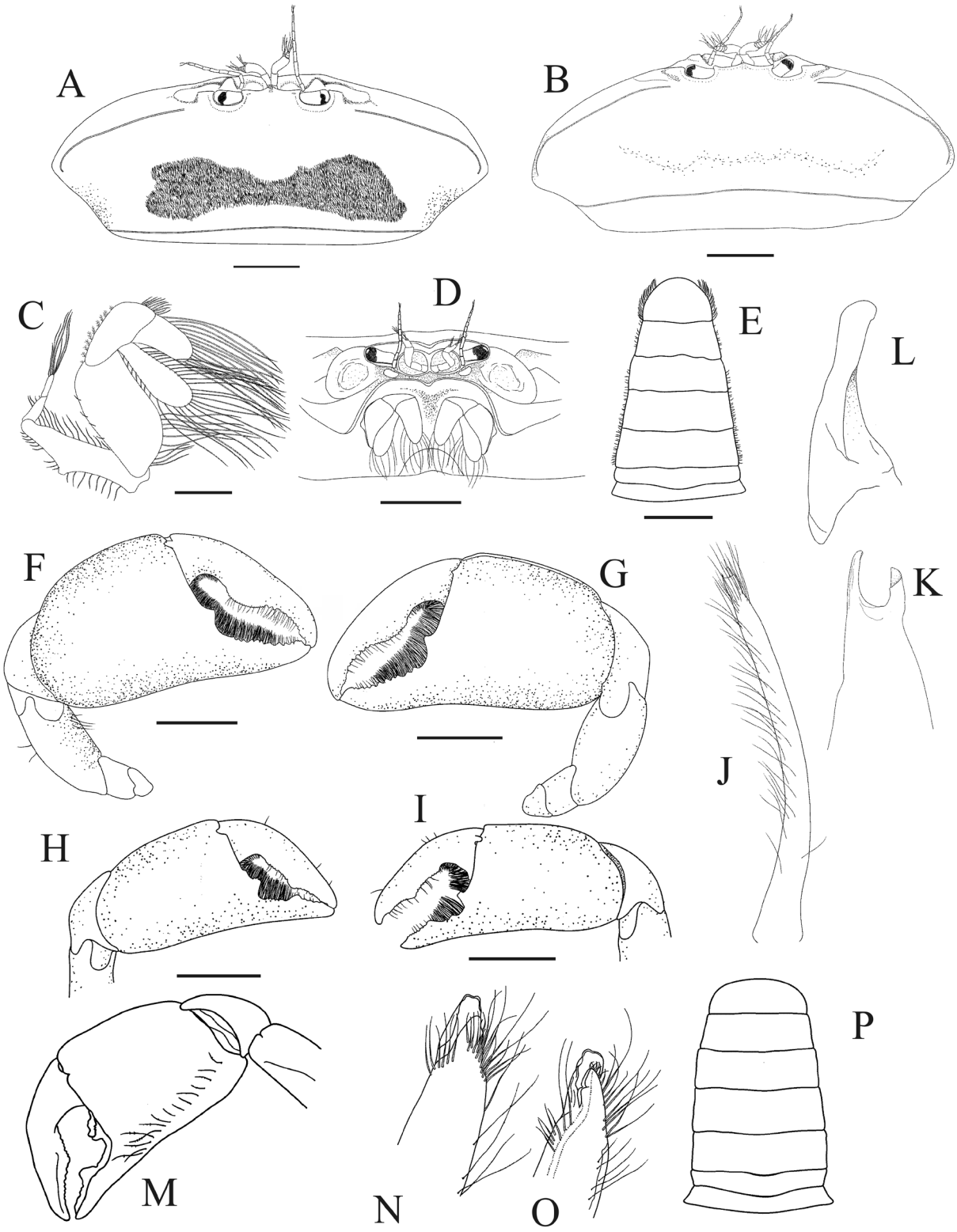

Figure 3. *Austinixa marianae* n. sp. **A, C–G, J–L**, male paratype (ICML-EMU 12531); **B, H–I**, female paratype (ICML-EMU 12531). *Austinixa roblesi* Palacios Theil and Felder, 2020a, **M–P. A**, Male carapace, dorsal view; **B**, female carapace, dorsal view; **C**, third maxilliped, external view; **D**, carapace frontal region, anterior view; **E**, pleon; **F**, male right cheliped, external view; **G**, male left cheliped, external view; **H**, female right cheliped, external view; **I**, female left cheliped, external view; **J**, male, first gonopod, *in toto*; **K**, male, first gonopod, distal portion (setae omitted); **L**, male second gonopod; **M**, right chela, internal; **N**, left first gonopod tip, pleonal surface; **O**, left first gonopod tip, sternal surface; **P**, male pleon. Scale bar = 1 mm, except **C** = 0.2 mm. (**M–P** redrawn from Palacios Theil and Felder, 2020a)

Size. Males, CW 4.3–6.7, CL 1.7–2.4 mm (N = 7); ovigerous females, CW 6.8–7.9, CL 2.6–2.7 mm (N = 3)

Diagnosis. Carapace transverse ridges on branchial regions nearly reaching orbit and turning towards posterior before reaching lateral margins; male carapace with dorsal patch of setae anterior to cardiac ridge; P4 propodus opposable margin bicarinate; P4 merus with bare depression on posterodistal half; P5 dactylus triangular in sectional view, margins serrated; male pleon triangular, telson rounded, longer than sixth pleonite.

Description. Carapace (Fig. 3A–B) smooth, punctate, 2.7–2.8 times wider than long, high, cardiac crest extending from side to side across cardiac region, above posterior margin; sharp, non-tuberculate branchial ridges, not extending to orbit and turning laterally towards posterior end before reaching lateral margin. Male carapace (Fig. 3A) with large patch of setae anterior to cardiac crest, narrower towards the central part. Female carapace (Fig. 3B) slightly depressed in mid-back, with no setose dorsal patch. Rostrum with low anterior median depression, two lateral grooves between rostrum and orbital regions. Orbits approximately 0.6 times width of rostrum.

Antennae about 1.3 times longer than width of front, (Fig. 3A–B, D) with 9 articles, third being the longest.

Third maxilliped (Fig. 3C) ischiomerus fused, elongate; carpus almost as long as propodus; propodus and dactylus elongate, with long marginal setae, dactylus longer than propodus. Exopod with median protuberance on outer margin, flagellum two-segmented ending in long setae.

Chelipeds of males and female (Fig. 3F–I) similar in shape, but stouter in males. Chelae strong, stout, smooth but with a line of long plumose setae decreasing in size on internal surface, near and subparallel to inferior margin, extending from proximal margin of palm up to distal margin of pollex; palm dorsal margin with ridge along and continuing on dactylus exterior margin, nearly reaching tip, ventral margin nearly straight, with smooth concavity on distal third; pollex straight, about third to half as long as palm, cutting edge serrated, triangular tooth on proximal third followed by low concavity with a series of small teeth in males and a proximal tooth followed by a concavity and a plateau with tiny teeth in female gape very setose; dactylus almost as long as palm, deflexed downward, unarmed, cutting edge medially convex, serrated.

Pereopods 2–5 (Fig. 4A–E) slender, relative lengths P4 > P3 > P2 > P5; P2 with flexor margin of merus proximally convex, dactylus longer than propodus, almost straight, short setae on tip; P3 similar to P2, dactyl curved, short setae on tip; P4 the strongest, merus with crest on extensor margin following to carpus, with dorsodistal depression of about one third length of merus, flexor margin bicarinate, anterior carina serrated, covered with short setae, propodus bicarinate, anterior carina serrated and setose, margin of posterior carina with minute teeth, dactylus curved carinae on anterior and posterior faces, anterior wider and setose, posterior thinner and shorter, on distal half of dactylus; P5 dactylus almost straight, with deflected tip, triangular in sectional view, all margins serrated.

Male pleon (Fig. 3E) with 6 non-fused pleonites plus telson, tapering distally, short marginal setae from third to sixth pleonite, longer on telson; pleonite 1 subtrapezoidal, pleonites 2–6 trapezoidal, second pleonite about half length of third, pleonites 3–6 similar in width, telson longer than sixth pleonite, distally rounded. Ovigerous female pleon (Fig. 4J) wider than long, margins rounded, with 6 unfused pleonites plus telson, pleonite 1 about 0.8 pleonite 2 length, pleonites 3–5 of about same length, pleonite 6 slightly shorter than pleonite 5; telson shorter than pleonite 6, distal margin sinuous, apex slightly elevated. Male first gonopod (Fig. 3G, H) as illustrated. Male second gonopod (Fig. 3L) much smaller than first, as illustrated.

Distribution. Only known from the marina at La Cruz de Huanacaxtle, Nayarit, Mexico (Fig. 1).

Etymology. The species name honors Mariana Salgado, the beloved daughter of the first author, in thanks for her invaluable support with the illustration of the new species.

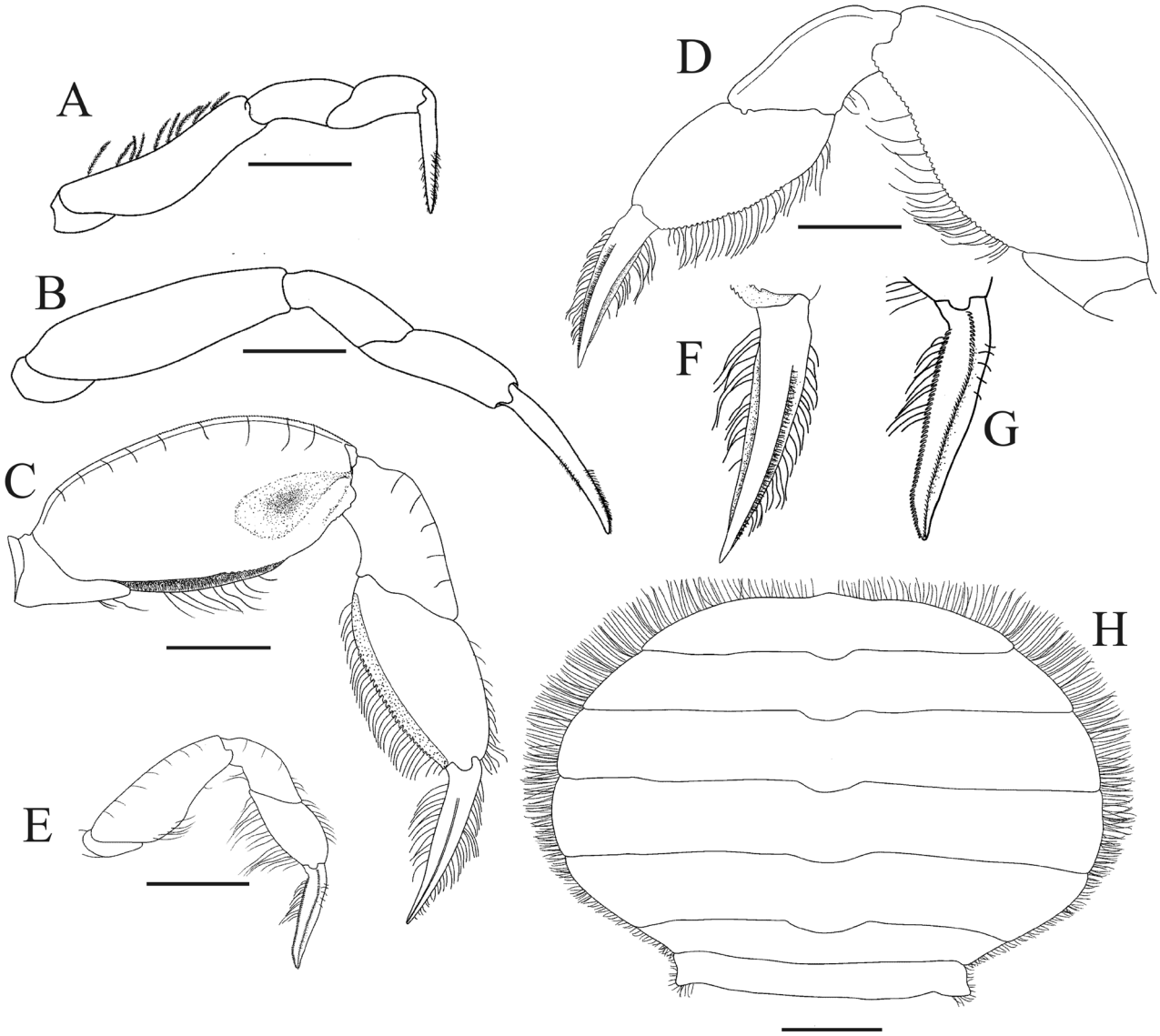

Figure 4. *Austinixa marianae* n. sp. **A–G**, male paratype (ICML-EMU 12531); **H**, female paratype (ICML-EMU 12531). **A**, Second pereopod, dorsal view; **B**, third pereopod, dorsal view; **C**, fourth pereopod, dorsal view; **D**, fourth pereopod anterior view; **E**, fifth pereopod, dorsal view; **F**, dactylus of fourth pereopod, dorsal view; **G**, dactylus of fifth pereopod, dorsal view; **H**, ovigerous female pleon. Scale bar = 1 mm.

Remarks. *Austinixa marianae* sp. nov. is the third species of *Austinixa* recorded in the eastern Pacific coast. The new species can be separated from the other two species in this zoogeographical region (*A. felipensis* and *A. cuestai*) by several morphological differences: *A. marianae* sp. nov. has large branchial ridges that are absent in the other two species; the males of *A. marianae* sp. nov. and *A. cuestai* have a large dorsal patch of setae on carapace, anterior to the cardiac crest that is absent in *A. felipensis*, but the carapace of males and females of *A. cuestai* also have setose lateral regions, whereas in the new species these regions are bare. The P4 propodus is ventrally bicarinate in all three species, but only *A. marianae* sp. nov. has P4 with a posterodistal depression in carpus.

The new species is more similar to *A. roblesi*, from Belize and the Atlantic coast of Panama, than to the rest of *Austinixa* species. *Austinixa marianae* sp. nov. shares all the diagnostic characteristics indicated for *A. roblesi* by Palacios Theil and Felder (2020a): "Carapace with each branchial region transversed by ridge, nearly reaching orbit, turning laterally sharply towards posterior; male carapace with dorsal patch of setae anterior to cardiac ridge; P4 propodus opposable

margin bicarinate; P4 merus with depression on posterior half of distal end of dorsal surface, depression not continuing into posterior surface", but, in addition to the fact that the *A. marianae* sp. nov. and *A. roblesi* are distributed in two different zoogeographic regions (Fig. 1), they can be separated by several differences. Chelae of both males and females of *A. marianae* sp. nov. are similar but those on males are more robust than in females. On the other hand, in *A. roblesi* the fixed finger of chelae in males and females have a triangular median tooth on the inner margin that is absent in males of the new species. The dorsodistal depression in merus of P4 is setose in *A. roblesi* while in the new species it is bare. Dactyli of P4 and P5 of the two species could also be different, as Palacios Theil and Felder (2020a) indicated that, in *A. roblesi*, both P4 and P5 have dactyli with anterior and posterior ridges, but the authors did not mention any further details about those ridges. In *A. marianae* sp. nov. the anterior ridge of P4 is much wider than the posterior, surrounded by small setae and the posterior one is thinner. Besides, dactylus of P5 is triangular in sectional view and all three margins are serrated (Fig. 3C–G). The serration of the P5 dactylus was not mentioned by Palacios Theil and Felder (2020a) but in their drawing of P5 (Fig. 8F), they illustrated a posterior ridge serrated in the proximal half. We could not examine specimens of *A. roblesi* and there is a possibility that the P4 and P5 dactyli of both species are similar. Perhaps the most obvious difference between *A. roblesi* and *A. marianae* sp. nov. is in the shape of the male pleon and telson. In *A. roblesi* the pleonites 2–6 are subrectangular, slightly decreasing in width, and the telson is semi-ellipsoidal (Fig. 3P), similar in length to the sixth pleonite while the male pleon of *A. marianae* sp. nov. is tapering, the pleonites clearly decrease in width and the telson is much longer than the sixth pleonite and is distally rounded (Fig. 3E). The female telson in the new species seems to be much wider than that in *A. roblesi* but this difference may be due to a difference in maturity of the organisms used for illustration. Gonopods, recognized as an important tool to differentiate species of brachyurans (Martin and Abele, 1986; Manning and Felder, 1989), are also different in both species. The apex of the first male gonopod in *A. roblesi* is composed of two concave plaques, one a little longer than the other (Fig. 3N, O), while in the new species the gonopod ends in an elongated structure on one side, longer than a distally truncated plate on the other side (Fig. 3J, L).

In the same way as *A. roblesi*, the new species can be separated from the other species by the differences that Palacios Theil and Felder (2020a) found between *A. roblesi* and the rest of the species. That is, with the exception of *A. chacei*, *Austinixa beherae* (R.B. Manning and Felder, 1989), and *A. roblesi*, *A. marianae* sp. nov. can be distinguished from the rest of the *Austinixa* species because the members of these species have branchial ridges that fall near orbits and bend backward before reaching lateral margins, however, unlike *Austinixa chacei* (Wass, 1955) and *A. beherae*, males of *A. roblesi* and *A. marianae* sp. nov. have a setal patch anterior to the cardiac crest and a depression on the posterodistal surface of merus of P4.

Austinixa felipensis (Glassell, 1935)

Pinnixa felipensis Glassell, 1935: 14. — Hendrickx, 1993: 314.

Pinnixa salvadorensis Bott, 1955: 48, 59, fig. 3 a–c, pl. 11a, b.

Austinixa felipensis. — Palacios Theil *et al.* 2016: 4, figs. 1–4, tab. 2. — Palacios Theil and Felder 2020a: 126, figs. 10, 11. — Palacios Theil and Felder, 2020b: 88, fig. 1, tab. 1.

Material examined. Isla de la Piedra, Mazatlán, Sinaloa (23°11'12"N 106°24'35"W): 2 males, CW 11.0, CL 4.3 mm (ICML-EMU 12534), intertidal, sand, in burrows of *Callichirus seilacheri* (Bott, 1955), 25 February 2009, coll. E. Ríos-Jara and JSB; 1 male, CW 11.1, CL 4.3 mm, 1 female CW 11.0, CL 4.3 mm (ICML-EMU 12535-A), 19 April 2009, coll. JSB; 2 males, CW 7.9–8.3, CL 3.0–3.2 mm, 1 female CW 8.0, CL 3.1 mm (ICML-EMU 12535-B), 12 August 2010, coll. L. Sauma and JSB; 1 female, CW 8.4, CL 2.9 mm (ICML-EMU 12535- C), 9 September 2010, coll. L. Sauma and JSB; 3 males CW 5.0–8.0, CL 2.3–3.2 mm, 4 females, CW 6.4–9.1, CL 2.5–3.4 mm, 3 juveniles CW 3.8–4.2, CL 1.6–2.2 mm (ICML-EMU 12535-D), 11 November 2018, coll. JSB and MAP. — Santa María - La Reforma, coastal lagoon, Sinaloa: Melendez Island, (24°48'09"N 108°03'26"W), 2 females, CW

15.5–17.3, CL 5.8–6.3 mm (ICML-EMU 12536-A), intertidal, sand, unknown host, 15 March 2013, coll. N. Arenas and JSB; 2 males, CW 7.8–11.7, CL 2.9–3.9 mm, 1 ovigerous female, CW 11.3, CL 4.2 mm (ICML-EMU 12536-B), unknown host, 18 January 2015, coll. N. Suárez and V. Papiol. — El Tambor, (24°44'44"N 107°59'42"W), 9 males CW 6.2–12.2, CL 2.7–4.0 mm, 8 ovigerous females, CW 9.8–12.4, CL 3.6–4.9 mm (ICML-EMU 12536-C), intertidal, fine sand, in *Neotrypaea* sp. burrows, 15 October 2014, coll. A. K. Barragán and N. Arenas. — Saliaca Island, (25°08'54"N 108°16'14"W), 1 ovigerous female, CW 12.0, CL 4.3 mm (ICML-EMU 12536-D), intertidal, fine sand, 30 Mar 2015, coll. JSB. Bahía Chamela, Jalisco: mouth of Estero de Pérula, (19°35'05"N 105°08'03"W), 1 male, CW 8.9, CL 2.9 mm (LEMA-CCR-187), 0.3 m, sand, 7 March 2013, coll. M.A.P; 1 male, CW 9.3, CL 3.0 mm, 1 female CW 6.5, CL 2.6 mm, 1 ovigerous female CW 9.2, CL 3.0 mm (LEMA-CCR-375A), Punta Pérula, (19°35'07"N 105°08'02"W), 0–0.3 m, sand, 28 November 2011, coll. M.A.P and JSB; 2 males, CW 9.2, CL 3.0 mm (LEMA-CCR-375B), same data, 29 November 2011, coll. MAP and JSB. — La Cruz de Huanacaxtle, Nayarit, (20°45'03"N 105°22'38"W), 1 female, CW 5.5, CL 2.1 mm (ICML-EMU 12891), intertidal, fine sand, 22 August 2020, coll. R. García de Quevedo and ARH.

Distribution. San Felipe, Baja California, Gulf of California, Mexico to Las Enramadas, Nicaragua (Glassell, 1935; Boot, 1955; Palacios Theil *et al.* 2020b).

Remarks. The specimens were collected co-habiting the burrows of calliannassid shrimps, *Callichirus seilacheri* (Bott, 1955) and *Neotrypaea* sp. Currently, the records of this species had been scarce and the known distribution was limited to San Felipe, Baja California, in the upper Gulf of California, Coral de Mulas, El Salvador and Las Enramadas, Nicaragua, in Central America. *Austinixa felipensis* seems to be a common species on sandy beaches, in the intertidal zone of coastal lagoons or open sea beaches not directly (or poorly) exposed to the waves from the eastern coast of the Gulf of California to the State of Jalisco; however, due to its infaunal habits and the fact that coring devices are not widely used to collect invertebrates, the records of its presence have been scarce. With the records of the presence of this species in four new locations in the Gulf of California and the central Mexican Pacific a continuity of the distribution of this species seems to be confirmed.

Discussion

In order to include *A. marianae* sp. nov. within the identification key of the species of the genus *Austinixa* designed by Palacios Theil and Felder (2020b), we propose the addition of the new species as follows:

Key to species of Austinixa *(modified from Palacios Theil and Felder, 2020b)*

1. Carapace without branchial ridges 2

- Carapace with branchial ridges 5

2. P4 propodus opposable margin bicarinate 3

- P4 propodus opposable margin with single carina (NE FL, GMx, Car) .... *A. gorei* (Manning and Felder, 1989)

3. Male carapace with patch of short setae on posterior third, just anterior to cardiac ridge. Male pleon telson subtriangular or semicircular, not wider than long.....4

- Male carapace without patch of short setae on posterior third, just anterior to cardiac ridge. Male pleon telson semi-ellipsoid, clearly wider than long (E Pac) ..... *A. felipensis* (Glassell, 1935)

4. Male pleon telson subtriangular. Setal patch on male carapace posterior third connecting with setae on lateral regions. Female carapace with setae on lateral regions extending also onto anterolateral regions (E Pac) ..... *A. cuestai* Palacios Theil and Felder, 2020a

- Male pleon telson semicircular. Setal patch on male carapace posterior third clearly separated from setae on lateral regions. Setae on female carapace confined to most lateral regions (SW Atl) ..... *A. aidae* (Righi, 1967)

5. Branchial ridges each extending to orbits (SW Atl) ..... *A. patagoniensis* (Rathbun, 1918)

- Branchial ridges falling short of orbits 6

6. P4 merus with distinct depression on posterior or dorsal surface 7

- P4 merus without distinct depression on posterior or dorsal surface 9

7. P4 merus with proximal depression on posterior to postero-dorsal surface into which dactylus of P5 fits (SW Atl) .....A. *leptodactyla* (Coelho, 1997)

- P4 merus with distal depression on dorsal surface, not positioned to fit P5 dactylus 8

8. Male pleon subrectangular, lateral margins of pleonites subparallel, telson semi-ellipsoidal, about as long as sixth somite (Car) . ..... *A. roblesi* Palacios Theil and Felder, 2020a

- Male pleon subtriangular, tapering, margin of pleonites decreasing in width distally, telson triangular, clearly longer than the sixth pleonite (E Pac) ..... *A. marianae* sp. nov.

9. Male carapace without patch of short setae on posterior third, just anterior to cardiac ridge 10

- Male carapace with patch of short dark setae on posterior third, just anterior to cardiac ridge. (SW Atl) ... . *A. bragantina* Coelho, 2005

10. Branchial ridges angled laterally, with sharp bend toward posterior 11

- Branchial ridges extending laterally or gently curved towards posterior lacking sharp bend laterally...12

11. P4 propodus opposable margin with single carina. First gonopod with truncate apex (GMx) .... *A. chacei* (Wass, 1955)

- P4 propodus opposable margin bicarinate. First gonopod apex hooked, styliform (GMx) ....*A. behreae* (Manning and Felder, 1989)

12. P5 dactylus clearly reaching beyond distal end of P4 merus. P4 merus anterior margin carinate, carina not clearly laminate. Carapace depressions lateral to front narrow and short, not reaching dorsally to near branchial ridges. Carapace 2.2–2.9 times wider than long. Male telson semicircular (NW Atl, GMx) ....*A. cristata* (Rathbun, 1900)

- P5 dactylus not clearly reaching beyond distal end of P4 merus. P4 merus anterior margin flattened into strongly laminate crest; merus posterior half robust, clearly swollen. Carapace depressions lateral to front reaching nearly to branchial ridges. Carapace 1.7–2.3 times wider than long. Male telson prolate semi-ellipsoidal, less than twice as wide as long (Car) ....*A. artankeri* Palacios Theil and Felder, 2020a

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