



# NOTES AND NEWS

## ON THE PRESENCE OF THE DEEP-WATER ROSE SHRIMP *PARAPENAEUS LONGIROSTRIS* (DECAPODA, DENDROBRANCHIATA, PENAEIDAE) OFF THE CANARY ISLANDS

BY

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The species composition of the Decapoda suborder Dendrobranchiata in waters around and off the Canary Islands has received increasing attention in recent years (Landeira & Fransen, 2012; González & Santana, 2014; Landeira & González, 2018). Here we report on the first record of one new benthic shrimp, *Parapenaeus longirostris* (Lucas, 1846), on the basis of the collection of adults off the Canary Islands, that confirms previous evidence from larval stages in the plankton. This paper also provides evidence on the epibenthic behaviour of the species.

The shrimps studied in this work were obtained in the framework of the research projects “Macarofood” and “Mariscomac”. Sampling was performed on board the F/V “David y Catalina”, and took place on 21 November 2017 off the west coast of Lanzarote Island. Shrimps were caught as by-catch of the local artisanal fishery of the striped soldier shrimp *Plesionika edwardsii* (Brandt, 1871) with multiple semi-floating shrimp traps (Arrasate-López et al., 2012; Pajuelo et al., 2018).

Deep-water rose shrimps were sorted on board and preserved in 80% ethanol for later morphological analysis and final identification at the laboratory. Voucher specimens were labelled, curated, data-based and deposited, available for verification (Turney et al., 2015) in both the museum collections of the “Museo de Ciencias Naturales de Tenerife” (TFMC, Tenerife, Canary Islands) and the ICCM study collection at the University of Las Palmas de Gran Canaria (Gran Canaria, Canary Islands). The postorbital carapace length (pocl) was measured from the posterior margin of the orbit to the posterodorsal border of the carapace, excluding the rostrum (Landeira & Fransen, 2012), and was measured with a digital calliper

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in millimetres. The sex of the specimens, according to the presence of petasma or thelycum, was also recorded as male or female, respectively.

The present systematic classification and taxa arrangement follow De Grave et al. (2009) and De Grave & Fransen (2011).

Suborder DENDROBRANCHIATA Spence Bate, 1888

Superfamily PENAEOIDEA Rafinesque, 1815

Family PENAEIDAE Rafinesque, 1815

Genus *Parapenaeus* Smith, 1885

***Parapenaeus longirostris*** (Lucas, 1846) (fig. 1)

Material examined.— Voucher codes: TFMCBM-CR/332, four males (pocl. 20.3–25.2 mm), ICCM436, four males (pocl. 18.8–23.5 mm) and one female (pocl. 24.1 mm). Collection locality for all voucher specimens: W of Lanzarote Island, off La Santa, 29°08'N 13°41'W, 240 m depth.

Specific diagnostic features.— Integument glabrous (smooth). Rostrum long (= *longirostris*), thin and narrow, always slightly bent upwards, armed with usually 8 dorsal teeth very variable in length, the last gastric in position and well separated from the others, distal part devoid of teeth; ventral teeth absent; prolonged in the form of a laminar keel on the carapace; epigastric tooth situated conspicuously posterior to first rostral tooth. Carapace with orbital spine pointed; with well-developed antennal and hepatic spines; pterygostomian and branchiostegal spines present; longitudinal suture long, extending almost until posterior margin of carapace, no exopods at bases of pereopods, transverse suture at level of second pereopod. Sixth abdominal somite without cicatrix. Telson ending in a pointed tip flanked by 2 long fixed lateral spines, its lateral margins without mobile spines. Antennule with small spine; antennular flagella much longer in males than in females. Petasma symmetrical, semiclosed, with numerous processes and folds. Thelycum with single plate of sternite XIV raised in two pairs of lateral prominences (Zariquiey Álvarez, 1968; Lagardère, 1981; Pérez Farfante & Kensley, 1997; Fransen, 2014).

Geographical distribution.— Mediterranean Sea, absent in northern Adriatic Sea and in the Black Sea; eastern Atlantic Ocean at least from Galicia, Spain to Namibia (Pérez Farfante & Kensley, 1997; d'Udekem d'Acoz, 1999; Fransen, 2014). West Atlantic records of *P. longirostris* refer to *Parapenaeus politus* (Smith, 1881) (cf. Fransen, 2014). This is the first record of this species from the Canary Islands, as well as for the Macaronesia ecoregion (Azores-Madeira-Salvage-Canaries). According to the biogeographic pattern categories proposed by González (2018), the deep-water rose shrimp is an eastern Atlantic warm-temperate species.

Habitat and biology.— Benthic. It usually inhabits sandy and sandy mud bottoms at depths between 20 and 700 m, chiefly between 70 and 100 m, at



Fig. 1. *Parapenaeus longirostris* (Lucas, 1846) from off the Canary Islands (ICCM436, male, pochl. 18.8 mm).

temperatures of 8° to 15°C. It carries out important daily or monthly vertical migrations interpreted as phototropic responses. The bathymetric distribution also varies according to body size, with large individuals occupying the deepest part of the species' depth range. It feeds on benthic organisms, such as clams, mysids and small crangonids (Lagardère, 1981; d'Udekem d'Acoz, 1999; Fransen, 2014). The studied specimens were collected around 240 m depth, which is well within the depth range given for the species. According to fishermen from the area, the deep-water rose shrimp is frequently caught with semi-floating shrimp traps at 200–460 m depth.

Remarks.— According to d'Udekem d'Acoz (1999), *P. longirostris* is a typical species in the community of bathyal muddy bottoms. The present first author captured, with the same fishing gear (operated about 2.5 m above the seafloor) on flat soft bottoms, many epibenthic specimens of *P. longirostris* in a Moroccan sector (Agadir — Oued Souss, 30°23'N –30°21'N, 140–360 m depth, 14–15°C) near Lanzarote Island (project Omarat, R/V “Prof. Ignacio Lozano”, campaign Agadir 2011-05, April–May 2011) (González et al., 2011). The comparison between the Moroccan and Canarian specimens has not revealed any morphological differences.

The occurrence of *P. longirostris* in the north-eastern sector of the Canary Islands can be interpreted as a natural expansion of the Moroccan populations. The Canary-African coastal transition zone is a region with intense oceanographic activity, with numerous cyclonic and anticyclonic eddies as well as upwelling filaments, that can produce a highly complex scenario of larval transport, connecting both populations in the archipelago and those along the neighbouring north-western African coasts (Landeira et al., 2017). In fact, these large-scale transport events have been reported previously. Thus, two *P. longirostris* larvae in protozoa

stage III were collected offshore, southern Gran Canaria (Cruise Canarias 9110, station 57: 27°24'N 15°36'W), in association with a filament of African coastal water (Landeira et al., 2009). On the other hand, other records of *P. longirostris* larvae suggest that the population of Lanzarote Island is not the only one in the archipelago. For instance, during a plankton monitoring programme over the island shelf off Gran Canaria (ConAfrica cruise, station 1: 28°04'N 15°21.5'W), larvae of *P. longirostris* protozoa II and III were collected in June and July 2005, and February and December 2006 (Landeira & Lozano-Soldevilla, 2018).

The checklist of the dendrobranchiate shrimps from the Canary Islands has been recently published by Landeira & González (2018), where a total of 49 species were listed. Considering the present first record of *P. longirostris*, the inventory of the Canary Islands Dendrobranchiata currently comprises 50 species. Biogeographically, 26 dendrobranchiate species are circumtropical, 11 are ampho-Atlantic of warm affinity, four are ampho-Atlantic of wide distribution, three are restricted to the tropical/subtropical eastern Atlantic, three are distributed worldwide, and three species (*P. longirostris* included) are eastern Atlantic species of warm-temperate affinity (see Landeira & González, 2018).

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#### REFERENCES

- ARRASATE-LÓPEZ, M., V. M. TUSET, J. I. SANTANA, A. GARCÍA-MEDEROS, O. AYZA & J. A. GONZÁLEZ, 2012. Fishing methods for sustainable shrimp fisheries in the Canary Islands (north-west Africa). *Afr. J. mar. Sci.*, **34**(3): 331-339.
- 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. Med. Leiden*, **85**(9): 195-589.
- DE GRAVE, S., N. D. PENTCHEFF, S. T. AHYONG, T.-Y. CHAN, K. A. CRANDALL, P. C. DWORSCHAK, D. L. FELDER, R. M. FELDMANN, C. H. J. M. FRANSEN, L. Y. D. GOULDING, R. LEMAITRE, M. E. Y. LOW, J. W. MARTIN, P. K. L. NG, C. E. SCHWEITZER, S. H. TAN, D. TSHUDY & R. WETZER, 2009. A classification of living and fossil genera of decapod crustaceans. *Raffles Bull. Zool.*, (Suppl.) **21**: 1-109.
- 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. *Patrimoines Naturels*, **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. Introduction, crustaceans, chitons and cephalopods. FAO Species Identification Guide for Fishery Purposes, **1**: 37-196. (FAO, Rome).
- 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. I. SANTANA, 2014. The family Penaeidae from the Canary Islands (Northeastern Atlantic), with first record of *Penaeus kerathurus*. *Bol. Mus. Hist. Nat. Funchal*, **64**(338): 29-34.
- GONZÁLEZ, J. A., J. I. SANTANA, H. EL HABOUZ, M. H. BENYACINE, M. EL HILALI, M. N. TAM-SOURI, S. JIMÉNEZ, J. G. GONZÁLEZ-LORENZO, R. TRIAY & J. G. PAJUELO, 2011. Memoria final de la campaña "Agadir 2011-05" sobre prospección experimental de camarones pandálicos con nasas semi-flotantes. Observatorio marino atlántico Canarias-Marruecos OMARAT, Instituto Canario de Ciencias Marinas: 1-97. (Telde, Las Palmas).
- LAGARDÈRE, J. P., 1981. Crevettes. In: W. FISCHER, G. BIANCHI & W. B. SCOTT (eds.), Fiches FAO d'Identification des Espèces pour les Besoins de la Pêche. Atlantique centre est; zones de pêche 34, 47 (en partie), **VI**: 1-4 + fiches. (Minis. Pêch. Océans Canada, ONU FAO, Ottawa).
- LANDEIRA, J. M., T. BROCHIER, E. MASON, F. LOZANO-SOLDEVILLA, S. HERNÁNDEZ-LEÓN & E. D. BARTON, 2017. Transport pathways of decapod larvae under intense mesoscale activity in the Canary-African coastal transition zone: implications for population connectivity. *Sci. Mar.*, **81**(3): 299-315.
- 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.
- LANDEIRA, J. M. & J. A. GONZÁLEZ, 2018. First record of *Pelagopenaeus balboae* and *Sergia wolffi* (Decapoda, Dendrobranchiata) from the Canary Islands, with an annotated checklist of the Dendrobranchiata in the area. *Crustaceana*, **91**(3): 379-387.
- LANDEIRA, J. M. & F. LOZANO-SOLDEVILLA, 2018. Seasonality of planktonic crustacean decapod larvae in the subtropical waters of Gran Canaria Island, NE Atlantic. *Sci. Mar.*, **82**(2): 119-134.
- LANDEIRA, J. M., F. LOZANO-SOLDEVILLA, S. HERNÁNDEZ-LEÓN & E. D. BARTON, 2009. Horizontal distribution of invertebrate larvae around the oceanic island of Gran Canaria: the effect of mesoscale variability. *Sci. Mar.*, **73**: 761-771.
- PAJUELO, J. G., R. TRIAY-PORTELLA, J. DELGADO, A. R. GÓIS, S. CORREIA, A. MARTINS & J. A. GONZÁLEZ, 2018. Changes in catch and bycatch composition and in species diversity of a semi-floating shrimp-trap fishery in three eastern Atlantic island ecosystems with different degree of human alteration. In: M. DEMESTRE & F. MAYNOU (eds.), Discards regulation vs Mediterranean fisheries sustainability. *Sci. Mar.*, **82**(S1): 107-114.
- PÉREZ FARFANTE, I. & B. KENSLEY, 1997. Penaeoid and sergestoid shrimps and prawns of the world. Key and diagnoses for the families and genera. *Mém. Mus. nat. Hist. nat., Paris*, **175**: 1-233.
- TURNER, S., E. R. CAMERON, C. A. CLOUTIER & C. M. BUDDLE, 2015. Non-repeatable science: assessing the frequency of voucher specimen deposition reveals that most arthropod research cannot be verified. *PeerJ*, **3**: e1168.
- ZARIQUIEY ÁLVAREZ, R., 1968. Crustáceos decápodos ibéricos. *Inv. Pesq., Barcelona*, **32**: i-xv + 1-510.