

# First record of the buoy barnacle *Dosima fascicularis* (Ellis & Solander, 1786) (Crustacea, Cirripedia) from the Galician beaches (NW Spain) after the Prestige oil spill

Juan Junoy\* and Jorge Junoy

EU-US Marine Biodiversity Research Group, Franklin Institute and Departamento de Ciencias de la Vida, AP 20. Campus Universitario, Universidad de Alcalá, 28805 Alcalá de Henares, Spain.

\* Corresponding author. E-mail: [juan.junoy@uah.es](mailto:juan.junoy@uah.es)

**ABSTRACT:** The presence of the buoy barnacle *Dosima fascicularis* is first documented for Spanish waters. More than the half of the specimens collected was attached to tar pellets from the Prestige oil spill.

DOI: 10.15560/10.3.669

*Dosima fascicularis* (Ellis & Solander, 1786) is a stalked barnacle which capitulum bears five large plates. It is the unique barnacle that constructs its own float, a foamy mass described as similar to polystyrene, using floating items as feathers, tar balls and plastic particles as attachment surfaces (Darwin 1851; Minchin 1996; Ryan and Branch 2012). The species is widespread in temperate and subtropical ocean waters, reaching in the NE Atlantic the British Islands and Baltic Sea (Darwin 1851) but its presence in European coast is unusual (O' Riodan 1967; Cotton *et al.* 2006).

A long term study on the macroinfauna community was carried out on sandy beaches situated along the 1659 km of the Galician coast (NW Spain; NE Atlantic Ocean) after the *Prestige* oil spill from autumn 2002 to winter 2003 (De la Huz *et al.* 2005; Junoy *et al.* 2005). Eighteen sandy beaches were sampled yearly during four consecutive years (2004–2007) (Figure 1). Three of them (Corrubedo, Frouxeira and Altar beaches) were also sampled monthly from September 2005 to August 2007 (Bernardo-Madrid *et al.* 2013), totalizing 138 shore visits. Additional surveys were realized along the drift line of the La Lanzada Beach, with occasion of two coastal field courses, at spring tides from 2003 to 2013. At these visits, several colonies of the goose barnacle *Lepas anatifera* Linnaeus, 1758 were observed but no one of the buoy barnacle *D. fascicularis*.

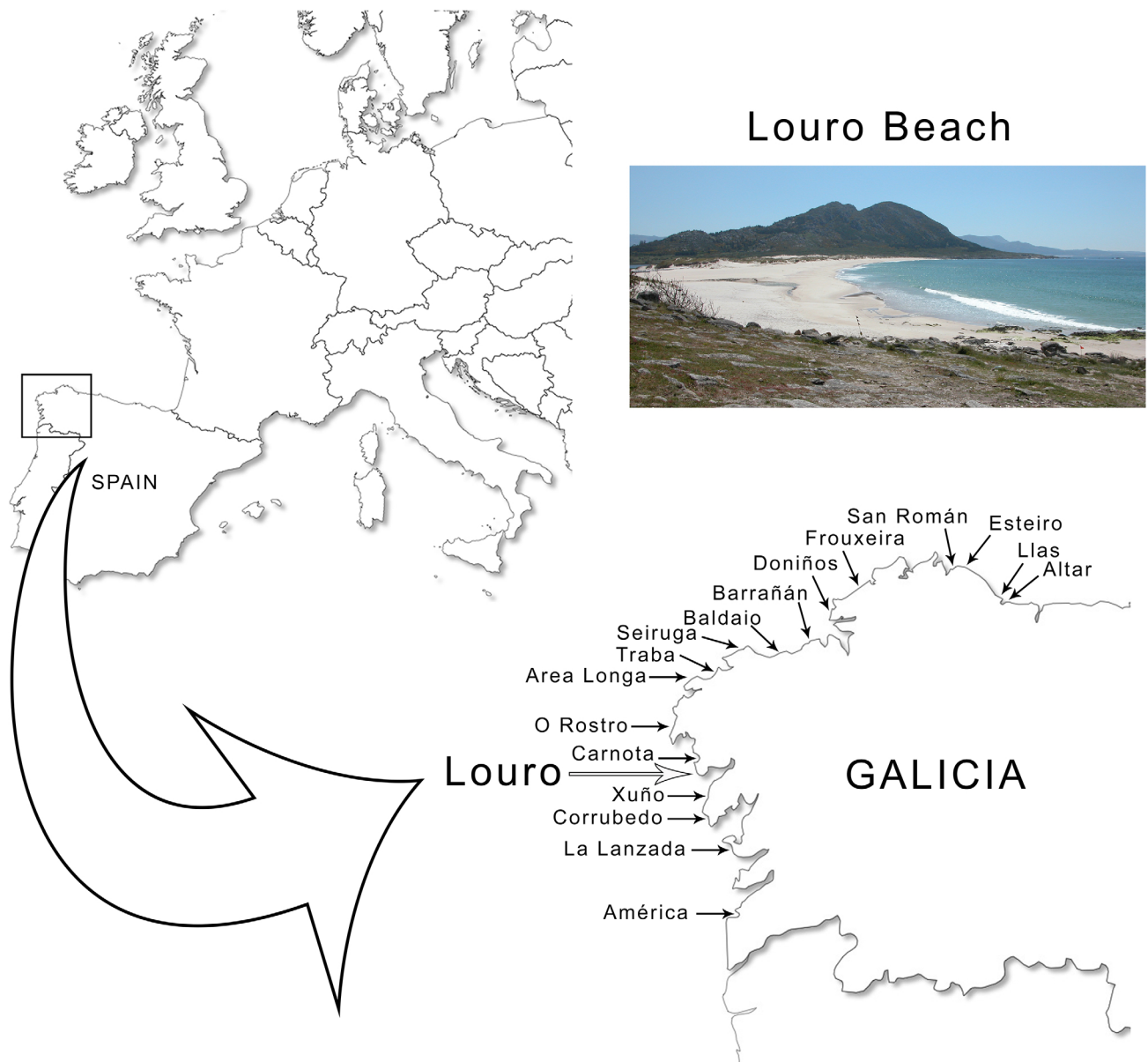
Buoy barnacles were observed washed ashore on 18 August 2004 at Louro Beach (A Coruña province, 42°43' N, 9°03' W). A total of 39 single individuals, but no one colony (two or more specimens attached together) were

collected along the 1470 m of the beach longitude. The floats of 53.8% of the specimens were attached to tar balls, presumably from the *Prestige* oil spill; other attachment surfaces were *Velella* tests (15.3%), *Sargassum* bladders (7.6%) and feathers (2.5%). 20.8% of buoy barnacles lacked an obvious attachment object (Figure 2).

The average capitulum length of the collected specimens was 17.7 mm (range 13–22 mm). The maximum size recorded for the species was 37 mm in European waters (Minchin 1996) and 49 mm in South Africa (Ryan and Branch 2012).

*Dosima fascicularis* stranding on the Galician beaches is very rare; it has only been observed in just one occasion of the 160 shore visits, being an unknown species for local sailors. There was no noticeable pattern for cirripede stranding, although they appeared in Europe in summer, usually after westerly or south strong winds (Minchin 1996; Cotton *et al.* 2006).

This is the first record of *D. fascicularis* from Spanish waters providing further evidence of the use of tar balls as attachment surface for this cirripede. Minchin (1996) also found that tar was the most frequent object of attachment. This fact suggests that the abundance of the species could be increased after the spills, providing numerous floating surfaces for attachment. Whitehead *et al.* (2011) also conclude that the increasing abundance of plastic (or other available substrata) is drastically increasing the opportunities for the goose barnacles to colonize and it greatly influences their abundance and distribution.



**FIGURE 1.** Map of beaches sampled after the Prestige oil spill in Galicia, NW Spain, NE Atlantic. Louro Beach where *D. fascicularis* was collected is highlighted.



**FIGURE 2.** *Dosima fascicularis* (Ellis & Solander 1786) A) specimens with tar balls (T) or *Velella* cast (V) at their floats. B) largest specimen attached to the condrophore *Velella*.

## LITERATURE CITED

- Bernardo-Madrid, R., J.M. Martínez-Vázquez, J.M. Viéitez and J. Junoy. 2013. Two year study of swash zone suprabenthos of two Galician beaches (NW Spain). *Journal of Sea Research* 83: 152–162 (doi: 10.1016/j.seares.2013.04.011).
- Cotton, D.C.F., J. Dunleavy and J.M. Dick. 2006. Buoy barnacle (*Dosima fascicularis* (Ellis & Solander 1786) mass stranding in Cos Mayo and Sligo. *Irish Naturalists' Journal* 28 (5): 223–225 (doi: 10.2307/25536723).
- Darwin, C. 1851. *A Monograph on the Sub-class Cirripedia, with Figures of All the Species. Vol. I — The Lepadidae; or Pendunculated Cirripedes*. London: Ray Society, 400 pp.
- De la Huz, R., M. Lastra, J. Junoy, C. Castellanos and J.M. Viéitez. 2005. Biological impacts of oil pollution and cleaning in the intertidal zone of exposed sandy beaches: preliminary study of the *Prestige* oil spill. *Estuarine, Coastal and Shelf Science* 65(1): 19–29 (doi: 10.1016/j.ecss.2005.03.024).
- Junoy, J., C. Castellanos, J.M. Viéitez, R. de la Huz and M. Lastra. 2005. The macroinfauna of the Galician sandy beaches (NW Spain) affected by the *Prestige* oil spill. *Marine Pollution Bulletin* 50 (5): 526–536 (doi: 10.1016/j.marpolbul.2004.11.044).
- Minchin, D. 1996. Tar pellets and plastics as attachment surfaces for lepadid cirripedes in the North Atlantic Ocean. *Marine Pollution Bulletin* 32 (12): 855–859 (doi: 10.1016/S0025-326X(96)00045-8).
- O'Riordan, C.E. 1967. Cirripedes in Ireland (Irish cirripedes in the collections of the National Museum of Ireland and in the literature). *Proceedings of the Royal Irish Academy B* 65: 285–296 (doi: 10.2307/20518860).
- Ryan, P.G. and G.M. Branch. 2012. The November 2011 irruption of buoy barnacles *Dosima fascicularis* in the Western Cape, South Africa. *African Journal of Marine Science* 34 (1): 157–162 (doi: 10.2989/1814232X.2012.675130).
- Whitehead, T.O., A. Biccard and C.L. Griffiths. 2011. South African pelagic goose barnacles (Cirripedia, Thoracica): substratum preferences and influence of plastic debris on abundance and distribution. *Crustaceana* 84 (5–6): 635–649 (doi: 10.1163/001121611X574290).

RECEIVED: December 2013

ACCEPTED: May 2014

PUBLISHED ONLINE: July 2013

EDITORIAL RESPONSIBILITY: Vinicius Queiroz