



***Cyathura odaliscae*, a new species of anthurid isopod (Crustacea: Peracarida) from a brackish habitat on the Pacific coast of Costa Rica**

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Abstract

During a preliminary survey of a brackish mangrove habitat in the Terraba River delta on the Pacific coast of Costa Rica, several adult and subadult specimens of a new anthurid isopod, *Cyathura odaliscae* n. sp. were discovered. The specimens were collected from decaying wood in low salinity conditions (<5‰). The unique shape and complexity of the male copulatory stylet of *C. odaliscae* distinguishes it from the other 22 species for which males have been described. A combination of other characters (e.g., morphology of the mouth parts, body setation, shape of telson and first pereopod) is used to distinguish the female from the others within the genus. Illustrations of the known male copulatory stylets for the genus and a table listing diagnostic information, depth ranges, and general distribution for the 32 currently recognized species of *Cyathura* are provided.

Key words: Anthuridae, *Cyathura*, new species, Costa Rica, Pacific

Introduction

During a preliminary survey of the brackish invertebrate fauna of the Terraba River Delta, one of us (RV) collected specimens of an anthurid isopod from decaying wood in a low salinity (<5‰) mangrove habitat. These specimens proved to represent an undescribed species of *Cyathura* Norman & Stebbing, 1886. Only two other species of the genus, *C. munda* Menzies, 1951 described from California and *C. guaroensis* Brusca & Iverson, 1985 described from Costa Rica, are previously known from the eastern Pacific coasts of the Americas.

Length measurements were made from the tip of the rostrum to the tip of the telson.

Type material was deposited in the Museo de Zoología (MZUCR), Escuela de Biología, Universidad de Costa Rica, San Jose, Costa Rica, and the Gulf Coast Research Laboratory Museum (GCRL), University of Southern Mississippi, Ocean Springs, Mississippi, USA.

Systematics

Order Isopoda Latreille, 1802

Suborder Cymothoida Wägele, 1989

Family Anthuridae Leach, 1814

***Cyathura* Norman & Stebbing, 1886**

Diagnosis (modified from Poore 2001). **Female.** —Body irregularly pigmented, smooth or in part finely setulate (pubescent). Eyes usually present. Mandibular palp with distal article (article 3) having 1–4 terminal or subterminal

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References

- Bamber, R.N. (2008) New species of anthurid and arcturid isopod (Crustacea: Peracarida: Isopoda) from Hong Kong. *Journal of Natural History*, 42 (9–12), 855–876.
<http://dx.doi.org/10.1080/00222930701850489>
- Barnard, K.H. (1914) Contributions to the crustacean fauna of South Africa. 3. Additions to the marine Isopoda, with notes on some previously incompletely known species. *Annals of the South African Museum*, 10, 325–442.
- Bamber, R.N. (2008) New species of anthurid and arcturid isopod (Crustacea: Peracarida: Isopoda) from Hong Kong. *Journal of Natural History*, 42 (9–12), 855–876.
<http://dx.doi.org/10.1080/00222930701850489>
- Barnard, K.H. (1925) A revision of the family Anthuridae (Crustacea Isopoda) with remarks on certain morphological peculiarities. *Journal of the Linnean Society, Zoology*, 36, 109–160.
- Botosaneanu, L. (2003) New stygobitic isopods (Isopoda: Cirolanidae, Anthuridae) from caves in Sulawesi, Indonesia *Bulletin de L'Institut Royal des Sciences Naturelles de Belgique*, 73, 91–105.
- Botosaneanu, L. (2008) A new species of *Cyathura* (*Stygocyathura*) from a Mexican cave, with notes on *C. (S.) sbordoni* Argano, 1971 (Isopoda: Anthuridea). *Subterranean Biology*, 6, 17–21.
- Botosaneanu, L. & Stock, J.H. (1982) Les *Cyathura* stygobies (Isopoda, Anthuridea) et surtout celles des Grandes et des Petites. *Bijdragen tot de Dierkunde*, 52, 13–42.
- Botosaneanu, L. & Stock, J.H. (1997) Stygofauna of Oman, 1. A new freshwater stygobiont *Cyathura* (Isopoda, Anthuridae), from interstitial of coarse wadi sediments in Oman. *Annales de Limnologie*, 33 (2), 79–84.
<http://dx.doi.org/10.1051/limn/1997011>
- Brusca, R.C. & Iverson, E.W. (1985) A guide to the marine isopod Crustacea of Pacific Costa Rica. *Revista de Biología Tropical*, 33, 1–67.
- Dang, N.T. (1965) Mot so loai giap xac tim thay trong nuoc ngot va nuoc lo mien Bac Viet-Nam. *Tap San Sinh Vat-Dia Hoc*, 4, 146–152.
- Frankenberg, D. (1965) A new species of *Cyathura* (Isopoda, Anthuridae) from coastal waters off Georgia, U.S.A. *Crustaceana*, 8 (2), 206–212.
- Hackney, C.T. & Ganuicheau, R.F. (1989) A new species of *Cyathura* (Isopoda, Anthuridae) from a high intertidal marsh in North Carolina, U.S.A. *Crustaceana*, 57 (3), 304–310.
- Heard, R.W., Vargas, R. & Breedy, O. (2008) Tanaidacea. In: Wehrmann, I.S. & Cortés, J. (Eds.), *Marine Biodiversity of Costa Rica, Central America*, Monographiae Biologicae Series, 86 (2008), pp. 1–XXXIV + 1–538, CD-ROM.
- Kensley, B. (1980) Anthuridean isopod crustaceans from the International Indian Ocean Expedition, 1960–1965, in the Smithsonian Collections. *Smithsonian Contributions to Zoology*, 304, 1–37.
<http://dx.doi.org/10.5479/si.00810282.304>
- Kensley, B. (1982) Deep-Water Atlantic Anthuridea (Crustacea: Isopoda). *Smithsonian Contributions to Zoology*, 346, 1–60.
- Kensley, B. (1987) A reevaluation of systematics of K. H. Barnard's review of the anthuridean isopods. *Steenstrupia*, 13 (3), 101–139.
- Kensley, B., Ortiz, M. & Schotte, M. (1997) New records of marine Isopoda from Cuba (Crustacea: Peracarida). *Proceedings of the Biological Society of Washington*, 110 (1), 74–98.
- Krøyer, H. (1847) Karcinologiske Bidrag. *Naturhistorisk Tidsskrift, Kjobenhavn*, 2, 366–346
- Liu, W., Poore, G.C.B. & Chen, X. (2013) A new species of *Cyathura* (Isopoda), Anthuridae from fresh water in Shanghai, P. R. China. *Crustaceana*, 86 (11), 1297–1303.
<http://dx.doi.org/10.1163/15685403-00003243>

- Menzies, R.J. (1951) New marine isopods, chiefly from northern California, with notes on related forms. *Proceedings of the United States National Museum*, 101 (3273), 105–156.
<http://dx.doi.org/10.5479/si.00963801.101-3273.105>
- Miller, M.A. & Burbank, W.D. (1961) Systematics and distribution of an estuarine isopod crustacean, *Cyathura polita* (Stimpson, 1855), new comb., from the Gulf and Atlantic seaboard of the United States. *Biological Bulletin*, 120 (1), 62–84.
<http://dx.doi.org/10.2307/1539338>
- Monod, T. (1925) Tanaidacés et Isopodes aquatiques de l'Afrique occidentale et septentrionale (1er partie : Tanaidacea, Anthuridea, Valvifera). *Bulletin de la Société des Sciences Naturelles et Physiques du Maroc*, 5, 61–85, pls 64–19.
- Müller, H.G. (1990) Anthuridea from coral reefs at Reunion Islands, southern Indian Ocean. *Senckenbergiana Biologica*, 70 (4/6), 359–395.
- Müller, H.G. (1991) New species and records of *Amakusanthura*, *Cyathura*, and *Haliophasma* from Sri Lanka (Crustacea: Isopoda: Anthuridae). *Revue Suisse de Zoologie*, 98 (3), 589–612.
- Negoescu, I. (1979) *Cyathura cubana* sp. n. (Isopoda, Anthuridea) from the Caribbean Sea (Cuban waters). *Travaux du Museum d'Histoire Naturelle "Grigore Antipa"*, 20, 157–164.
- Negoescu, I. (1981) New data about the fauna of anthuridean isopods (Isopoda, Anthuridea) from the Libyan coast and the Suez Canal. *Travaux du Museum d'Histoire Naturelle "Grigore Antipa"*, 23, 109–122.
- Nunomura, N. (1974) A new anthurid isopod from the estuary of the Muromi River, northern Kyushu, Japan. *Bulletin of the Osaka Museum of Natural History*, 28, 13–16.
- Nunomura, N. (1977) Marine Isopoda from Amakusa, Kyushu (1). *Publications from the Amakusa Marine Biological Laboratory*, 4 (2), 71–90.
- Nunomura, N. (2001) A new species of the genus *Cyathura* (Crustacea: Isopoda) from the Lake Shinji-ko, Shimane Prefecture, western Japan. *Contribution of the Toyama Science Museum*, No. 247, 10–23.
- Nunomura, N. (2006) Marine Isopod Crustaceans in the Sagami Sea, Central Japan. *Contributions from Toyama Science Museum*, No. 318. [total page range unknown]
- Nunomura, N. & Hagino, M. (2000) A new species of the genus *Cyathura* from the Lake Kasumigaura, Ibaraki Prefecture, middle Japan. *Bulletin of the Toyama Science Museum*, 23, 5–9.
- Poore, G.C.B. (2001) Families and genera of Isopoda Anthuridea. In: Kensley, B. & Brusca, R. C. (Eds.), *Isopod systematics and evolution*. *Crustacean Issues*, 13, 63–173. [Balkema, Rotterdam]
- Poore, G.C.B. & Lew Ton, H.M. (1985) New species of *Cyathura* (Crustacea: Isopoda: Anthuridae) from estuaries of eastern Australia. *Memoirs of the Museum Victoria*, No.46, 89–101.
- Schotte, M., Kensley, B.F. & Shilling, S. (1995 onwards) World list of marine, freshwater and terrestrial Crustacea Isopoda. National Museum of Natural History Smithsonian Institution: Washington D.C., USA. Available from: <http://www.nmnh.si.edu/iz/isopod/> (accessed 14 January 2015)
- Stebbing, T.R.R. (1904) Gregarious Crustacea from Ceylon. *Spolia Zeylanica*, 2 (5), 1–29.
- Stimpson, W. (1856) On some California Crustacea. *Proceedings of the California Academy of Sciences* 1, 95–99.
- Wagner, H.P. (1990) The stygobiont isopods of the genus *Cyathura* in the Dominican Republic (Crustacea; Isopoda; Anthuridae). *Bulletin Zoologisch Museum*, 12 (10), 145–158.