

determination was checked by J. R. le B. Tomlin and confirmed by myself by comparison with a collection of *P. lithophaga* in the Zoology Department of the Natural History Museum.

The dimensions of the two shells are given in millimetres, Sandwich Bay first, Pravesa in brackets. Length 10.8 (12.4), height 6.9 (9.0), inflation 5.2 (7.0), riblets on each valve 63–67 (38–40). Dried tissue adhering to the inside of the valves of the Sandwich Bay specimen confirm that it was alive when collected. Gert Lindner has figured the species, "Seashells of the World", Blandford Press, p. 244, pl. 61, fig. 18, but the many riblets are not clearly shown. M. Kerney, 1981 (below) refers to "Shell Life", E. Step, p. 138.

Natural History Museum collections show that *P. lithophaga* has a broad distribution. It was collected from Texas by Carpenter and occurs right across the Mediterranean, from 'coast of Spain' to Greece, and into the Black Sea. It is found in the Gulf of Suez and as far east as 'China Seas', thus showing a preference for warm-temperate waters. Examples from the Mediterranean show that *P. lithophaga* bores into hard, grey (?Tethyan) limestone, producing crypts the shape of the shell, and opening to the outside with hour-glass shaped apertures for the inhalant and exhalant siphons. Mediterranean shells tend to be bigger than the Sandwich Bay specimen: length 27 mm from Malta and Naples, length 19 mm for Algeria. Gert Lindner, p. 244, claims that the range of *P. lithophaga* is "Mediterranean to Britain". Sandwich Bay covers 7 miles (11.3 km) of coast from Deal to Pegwell Bay, most of which is across the outcrop of the Thanet Sands producing a sandy and muddy shore. Since *P. lithophaga* bores into soft to hard rock it is unlikely to have been collected alive along that part of the coast. Chalk outcrops at Pegwell Bay are a more likely habitat and locality.

J. G. Jeffreys, "British Conchology" vol. 2, p. 238, mentions that "... this species has not been authenticated as British, although it is rather common in the Mediterranean and the west of France". He goes on to remark that a specimen in the J. D. Humphries collection of Irish Shells was "... found by him in Cork Harbour but I have reason to believe that it came from a piece of ballast stone".

Michael Kerney in Conchologists Newsletter 1981, no. 79, pp. 348–9, reports finding crypts, with shells of *P. lithophaga* in good condition, in blocks of exotic stone used in the construction of walls in Greenwich. He was able to establish that the stone originated as ballast from Victorian sailing ships. With the near demise of commercial sailing ships in early 20th Century it seems unlikely that the Sandwich Bay specimens were, in 1935, still alive in ballast. More likely, it arrived in ballast during the late 1900s and colonised the Chalk of Pegwell Bay, but may not have survived very cold winters. Use of ballast began to decline around the end of the 19th century as heavy engines replaced sail and lowered the centre of gravity.

Whether or not *P. lithophaga* should go on the British List of marine molluscs, is a matter for the Marine Recorder. But the possibility, that it might still be alive in Chalk outcrops along the S. E. coast, is worth keeping in mind during marine recording field work. A geological hammer would be a useful tool.

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### ANADARA INAEQUALVALVIS (BRUGUIÈRE, 1789) IN THE NORTH ATLANTIC

Several specimens of the bivalve *Anadara inaequalvis* (Bruguière, 1789) have been collected during 1993 and 1994 in the intertidal culture parks of *Ruditapes philippinarum* Adams & Reeve, 1850 in the Eo Estuary, Atlantic North coast of Spain.

The importation of commercial bivalves has resulted in the introduction of alien marine molluscs in the North Atlantic coast of Spain (Rolán, E. *et al. Thalassas* 3: (1985) pp. 29–36). In the Eo Estuary, the Pacific Opisthobranch *Haminaea calidegenita* Gibson & Chia, 1989 has been recently reported (Álvarez, L. *et al. Iberus* 11: (1993) pp. 59–65).

A possible pathway of introduction of *A. inaequalvis* to Northern Spain could be from Italy. In the years 1900 and 1991, the marine farming company Cultimar S. A. introduced spat of the clam *Ruditapes philippinarum*, of Italian origin, to the Eo Estuary. It is very probable that spat of *A. inaequalvis* were introduced along with *Ruditapes*. Zibrowius (1991, *Mésogée* 51: 83–107) indicated the presence of *A. inaequalvis* (as *Scapharca inaequalvis*) on the Italian coast. It was first recorded from near Ravenna, northern Adriatic Sea, where it had arrived by accidental ship transport. *Anadara inaequalvis* then rapidly invaded all the Adriatic Sea and reached Sicily, Calabria, Naples and Geneva. Living specimens of *A. inaequalvis* were seen among oyster spat imported to Northeastern Spain from Italy, before release into the local environment (Rolán, E. *et al. Thalassas* 3: (1985) pp. 29–36, under the name *Scapharca comea*).

It is difficult to know if there are stable populations of *A. inaequalvis* in the north of Spain. The capture of living specimens during two consecutive years indicates that this species survives in this area. Our specimens are small (less than 36 mm) in contrast to the Mediterranean (81.5 mm of maximum size, Cesari, P. & Pellizzato, M. *Boll. Malacologico* 21: (1985) 237–274) and thus have not been established for a very long time. Never the less, the high

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ecological versatility of this species (Ghisotti, F. & Rinalid, E. *Conchiglie* 12: (1976) 183–195) makes it possible that this species has become established in the North of Spain.

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