



First Report of *Sabella spallanzanii* (Gmelin, 1791) (Annelida: Polychaeta) from Botany Bay, New South Wales, a northern range extension for the invasive species within Australia

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The European Fanworm, *Sabella spallanzanii* (Gmelin, 1791), is a known invasive species in Australian coastal waters (Global Invasive Species Database 2013) and has been listed as:

- an 'introduced marine pest' by the National Introduced Marine Pest Information System (NIMPIS 2013)
- a 'target introduced pest species' by the Australian Ballast Water Management Advisory Council (ABWMAC) (Currie *et al.* 1998)
- a 'medium priority species' (a species which has a reasonably high impact/or invasion potential) in a ranking of Australian marine pests (Hayes *et al.* 2005).
- a reportable marine pest (NSW DPI 2013).

Sabella spallanzanii has the potential to alter native marine ecosystems and compete with native organisms for food and space. In high densities it also has the potential to impact aquaculture operations both as a nuisance fouler, and as a competitor to cultured filter-feeding species such as oysters and mussels (NSW DPI 2013; Currie *et al.* 2000).

The invasive capabilities of this polychaete worm have received considerable attention. It has been shown to inhibit recruitment of many sessile species on hard surfaces and some infaunal species in soft sediments due to the combined 'canopy effect' of the feeding 'fans' in a population (Holloway & Keogh 2002; O'Brien *et al.* 2006), and the efficiency and strength of its filtration during feeding (Lemmens *et al.* 1996). This high filtration capacity may also have a deleterious effect on nutrient recycling processes in areas where there are high densities of *S. spallanzanii* in soft sediments (Murray & Parslow 1999; Stabilia *et al.* 2006).

This annelid is considered native to the Mediterranean Sea and to the European Atlantic coast, but was also recorded as early as 1856 from Brazil under seven different synonyms (Knight-Jones & Perkins 1998) and has also been reported as a recently introduced species to New Zealand (Read *et al.* 2011). Within Australia *S. spallanzanii* was first discovered in southern Western Australia in 1965 (Wells & McDonald 2010), and has since been recorded from Victoria, South Australia, Tasmania and New South Wales (NSW) (see Fig. 1 for distribution records in Australia). In some locations it appears to be a "boom-or-bust" species. For example, densities in Port Phillip Bay have declined to relatively low levels compared with the period following its initial establishment and expansion in the late 1980s to mid-1990s (Ross *et al.* 2007).

In New South Wales, *S. spallanzanii* was first discovered in Twofold Bay (~37°S, 150°E) in November 1996 where the species is still present despite eradication attempts by diver hand-removal. This population steadily increased until 2008, followed by a decline to pre-2005 numbers (NSW DPI 2013; Creese & Glasby pers. comm.). Due to concerns regarding the impact of introduced marine pests, Australian ports were surveyed for invasive species during the late 1990s and early 2000s (Hewitt & Martin 1996). Despite extensive diver-surveys of piles, rocky reefs and soft substrates undertaken in 1998 in Botany Bay during a port survey, no *S. spallanzanii* were recorded (O'Donnell 2000; Pollard & Pethebridge 2002a). A study undertaken in 2004 of the soft-sediment polychaete assemblages of Botany Bay also did not report any *S. spallanzanii* (Fraser *et al.* 2006). Likewise, it was not recorded from other major international and domestic shipping ports immediately to the south and north of Botany Bay which were also sampled during similar port surveys, namely Port Kembla (in 2000), Port Jackson/Sydney Harbour (in 2001) and Newcastle (in 1997), (Hewitt *et al.* 1998; Australian Museum Business Services 2002; Pollard & Pethebridge 2002b). There has been no record of a northern extension of the range of *S. spallanzanii* along the NSW east coast, until now (Capa, pers. comm.).