



BRILL

Crustaceana 96 (10) 1043-1047

CRUSTACEANA



NOTES AND NEWS

ON THE OCCURRENCE OF *PROCESSA MACROPHTHALMA* (DECAPODA, CARIDEA, PROCESSIDAE) IN THE CANARY ISLANDS

BY

JOSÉ A. GONZÁLEZ^{1,3}) and ARTHUR TELLE²)

¹) EMAP — Applied Marine Ecology and Fisheries, i-UNAT, University of Las Palmas de Gran Canaria, Campus Universitario de Tafira, 35017 Las Palmas de Gran Canaria, Spain

²) A. Telle Professional Underwater Photographer, Lomo de la Herradura, 35200 Telde, Las Palmas, Spain

ORCID iDs: González: 0000-0001-8584-6731; Telle: 0000-0003-4926-0914

The caridean genus *Processa* Leach (1815) currently comprises 64 valid species (DecaNet eds., 2023). In the waters of the Canary Islands, a total of five species and subspecies of *Processa* have been reported to date (González, 2018). These species have been first recorded for the Canaries in the last thirty years (González, 2018) and have very few recent records in the region (e.g., Moro et al., 2014 for *P. parva* Holthuis, 1951). *Processa modica carolii* Williamson in Williamson & Rochanaburanon, 1979, *Processa modica modica* Williamson in Williamson & Rochanaburanon, 1979, *Processa parva* and *Processa robusta* Nouvel & Holthuis, 1957 were first reported by Fransen & Wirtz (1997), while *Processa canaliculata* Leach, 1815 was first cited for the Canary Islands by Quiles et al. (2001).

Here we report the first occurrence of *Processa macrophthalma* Nouvel & Holthuis, 1957 for the Canary Islands, based on several individuals recently caught by the second author off the island of Gran Canaria. When discovered, the studied specimens were in situ photographed and collected by hand. Then, they were photographed freshly caught and preserved in 80% ethanol for morphological analysis and identification at the laboratory. The voucher specimens were labelled, curated, data-based and deposited in the ICCM study collection at the University of Las Palmas de Gran Canaria. For each shrimp, the postorbital carapace length (pocl) (Landeira & Fransen, 2012) was measured using a digital calliper in millimetres, and the total length including the rostrum was also estimated to compare with literature data. The shrimps were sexed under a binocular microscope based on the

³) Corresponding author; e-mail: pepe.solea@ulpgc.es

presence or absence of the appendix masculina on the endopod of the second pleopod (King & Moffitt, 1984; González et al., 2016) and the ovigerous condition of the females was determined.

The systematic classification and taxa arrangement follow De Grave & Fransen (2011) and the global database WoRMS (2023).

Suborder PLEOCYEMATA Burkenroad, 1963

Infraorder CARIDEA Dana, 1852

Superfamily PROCESSOIDEA Ortmann, 1896

Family PROCESSIDAE Ortmann, 1896

Genus *Processa* Leach (1815)

Processa macropthalma Nouvel & Holthuis, 1957 (fig. 1A-I)

Material examined.— Voucher code: ICCM526. One ovigerous female (pocl 5.8 mm) and one male (pocl 5.2 mm). Collection data: north-eastern Gran Canaria, off Taliarte, 27°59'19"N 15°22'11"W, 7-9 m depth, in fine sand, 13 June 2023, night dive (22:00-23:00 h).

Additional material.— Two ovigerous females (pocl 5.8 and 4.6 mm) and one male (pocl 3.8 mm). Collection data: same location as above, 25 May 2023, night dive (22:00-23:00 h).

Morphological identification.— The specimens studied were well in agreement with the description of the species by Nouvel & Holthuis (1957). Carapace smooth with antennal spine only, without postorbital grooves. Rostrum slender, bifid at apex, tip ventrally curved in distal region, lacking setae along its lower edge, ventral margin of rostrum sinuous. Eyes relatively large and dorsoventrally flattened. Antennular peduncles relatively long and slender. Antennal scale relatively long and narrow. Pereiopods without exopods. First pereiopods unequal, right pereiopod with distinct chela, left pereiopod simple. Second pereiopods also unequal, right pereiopod much longer than left, chela small, carpus and merus multi-articulate. Pleura of 5th pleonite with 1 posterolateral tooth. Sixth pleonite with 1 strong conical preanal spine. Telson less than 3 times as long as wide and strongly canaliculated. Ventral surface with a strong longitudinal carina that persists in ovigerous females. Live colour: body colourless, translucent, and scattered with red chromatophores, giving the impression of a general colouration ranging from pale red to bright red; some white yellowish chromatophores, more numerous on the abdomen than on the carapace. Eyes with a black cornea with greenish reflections. Eggs pale yellowish green (cf. Nouvel & Holthuis, 1957). Moreover, the studied material was checked step by step with the dichotomous key of Fransen (2014) (fig. 1D-I).

Size.— The material studied by Nouvel & Holthuis (1957) included: males, with a size range of up to 31.0 mm, non-ovigerous females, with a size range of up to 33.5 mm, and ovigerous females, ranging from 27.0 to 43.0 mm. The present

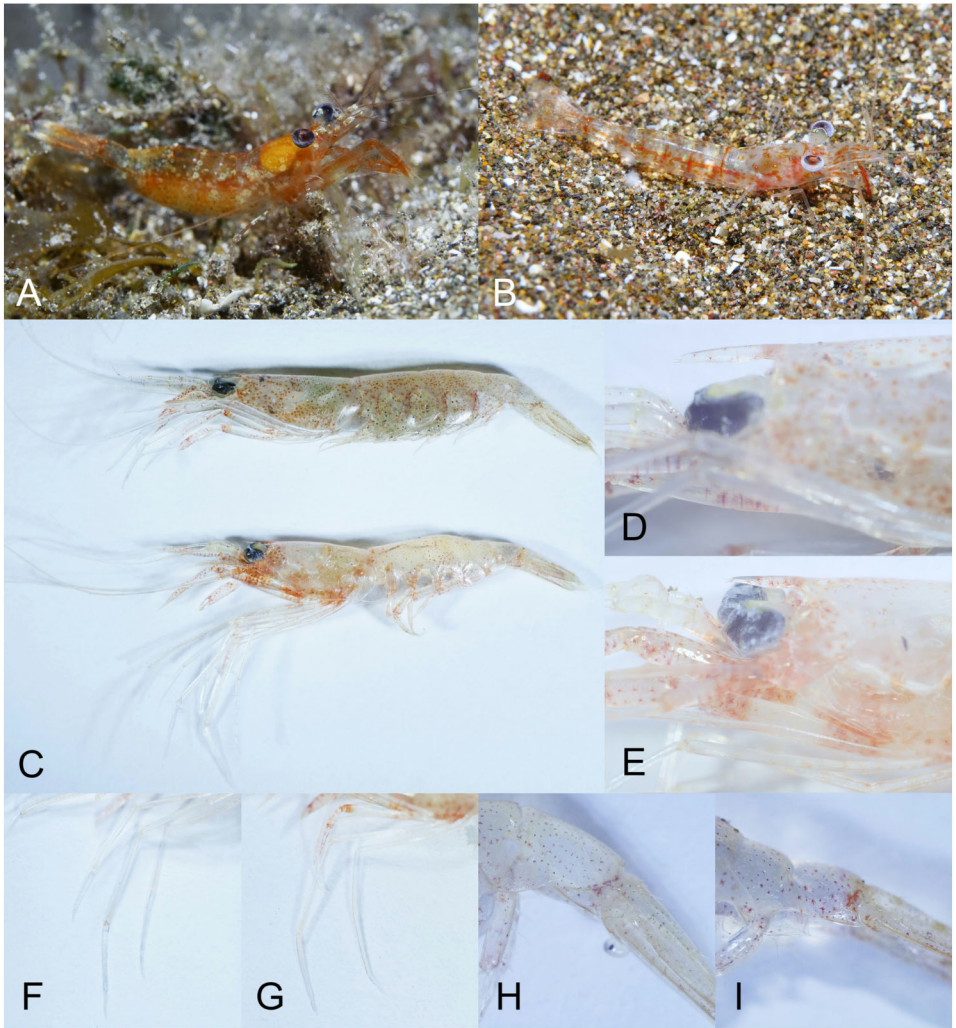


Fig. 1. *Processa macrophthalmalma* Nouvel & Holthuis, 1957 from the Canary Islands (ICCM526). A, Ovigerous female (pocl 5.8 mm) in its natural habitat; B, male (pocl 5.2 mm) in its natural habitat; C, same ovigerous female (top) and male (bottom) freshly caught; D-E, details of their respective rostra; F-G, details of their respective pereiopods; H-I, details of their respective pleura of the 5th pleonite.

specimens measured from 14.0 to 21.5 mm in total length (including the rostrum), with the smallest ovigerous female measuring 17.0 mm.

Habitat.— A littoral benthic species, found between 20 and 119 m depth (d'Udekem d'Acoz, 1999; González, 2018), living on soft bottoms (d'Udekem d'Acoz, 1999; Fransen, 2014). The present material fits well with the species' habitat, being the shallowest (8–9 m depth) known record for the species.

Biogeographic pattern and distribution.— This is an Atlanto-Mediterranean species. Known from the Mediterranean Sea and the eastern-central Atlantic Ocean from Portugal and along the northwestern African coast to the Gulf of Guinea (d’Udekem d’Acoz, 1999; González, 2018), including Madeira (Wirtz, 1994) and the Cape Verde islands (Wirtz et al., 2016). The present finding is the first documented record of *P. macrophthalma* for the Canary Islands.

Biology.— The two largest (pocł 5.8 mm) ovigerous females carry about 250–350 eggs (fig. 1C, top), while the smallest one (pocł 4.6 mm) incubates approximately 200 eggs. The eggs are relatively large, with an approximate diameter of 0.35 mm.

Remarks.— Species of *Processa* are of small to moderate size, exhibit chromatic patterns (translucent or pale) adapted for camouflage in their environment, hide in the mud or sand during the day and come out during the night when they are more active (Fransen, 2014). In our opinion, these morphological characteristics and ethology have played a crucial role in the observation, collection, and identification of these forms in the Canary Islands and other regions. Furthermore, species of *Processa* have traditionally been confused with each other, mainly due to small morphological differences that even have led to the recognition of subspecies. In summary, the presence of *P. macrophthalma* in the waters of the Canary Islands may have gone unnoticed until now or its recent occurrence may be due to a natural expansion of neighbouring African, Madeiran, and/or Cape Verdean populations. A second explanatory hypothesis for the presence of this species in the Canary archipelago would be its introduction due to anthropogenic causes, such as transportation through ship’s ballast water or accidental introduction on oil platforms.

ACKNOWLEDGEMENT

Thanks to Dr. Peter Wirtz (Faro) for his kind help in identifying the material studied.

REFERENCES

- DE GRAVE, S. & C. H. J. M. FRANSEN, 2011. Carideorum catalogus: the recent species of the dendrobranchiate, stenopodidean, procarididean and caridean shrimps (Crustacea: Decapoda). Zool. Mededel. Leiden, **85**(9): 195–589.
- DECANET (eds.), 2023. DecaNet. *Processa* Leach, 1815. World Register of Marine Species. Available online at <https://www.marinespecies.org/aphia.php?p=taxdetails/id=107054> (accessed 4 June 2023).

- D'UDEKEM D'ACÓZ, C., 1999. Inventaire et distribution des crustacés décapodes de l'Atlantique nord-oriental, de la Méditerranée et des eaux continentales adjacentes au nord de 25°N. *Patrim. Nat.*, **40**: i-x, 1-383.
- FRANSEN, C. H. J. M., 2014. Shrimps and prawns. In: K. E. CARPENTER & N. DE ANGELIS (eds.), *The living marine resources of the Eastern Central Atlantic*, **1**, introduction, crustaceans, chitons and cephalopods: 37-196. (FAO Species Identification Guide for Fishery Purposes, FAO, Rome).
- FRANSEN, C. H. J. M. & P. WIRTZ, 1997. Contribution to the knowledge of decapod crustaceans from Madeira and from the Canary Islands. *Zool. Meded.*, **71**: 215-230.
- GONZÁLEZ, J. A., 2018. Checklists of Crustacea Decapoda from the Canary and Cape Verde Islands, with an assessment of Macaronesian and Cape Verde biogeographic marine ecoregions. *Zootaxa*, **4413**(3): 401-448.
- GONZÁLEZ, J. A., J. G. PAJUELO, R. TRIAY-PORTELLA, R. RUIZ-DÍAZ, J. DELGADO, A. R. GÓIS & A. MARTINS, 2016. Latitudinal patterns in the life-history traits of three isolated Atlantic populations of the deep-water shrimp *Plesionika edwardsii* (Decapoda, Pandalidae). *Deep-Sea Res. I*, **117**: 28-38.
- KING, M. & R. B. MOFFITT, 1984. The sexuality of tropical deepwater shrimps (Decapoda: Pandalidae). *J. Crust. Biol.*, **4**: 567-571.
- LANDEIRA, J. M. & C. H. J. M. FRANSEN, 2012. New data on the mesopelagic shrimp community of the Canary Islands region. *Crustaceana*, **85**(4-5): 385-414.
- MORO, L., R. HERRERA, J. ORTEA, R. RIERA, J. J. BACALLADO & J. MARTÍN, 2014. Aportaciones al conocimiento y distribución de los decápodos y estomatópodos (Crustacea: Malacostraca) de las islas Canarias. *Rev. Acad. Canaria Cienc.*, **26**: 33-82.
- NOUVEL, H. & L. B. HOLTHUIS, 1957. Les Processidae (Crustacea Decapoda Natantia) des eaux européennes. *Zool. Verh.*, **32**(1): 1-53.
- QUILES, J. A., J. A. GONZÁLEZ & J. I. SANTANA, 2001. Dendrobranchiata y Caridea nuevos o poco conocidos para las islas Canarias (Crustacea, Decapoda). *Bol. Inst. Esp. Oceanogr.*, **17**: 7-13.
- WIRTZ, P., 1994. Three shrimps, five nudibranchs, and two tunicates new for the marine fauna of Madeira. *Bol. Mus. Mun. Funchal*, **46**(257): 167-172.
- WIRTZ, P., E. D'OLIVEIRA & G. BACHSCHMID, 2016. One fish and seven invertebrate species new for the marine fauna of Cape Verde Islands. *Arquipélago — Life & Mar. Sci.*, **34**: 51-54.
- WoRMS, 2023. World Register of Marine Species. Available online at <https://www.marinespecies.org> (accessed 5 June 2023).

First received 20 June 2023.

Final version accepted 1 July 2023. Published online 27 October 2023.