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AMPHIPODS OF THE FAMILY AMPELISCIDAE (GAMMARIDEA)

III. *AMPELISCA PARAPACIFICA*, A NEW SPECIES OF AMPHIPOD FROM THE WESTERN NORTH ATLANTIC WITH THE DESIGNATION OF A SUBSTITUTE NAME FOR *A. ESCHRICHTII PACIFICA* GURJANOVA, 1955

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ABSTRACT A new species of benthic amphipod, *Ampelisca parapacifica*, is described from the southeastern Gulf of Mexico and compared with the closely allied *Ampelisca pacifica* Holmes, 1908, from the eastern Pacific. The distinctive form of the third uropod separates this species pair from other members of the "macrocephala" subgroup of the genus *Ampelisca* Kroyer, 1842. *Ampelisca parapacifica* is distinguished from *A. pacifica* by antenna I peduncle segment 2 less than twice the length of article 1 and uropod 1 peduncle shorter than the rami. Previous Atlantic records of *A. pacifica* are assigned to the proposed new species. The Pacific populations of *A. eschrichtii pacifica* Gurjanova, 1955, were elevated to the species rank by Karaman, unaware that the name *A. pacifica* was preoccupied. A substitute name, *A. karamani*, nomen novum, is designated for the form described by Gurjanova.

Twelve of the 17 species of the genus *Ampelisca* Kroyer, 1842, reported from the Gulf of Mexico were originally described from the Pacific Ocean (Barnard 1954b, Goeke and Heard 1983). Recently, one of these 12 nominal species has been elevated to species rank in the western Atlantic (*Ampelisca bicarinata* Goeke and Heard, 1983). *Ampelisca pacifica* Holmes, 1908, has been reported with a transpan-amic distribution by several authors (Barnard 1954b, Mills 1965, McKinney 1977). However, a more detailed comparison of specimens from waters off California and the south-eastern Atlantic coast indicate that the western Atlantic

populations previously assigned to *A. pacifica* represent a new species.

Ampelisca parapacifica new species

(Figures 1, 2 and 3)

Ampelisca pacifica: Barnard, 1954b, p. 5; Mills, 1967, p. 649 (not *A. pacifica*: Karaman 1975).

Material Examined

Holotype — 1 ♀, 8 mm, USNM 195114, 27°52'31"N, 83°33'56"W, 17 June 1974, 33 m, clayey, sandy silt.

Paratypes — USNM 195116: 1 ♂, 4 ♀♀, same collection data as holotype; USNM 195124 2 ♀♀ (1 ovig), 24°47'30"N,

Figure 1. *Ampelisca parapacifica*, new species.

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Figure 2. A. Pereopod 1; B. Pereopod 2; C. Pereopod 6; D. Pereopod 7; E. Pereopod 5.

Figure 3. A. Uropod 3 (setae omitted); B. Uropod 2; C. Uropod 1; D. Pereopod 4 (setae omitted); E. Pereopod 3 (setae omitted); F. Epimeral Plates 1-3; G. Mandible; H. Maxilliped; I. Maxilla 1.

83°13'15"W, 8 April 1981, 59 m, medium sand (illustrated); USNM 195119 1 ♂, 27°50'00"N, 82°25'00"W, 17 June 1974, 32 m (illustrated); USNM 195115 1 ♀, 26°16'30"N, 82°38'00"W, 28 July 1981, 26 m, very fine sand; USNM 195118 2 ♀♀, 25°47'15"N, 82°25'00"W, 12 February 1982, 26 m, very fine sand; USNM 195123 1 ♀, 25°47'15"N, 82°25'00"W, 8 November 1980, 26 m, very fine sand; USNM 195122 2 ♀♀, 25°45'30"N, 83°11'00"W, 28 April 1981, 54 m, medium sand; USNM 195117 1 ♀, 25°45'30"N, 83°11'00"W, 27 July 1981, 54 m, medium sand; USNM 195120 1 ♀ (1 ovig), 25°47'00"N, 83°58'00"W, 27 July 1981, 135 m; USNM 195121 2 ♂♂, 27°56'00"N, 83°27'29"W, 17 June 1974, 32 m; AHF 8010 (Allan Hancock Foundation), 8♀♀, 25°46'00"N, 82°24'00"W, November 1980, 26 m, very fine sand; MNHN Am 2442 (Muséum National d'Histoire Naturelle, Paris), 8 ♀♀, 25°46'10"N, 82°24'00"W, November 1980, 26 m, very fine sand; GCRL 1122 (Gulf Coast Research Laboratory, Ocean Springs, Mississippi), 4♀♀, 28°41'59"N, 84°26'30"W, 9 June 1974, 38 m.

Other material — 1 ♀, 29°53'30"N, 88°12'28"W, 1975, 32 m, sandy silt; 3 ♀♀, 29°48'05"N, 88°13'08"W, 18 May 1974, 35 m; 1 ♂, 2 ♀♀, 28°00'38"N, 83°44'49"W, 16 May 1974, 38 m; 1 ♂, 12 ♀♀, 27°57'30"N, 83°42'29"W, 16 June 1974, 38 m; 1 ♂, 6 ♀♀, 27°57'00"N, 84°49'59"W, February 1978, 189 m, silty very fine sand; 1 ♀, 27°57'00"N, 84°48'00"W, August 1977, 189 m, silty very fine sand; 1 ♀, 27°57'31"N, 83°33'59"W, November 1977, 34 m, clayey sandy silt; 3 ♀♀, 27°45'30"N, 83°25'30"W, 13 June 1974, 42 m; 5 ♀♀, 26°25'00"N, 82°58'00"W, Cruise 22, 33 m, fine sand; 4 ♀♀, 26°24'57"N, 82°38'00"W, 6 November 1980, 26 m, very fine sand; 1 ♀, 26°16'45"N, 83°47'45"W, 4 November 1980, 90 m, fine sand; 2 ♀♀, 26°16'45"N, 83°47'45"W, 30 April 1981, 90 m, silty very fine sand; 4 ♀♀ (1 ovig), 26°16'15"N, 83°00'13"W, 5 November 1980, 48 m, fine sand; 1 ♀, 25°47'15"N, 82°25'00"W, 28 July 1981, 26 m, very fine sand; 1 ♀, 25°40'00"N, 84°15'00"W, November 1977, 180 m, silty very fine sand.

Diagnosis — Lower margin of head deeply concave, 2 pair of corneal lenses, antenna I reaching just past articulation of antenna II peduncular segments 4 and 5, length ratio of antenna I peduncular segments 100:150:80, antenna II is 2/3 length of body, ratio of length of peduncular segments 4 and 5 of antenna II is 100:90; inner plate of maxilliped with 2 chisel teeth and 2 setal spines, maxilla 2 with about 10 facial spines; mandible with 10 accessory blades, terminal article of palp 2/3 length of second article; coxal plates 1 and 2 with posterodistal slit; posterior margin of merus of pereopod 3 with setae in distal 1/2 only; dactyli of pereopods 5 and 6 with numerous accessory teeth, epimeral plates 1 and 2 rounded, plate 3 with strong posteroventral tooth and small superior lobe, urosomite 1 dorsally sinuous; outer ramus of uropod 1 devoid of spines, outer ramus of uropod 2 with long terminal spine, outer ramus of uropod 3 oval; uropods 1 and 2 equal in length; gills of female sac-like.

Description

Female (8 mm) — Head equal to first 2 1/2 body segments in length; 2 pair of corneal lenses, 1 at lower front margin and 1 posterodorsal to insertion of antenna I, eyes heavily pigmented; lower margin of head deeply concave for 1/4 length then oblique. Antenna I peduncular segment 1 little inflated with few scattered setae, second and third segments linear, ratio of length of peduncular segments 1 to 3 is 100:150:80; flagellum of 7 segments, extending 1/3 length of fifth peduncular segment of antenna II. Antenna II peduncular segments 1–3 compact, segments 4 and 5 elongate with scattered setae, ratio of lengths of segments 4 and 5 is 100:90, flagellum of 21 articles, extending 2/3 length of body.

Upper lip, lower lip and maxilla 1, all normal for genus or without diagnostic features. Maxilla 2 inner plate with single apical seta, outer plate with 11 terminal spines, all with accessory teeth, palp segment 2 with about 10 facial setal spines and 4 blunt apical spines. Left mandible with well sclerotized molar process, 10 accessory blades, lacinia mobilis with 5 teeth, incisor with 7 teeth, palp segment 1 short, segment 2 elongate with lateral margins lined with scattered setae, segment 3 is 0.6 times length of second article with 5 medial simple setae and 3 terminal simple setae. Maxilliped inner plate short, rectangular distally with submarginal row of plumose setae and facial setal spine, distal margin with 2 chisel teeth and 2 setal spines, outer plate with 9 chisel teeth medially, 3 terminal plumose spines, most chisel teeth with accessory setal spines, outer plate reaching to the end of palp article 2, outer plate lateral margins lined with cilia, palp normal for the genus, with simple setae lining margins, third palp article clavate.

Coxal plates 1 and 2 with marginal and submarginal rows of plumose setae, coxal plates 3 and 4 with scattered marginal setae; coxal plates 1 and 2 with slit at posteroventral angle.

Pereopod 1 basis inflated distally, posterior margin with long simple setae, ischium subtriangular with several posterodistal plumose setae, merus diamond-shaped with long plumose setae ventrally and anterodistally, carpus inflated, with plumose and comb setae on ventral and anterior margins; propodus inflated, width 0.7 times length, with barbed spinules and bifid setae on palm and long simple setae dorsally; dactyl short, length 0.55 length of propodus with 3 accessory spinules on ventral margin.

Pereopod 2 basis inflated distally, anterior and posterior margins with elongate setae, ischium subquadrate with few setae, merus elongate, underriding carpus slightly, few plumose setae on ventral margin, carpus elongate, width 0.2 times length, ventral margin with elongate plumose setae propodus elongate; propodus elongate, width 3 times length, ventral margin with barbed spinules and elongate simple setae, dorsal margin with few plumose setae; dactyl width 0.5 times length of propodus, with 4 accessory comb spines.

Pereopod 3 slightly smaller than 4, but similar in shape, different in setation; basis elongate, little inflated, pereopod 3 with few scattered short setae on anterior and posterior margin, pereopod 4 with long plumose setae on posterior margin; ischium subquadrate, setose on pereopod 4; merus elongate, inflated, pereopod 3 with distal plumose setae on both margins.

Pereopod 4 with anterior and posterior margins lined with long plumose setae; carpus subquadrate, propodus subrectangular, margins with plumose setae; dactyli elongate, lanceolate, longer than propodus and carpus combined.

Pereopod 5, coxa with well developed anterior and posterior lobes devoid of setae, anterior lobe of basis with 4 long plumose setae at anterior angle and with small simple setae scattered along margin, posterior margin faintly bilobate, dorsal lobe well developed with straight posterodorsal margin, ventral lobe poorly developed, both devoid of setae, ischium short with 2 small setae anterodistally; merus approximately 2 times length of ischium with simple long spine anterodistally; carpus subrectangular, anterior margin lined with 6 long simple setae and single long distal spine, posterodistal margin with set of 5 spines increasing in length, longest subequal to propodus, a set of small spines submarginally at midlength; propodus subrectangular, anterior margin with 5 long comb setae, posterior margin with single short spine, 3 spines terminally, 2 simple and 1 comb; dactyl stubby, subterminal with 7 accessory teeth and main fang.

Pereopod 6, coxa lobate posteriorly with 3 plumose setae, anterior margin straight with 3 long plumose and 4 short simple setae; basis, anterior margin bent at nearly 90° angle, 4 long plumose setae at angle, scattered simple setae along entire margin, single spine distally, posterior lobe very well developed, devoid of setae, ischium short with single simple seta anteriorly, merus approximately 2 times length of ischium with a simple seta and spine at anterodistal margin, carpus subrectangular with 4 spines on anterior margin, cluster of 4 spines anterodistally, posteriorly with single and pair of submarginal spines, posterodistal angle with cluster of 6 comb spines increasing from short to a length subequal to propodus, propodus subrectangular with single submarginal posterior spine and 6 anterior spines, cluster of 4 spines terminally with the longest greater than length of propodus, dactyl with numerous accessory teeth to main fang.

Pereopod 7, coxa with anterior margin straight, posterior margin lobate with scattered short simple setae, anterior margin of basis straight with single spine distally, posterior margin broadly rounded distally, extending to end of merus, plumose setae only on distal margin, ischium subrectangular with 2 short spines anterodistally, merus bilobate, anterior lobe with single spine distally, posterior lobe with 4 long plumose setae and a single spine distally, carpus with anterior lobe better developed than posterior lobe, anterior margin with spine at 3/4 length and distally, posterior margin with 4 short distal spines and plumose seta, propodus length less than twice greatest width, 4 anterodistal and 3 posterodistal short spines, dactyl attenuated, curved forward.

Dorsum of pereosome and pleosome smooth. Epimeral plate 1 with sinuous anterior margin, rounded posteriorly, several long plumose setae in anterior and ventral margins. Epimeral plate 2 with rounded anterior and posterior margins, few scattered spinules on ventral margin. Epimeral plate 3 rounded anteriorly, slightly concave on anterior margin, ventral margin slightly convex, very strong tooth posteroventrally with small superior lobe, posterior margin sinuous. Urosomite 1 with sinuous dorsal carina, urosomites 2 and 3 low, fused.

Uropod 1 equal to 2, peduncle 4/5 length of rami, 4 short lateral facial spines ventrally, single spine dorsally at articulation with outer ramus, dorsolateral margin sinuous, devoid of spines; outer ramus without dorsal spines but with 3 short submarginal facial spines along ventral margin, inner ramus with numerous spines. Uropod 2 peduncle nearly as long as rami, outer margin with 4 spines in distal 1/2, inner margin with 4 spines, outer ramus with 8 spines along margin and a long subterminal spine 1/3 length of ramus, inner ramus with 2 submarginal ventral spines, plumose and simple setae on distal margin, dorsal margin devoid of setae. Uropod 3 peduncle short with 2 dorsal spines, outer ramus broad proximally, tapering slightly to blunt apex with plumose setae and ventral spinules; inner ramus oval with ventral spinules, plumose setae on distal margins. Telson deeply cleft, 1/2 of length, 2 pair of short dorsal spines, apices with 1 bifid spine and a companion seta on each lobe.

Male — Differs from female most notably by: (1) antennae with increased setation, (2) antenna I nearly as long as peduncle of antenna II, (3) antenna II as long as body, (4) pleosome more massive, (5) inner rami and peduncles of uropods 1 and 2 much more spinose, (6) dorsal boss and carina of urosomite 1 more massive, (7) distal spine of outer ramus of uropod 2 smaller, and (8) gills strongly pleated.

Variation — Intraspecific variation observed in the specimens of *A. parapacifica* we examined was slight, mostly attributable to sexual dimorphism and stage of development. Variation was noted in the length of the antennae, development of the carina of urosomite 1 and the dorsal-most process on the posterior margin of epimeral plate 3. Juvenile and subadult individuals often possess antenna II as long as the body or longer. This condition is normal within this family. Minor variation in the shape of the carina of urosomite 1 was noted in mature individuals and is also normal. In some specimens, the superior lobe on the posterior margin of epimeral plate 3 was even smaller than normal. In these individuals, the posterior margin of epimeral plate 3 is only slightly sinuous with no "lobe" evident. No relationship was observed with age or sex and degree of variation in the latter two characters.

Etymology — The specific name is derived from the Latin "para-," close and the specific name "pacifica". The name is in reference to the close affinity of the species with *A. pacifica* Holmes, 1908.

Remarks — *Ampelisca pacifica* Holmes, 1908, has been

TABLE 1
Comparison of selected morphological characters.

	<i>Ampelisca parapacifica</i>	<i>Ampelisca pacifica</i>
Ratio of length of Antenna I peduncular segments	100:150:80	100:225:125
Ratio of length of Antenna II peduncular segments 4 and 5	100:90	100:66
Maxilla 1 palp segment 2	4 large terminal spines	5 large terminal spines
Mandibular palp segment 3	5 lateral setae	3 lateral setae
Pereopods 3 and 4	equal	pereopod 4 more massive
Dactyli of pereopods 3 and 4	longer than combined length of propodus and carpus	equal to combined length of propodus and carpus
epimeral plate 3	superior lobe evident	superior lobe very reduced
Lateral margin of urosomite 3	oblique	acuminate
Uropod 1 length	peduncle shorter than rami	peduncle longer than rami
Telson spines	1 pair	2 pairs

reported from the waters of Southern California by Holmes (1908) and Barnard (1954a, 1966) in 24 to 496 m depth. A subsequent record from Caledonia Bay, Panama, by Barnard (1954b) is the first reference for this species from the western Atlantic. Since that report, *A. pacifica* has been listed from the western Atlantic by Mills (1965, 1967) and McKinney (1977).

Ampelisca parapacifica is a member of the "macrocephala" subgroup and is closely related to numerous species which share the head shape, form of pereopod 7, posterior process of epimeral plate 3 and general shape of the mouthparts. However, the unique combination of characters given in the diagnosis easily distinguishes it from other members of the subgroup. *Ampelisca parapacifica* differs from *A. macrocephala* Liljeborg, 1852, *A. unsocalae* Barnard, 1960, and *A. careyi* Dickinson, 1982, by the deeply concave lower margin of head, shorter antenna I and ovoid uropod 3. It may be distinguished from *A. cristata* Holmes, 1908, *A. cristoides* Barnard, 1954, and *A. bicarinata* Goeke and Heard, 1983, by the very strong tooth on the posterodistal margin of epimeral plate 3, ovoid uropod 3 and the lack of dorsal carinae of pleosomite 3 and urosomite 1. *Ampelisca parapacifica* is distinguished from *A. brevisimulata* Barnard, 1954, and *A. verrilli* Mills, 1967, by the subequal uropods 1 and 2, small superior lobe of epimeral plate 3, notched anterior margin of segment 5 on pereopod 7 and foliaceous uropod 3. *Ampelisca parapacifica* is separated from *A. panamensis* Barnard, 1954, and *A. parapanamensis* Barnard, 1954, by the strong process of epimeral plate 3, foliaceous uropod 3, and the shorter antenna I.

Ampelisca parapacifica is most closely related to *Ampelisca pacifica* Holmes, 1908, with which it shares a broad, oval uropod 3. Only 6 described species possess this character. *Ampelisca rostrata* Spandl, 1924, *A. misakiensis* Nagata, 1959, *A. byblisoides* Barnard, 1925, *A. statenensis* Barnard, 1932, and *A. hessleri* Dickinson, 1982, all share this uropodal feature but are easily distinguished by different leg

shapes. *Ampelisca dentifera* (sensu Schellenberg 1931) possesses the oval uropod 3 and leg shape of *A. parapacifica* but can be separated by the more massive pleon segment 4, antenna I equal in length to peduncle of antenna II and shorter article 1 of antenna I. Table 1 presents selected characters which distinguish *A. parapacifica* from *A. pacifica*.

The geographic range of *A. parapacifica* includes Cape Lookout, North Carolina (Mills 1967), the eastern Gulf of Mexico and southward to Caledonia Bay, Panama (Barnard 1954b). *Ampelisca parapacifica* appears to be widespread in the warm temperate and tropical waters of the northwestern Atlantic.

Ecological notes — *Ampelisca parapacifica* occurs in abundance on the sandy carbonate bottoms of the southeastern Gulf of Mexico. Collection data indicate the species is most often collected on substrata ranging from medium sand to silty, very fine sand composed primarily of carbonates. Bathymetric range of this material is 24 to 189 m. It is probable the species will be found below this depth as the 189 m record represents the deepest station sampled.

Taxonomic status of *Ampelisca eschrichtii pacifica* Gurjanova, 1955.

Karaman (1975) described *Ampelisca richardsoni* from Anvers Island in the Antarctic as very closely related to *A. eschrichtii* Kroyer, 1842. In that work he shows no *Ampelisca* species has a true bipolar distribution but that sibling species occur in both polar regions. *Ampelisca richardsoni* was differentiated from *A. eschrichtii* and *A. eschrichtii pacifica* Gurjanova 1955. This latter taxon exhibited sufficient characters that Karaman elevated it to the full species rank, apparently unaware that the name "pacifica" was occupied. *Ampelisca pacifica* Holmes, 1908, has clear precedence and we designate the name *Ampelisca karamani*, nomen novum, for *Ampelisca pacifica* Gurjanova, 1955. This species is named for Dr. Gordon Karaman in recognition for his significant contributions to the taxonomy and systematics of the Amphipoda.

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