

New records and range extensions of shrimps (Decapoda: Penaeoidea, Caridea) from the Pacific and Caribbean coasts of Costa Rica, Central America

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Abstract: This is the first record of a total of 22 species of penaeoid and caridean shrimps from Costa Rican waters: 16 were collected from the Caribbean coast, and six from the Pacific. Including the new records, a total of 142 shrimp species (Penaeoidea: 35; Caridea: 107) has been reported so far from Costa Rica waters.

Keywords: caridean shrimp, biodiversity, intertidal, Costa Rica.

Information on the taxonomic composition of shrimps occurring on the coasts of Central America and adjacent waters has been provided by several authors (e.g., Caribbean: Chace 1972, Williams 1984, Pacific: Wickstens 1983, Wicksten and Hendrickx 1992, Hendrickx 1995, 1996, Hendrickx and Estrade-Navarrete 1996), and Vargas and Cortés (1999a, b) reported on shrimps inhabiting waters of the Pacific and Caribbean coasts of Costa Rica. Their results clearly indicate that species numbers of penaeoid and caridean shrimps so far reported for the Caribbean coast of Costa Rica represent only a fraction of the species mentioned by Chace (1972) for the Caribbean.

The information presented herein is based upon the revision of the collections deposited in the Museo de Zoología, Escuela de Biología, Universidad de Costa Rica, as well as on the results of recent sampling efforts carried out along both coasts aimed at increasing our knowledge of the biodiversity of the decapod crustacean fauna in Costa Rica.

Here we report for the first time the presence of a total of 22 species of penaeoid and caridean shrimps from Costa Rican waters, 16 collected from the Caribbean coast, and six from the Pacific. Based upon Vargas and Cortés (1999a, b) and our present results, species numbers of caridean shrimps increase from 73 to 79 species for the Pacific and from

15 to 28 species for the Caribbean. Moreover, the species number of penaeoid shrimps inhabiting waters of the Caribbean coast of Costa Rica increases from 6 to 9 species. In summary, a total of 142 shrimp species (Penaeoidea: 35; Caridea: 107) has been reported so far from Costa Rica waters. This is a contribution of the Museo de Zoología, Universidad de Costa Rica. Financial support was provided by the Vicerrectoría de Investigación, Universidad de Costa Rica (project N° 808-A2-140), and we are grateful for the collaboration of CIMAR and Escuela de Biología, Universidad de Costa Rica. We greatly appreciate the ongoing support provided by Dr. Richard Heard (The University of Southern Mississippi, College of Marine Sciences).

Abbreviations: Cat UCR: catalog number of the Museo de Zoología, Escuela de Biología, Universidad de Costa Rica; coll.: collector(s); juv.: juvenile; ovig.: ovigerous.

Dendrobranchiata

Penaeoidea

Family Sicyoniidae

Sicyonia parri (Burkenroad 1934)

Previous records: Beaufort, North Carolina; through Gulf of México and West Indies to Bahia, Brazil (Williams 1984).

New record: 1 female, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002, 0.5 -1.5 m; 20 m from shore over *Thalassia* sp.; collected with push net; coll.: I.S. Wehrtmann; Cat UCR 2368-08.

Habitat: sand and calcareous algae; shallow littoral to 83 m (Williams 1984).

Family Penaeidae

Metapenaeopsis martinella

Pérez-Farfante 1971

Previous records: Cuba to Estado de Pernambuco, Brazil; western Caribbean (Chace 1972).

New record: 6 males, 1 female, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002, 0.5 -1.5 m; 20 m from shore over *Thalassia* sp.; collected with push net; coll.: I.S. Wehrtmann; Cat UCR 2368-03.

Habitat: in waters between 4 and 137 m (Chace 1972).

Metapenaeopsis smithi (Schmitt 1924)

Previous records: Bermudas and south-eastern Florida to Curaçao (Chace 1972).

New record: 2 males, 3 female, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002, 0.5 -1.5 m; 20 m from shore over *Thalassia* sp.; collected with push net; coll.: I.S. Wehrtmann; Cat UCR 2368-01.

Habitat: on sand and turtle-grass flats in shallow water (< 2 m) (Chace 1972).

Pleocyemata

Caridea

Family Ogyrididae

Ogyrides hayi Williams 1981

Previous records: Beaufort, North Carolina, to Sebastian Inlet, Florida; north-western Florida to Mississippi; Puerto Rico (Williams 1984).

New record: 6 juv., sandy beach in front to Ranger Station, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999, kicknet, coll.: R. Heard and L. Rodríguez; Cat UCR 2310-10.

Habitat: often found on firm sandbars just offshore in waters 1-3 m deep (Williams 1984).

Family Gnathophyllidae

Gnathophyllum americanum

Guérin-Méneville 1855

Previous records: Bermudas, southern Florida, Gulf of Mexico and Caribbean Sea; Canary Islands; and Indo Pacific region from the Red Sea to the Tuamotu Archipelago (Chace 1972).

New record: 2 males, south side of old dock, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 18-19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-42.

Habitat: from grass flats and from weed covered rocks and seawall, between 1 – 50 m. (Chace 1972).

Family Palaemonidae

Neopontonides henryvonprahli

Ramos 1995

Previous records: Isla Gorgona; from Punta Alta and Los Negros and Isla Palma in Babía Malaga and Utria, Pacific north coast of Colombia (Ramos 1995)

New record: 1 male, in association with soft coral, Islas Palmitas, Bahía Culebra (10°38'40" N, 85°41'30" W), Guanacaste, Pacific coast of Costa Rica; 27 August 1997, coll.: O. Breedy; Cat UCR 2234-01. 1 female ovig., associated with soft coral *Leptogorgia*, Isla del Caño (08°43'N, 83°52' W), Puntarenas, Pacific coast of Costa Rica; 17 September 1996, coll.: O. Breedy Cat UCR 2242-01.

Habitat: the species is found between 1- 6 m associated with gorgonids *Leptogorgia alba* and *Muricea robusta* (Ramos 1995).

Periclimenes americanus

Kingsley 1878

Previous records: Beaufort, North Carolina, to western Gulf of Mexico, and through West Indies to Aruba; Para to Sao Paulo, Brazil (Abele and Kim 1986).

New records: 5 males, 3 females ovig., inside of inner crest of reef, 1 m, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2311-14. 11 males, 14 females (10 ovig.), 1 juv., south side of old dock, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 18-19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-03.

Habitat: the species lives in sponges in coastal waters associated with *Synalpheus longicarpus* and *S. townsendi*; 18-73 m (Williams 1984).

Periclimenes paivai

Chace 1969

Previous records: Ubatuba and Cananéia, Estado de Sao Paulo, Brazil (Chace 1972).

New record: 10 males, 6 females (2 ovig.), 4 juv., graves, rocks and sand, 0.5–1 m depth, Puerto Viejo (09°39'40" N, 82°45'20" W), Limón, Caribbean coast of Costa Rica; 8 August 2001; kick net, coll.: R. Heard; Cat UCR 2358-02.

Habitat: among the tentacles of the medusa *Mastigias* sp. (Chace 1969).

Family Hippolytidae

Hippolyte californiensis

Holmes 1895

Previous records: Eastern Pacific, Alaska, California, Baja California, and occasional in Gulf of California (Wicksten, 1983).

New records: 2 males; at low tide from gorgonians in main tidal channel of mangrove area; Punta Morales (10°04' N, 84°58' W); Pacific coast of Costa Rica; 01 March 2002; coll.: I.S. Wehrtmann; Cat UCR 2367-01.

Habitat: among sand, algae (*Zostera* sp.) or rocks; shore to 10 m (Wicksten 1983).

Hippolyte curacaoensis Schmitt 1924

Previous records: Beaufort and Sneads Ferry, North Carolina; West Indies from Cuba to Curacao (Williams 1984).

New records: 19 males, 26 females (10 ovig.), rocky beach with *Thalassia* sp., 1 m, in front to Ranger Station, Puerto Viejo (09°39'40" N, 82°45'20" W), Limón, Caribbean coast of Costa Rica; 19 November 1999, kick net; coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2315-01. 2 males, 2 females, south side of old dock, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 18-19 November 1999, rock washing; coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-35. 8 males, 8 females (2 ovig.), 7 juv., in lagoon, 5 m from shore, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 24 April 1998, epibenthic sled; coll.: R. Heard and J. A. Vargas; Cat UCR 2222-03. 3 males, 3 females (1 ovig.) 12 juv., in lagoon, 50 m from shore, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 24 April 1998; epibenthic sled; coll.: R. Heard and J. A. Vargas; Cat UCR 2223-03.

Habitat: sand and mud flats; associated with sea grasses (Williams 1984)

Hippolyte williamsi Schmitt 1924

Previous records: México, Gulf of California to central-southern Chile (Wehrtmann and Carvacho 1997).

New records: 4 males, 7 females (5 ovig.), beach shallow water area on east side of

San José Island (10°51' N, 86°55' W), 1.5- 2 m, in front to Ranger Station, subtidal, rocks at southern end of beach covered with algae and hydroids; Islas Murciélago, Area de Conservación Guanacaste, Pacific coast of Costa Rica; 7-8 May 1999, algal wash, coll.: R. Heard and R. Vargas; Cat UCR 2295-02.

Habitat: among rocks and *Sargassum* spp. (Wicksten 1983)

Latreutes fucorum (Fabricius 1798)

Previous records: western North Atlantic between 10° and 50°; Azores and Cape Verde Islands (Chace 1972, Williams 1984, Abele and Kim 1986).

New records: 1 juv., inside of inner crest of reef, 150 m from shore at 1.5 m depth, Puerto Vargas (09°44'16'' N, 82°48'45'' W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2311-13. 7 males, 2 females (1 ovig.), rocky beach with *Thalassia*, 1 m, in front of Ranger Station, Puerto Viejo (09°39'40'' N, 82°45'20'' W), Limón, Caribbean coast of Costa Rica; kick net, 18 November 1999; coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2315-03.

Habitat: common in floating masses of *Sargassum*; surface waters; also common on grass flats in tropical Atlantic (Williams 1984).

Latreutes parvulus

(Stimpson 1866)

Previous records: Beaufort, North Carolina, to Rio de Janeiro, Brazil; West Africa (Williams 1984).

New records: 1 female, south side of old dock, 50- 60 m from shore at 1.5 m depth, Puerto Vargas (09°44'16'' N, 82°48'45'' W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 18-19 November 1999; rock washing; coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-27. 13 females, inside of inner crest of reef, 150 m from shore at 1.5 m depth, Puerto Vargas (09°44'16'' N,

82°48'45'' W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2311-04.

Habitat: littoral waters from or in sponges, among shells, dead coral, hydroids, and on seagrass flats; surface to 44 m (Williams 1984).

Lysmata anchisteus Chace 1972

Previous records: Puerto Rico to Grenada (Chace 1972).

New record: 4 females, Isla Uvita (09°59'50'' N, 82°48'50'' W), Limón, Caribbean coast of Costa Rica; 3 October 1970; coll.: W. Bussing and R. Nishimoto; Cat UCR 631-01.

Habitat: along rocky shores and on mud bottom; in shallow waters (< 3 m) (Chace 1972).

Lysmata argentopunctata

Wicksten 2000

Previous records: Pacific coast of México; Gulf of California to Galapagos Islands (Wicksten 2000).

New records: 3 males, at low tide at beach shallow in front to Ranger Station, east side of San José Island (10°51' N, 86°55' W), under single flat rock on beach; Islas Murciélago, Area de Conservación Guanacaste, Pacific coast of Costa Rica; 26 April 2002, coll.: I.S. Wehrmann; Cat UCR 2369-01.

Habitat: under rocks, in cracks or among branches of corals (Wicksten 2000).

Lysmata galapagensis Schmitt 1924

Previous records: Bahia Magdalena, Baja California; Gulf of California, southwestern Mexico to Acapulco; Panama; Galapagos Island (Wicksten 2000).

New records: 39 males, under rocks, between Punta Dominical and Roca Cambutal,

Dominical (09°13'20" N, 85°50'45" W), Puntarenas, Pacific coast of Costa Rica; 16 May 1995; coll.: M. Montoya; Cat UCR 2123-03. 3 males, 1 ovig. female, Playa Ocotol (10°32'43" N, 85°43'30" W), Guanacaste, Pacific coast of Costa Rica; 5 May 1985; Cat UCR 1553-06.

Habitat: rocky areas and among mangroves; intertidal to 10 m (Wicksten 2000).

Lysmata intermedia Kingsley 1878

Previous records: Azores; central Atlantic from Ascension; western Atlantic from Bermuda and South Carolina to Rio Grande do Norte, Brazil (Manning and Chace 1990).

New record: 1 male, Playa de Jacó (09°37' N, 84°38' W), Garabito, Puntarenas, Pacific coast of Costa Rica; 2 January 1967; Cat UCR 548-02. 2 males, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002; 0.5-1.5 m; 20 m from shore, collected with push net over *Thalassia* sp.; coll.: I.S. Wehrtmann; Cat UCR 2368-05.

Habitat: sublittoral to 22 m (Manning and Chace 1990).

Lysmata moorei (Rathbun 1901)

Previous records: Bermuda, Puerto Rico, Isla de Providencia, and Estado de Paraíba, Brazil, in the western Atlantic, and from Gabon, West Africa (Manning and Chace 1990).

New records: 1 male, 1 female, Isla Uvita (09°59'50" N, 82°48'50" W), Limón, Caribbean coast of Costa Rica; 3 October 1970; coll.: W. Bussing and R. Nishimoto; Cat UCR 613-02.

Habitat: tide pools (Manning and Chace 1990)

Thor floridanus Kingsley 1878

Previous records: Black Rock off New River, North Carolina, to Yucatan (Williams 1984, Abele and Kim 1986).

New records: 7 males, 10 females (1 ovig.), graves, rocks and sand, Puerto Viejo (09°39'40" N, 82°45'20" W), Limón, Caribbean coast of Costa Rica; 8 August 2001; kick net, coll.: R. Heard; Cat UCR 2358-04.

Habitat: grass flats (Chace 1972).

Tozeuma carolinense Kingsley 1878

Previous records: Vineyard Sound, Massachusetts, through Gulf of Mexico to Yucatan and southward to Colon, Panama; through West Indies to Curacao; Pernambuco to Bahia, Brazil (Abele and Kim 1986).

New records: 1 male, south side of old dock, 50-60 m from shore at 1.5 m depth, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 18-19 November 1999; rock washing; coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-48. 1 female, in lagoon, 5 m from shore, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 24 April 1998; epibenthic sled; coll.: R. Heard and J. A. Vargas; Cat UCR 2222-01.

Habitat: the species is not confined to any particular ecological niche (Chace 1972); common in beds of vegetation or similar habitats in shallow water (Williams 1984).

Family Processidae

Ambidexter symmetricus

Manning and Chace 1971

Previous records: western Atlantic, Gulf of México, southern Florida, Puerto Rico and Trinidad (Manning and Chace 1971).

New records: 2 males, 2 females (1 ovig.); Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002; 0.5-1.5 m; 20 m from shore over *Thalassia* sp.; collected with push net; coll.: I.S. Wehrtmann; Cat UCR 2368-07.

Habitat: on sand-mud grass flats; sublittoral to 6 m (Manning and Chace 1971).

Processa fimbriata

Manning and Chace 1971

Previous records: western Atlantic, North Carolina, southern Florida, Bahamas, Puerto Rico, and off Brazil (Manning and Chace 1971).

New records: 5 males, 4 females (4 ovig.), 3 juv.; inside of inner crest of reef, 150 m from beach at 1 m depth, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2311-08. 3 males, 7 females (6 ovig.); inside of inner crest of reef, 150 m from beach at 1 m depth, Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 19 November 1999; rock washing, coll.: R. Heard, L. Rodríguez and R. Vargas; Cat UCR 2312-02. 1 male, 2 females; Puerto Vargas (09°44'16" N, 82°48'45" W), Parque Nacional Cahuita, Limón, Caribbean coast of Costa Rica; 15 February 2002; 0.5-1.5 m; 20 m from shore, collected with push net over *Thalassia* sp.; coll.: I.S. Wehrtmann; Cat UCR 2368-06.

Habitat: shallow water to 37 m; on broken shells, corals, and in sponges (Manning and Chace 1971).

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Ingo S. Wehrtmann and Rita Vargas

Universidad de Costa Rica, Escuela de Biología, Museo de Zoología, 2060 San Pedro – San José. COSTA RICA. Fax ++506 207 4216, ingowehrtmann@gmx.de and ritav@biologia.ucr.ac.cr