

The risk of introductions by ballast water has been addressed by OSPAR and HELCOM taking action to ensure the early application of standards consistent with the IMO Ballast Water Convention. Environmental risks related to movements of non-indigenous aquatic species are addressed within the EU by the Regulation concerning use of alien and locally absent species in aquaculture. There are also international risk assessment protocols for assessing the risks of using non-indigenous species in aquaculture.

Ratification and implementation of the IMO Ballast Water Convention should be expedited and followed up with effective enforcement. There is a need to monitor the effectiveness of this and other recently implemented measures on reducing introductions of non-indigenous species. Work under the EU Marine Strategy Framework Directive will provide a focus for this in seeking to ensure that non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.

TABLE 9.1 Non-indigenous species in the OSPAR area that have been identified as problematic.

	Taxonomic group	Common names	Regions affected	Vector	First reported	Probable impacts
Plants, algae and phytoplankton	<i>Spartina anglica</i>	Common cord-grass, Townsend's grass or ricegrass	I, III, IV		France 1906	
	<i>Sargassum muticum</i>	Wireweed, Japweed, Strangleweed	I?, II, III, IV		UK 1973	
	<i>Undaria pinnatifida</i>	Wakame, Japanese kelp	II, IV		France 1972 France 1983	
	<i>Gracilaria vermiculophylla</i>	Asian red alga	II, III		France 1996	
	<i>Codium fragile</i> ssp. <i>fragile</i>	Green sea fingers	I, II, III, IV		Netherlands ~1900	
	<i>Bonnemaisonia hamifera</i>	Red alga	I, II, III, IV, V		UK 1893	
	<i>Coscinodiscus wailesii</i>	A centric diatom	II, III, IV		UK 1977 Norway 1979	
Invertebrates	<i>Mnemiopsis leidyi</i>	A comb jelly	II		Netherlands, Sweden, Norway 2006	
	<i>Marenzelleria</i> spp. (complex)	Red gilled mud worm	II, III		UK 1979	
	<i>Crepidula fornicata</i>	Slipper limpet	II, III, IV		UK 1872	
	<i>Ensis americanus</i> (=directus)	Jackknife clam, razor clam	II		Germany 1979	
	<i>Crassostrea gigas</i>	Pacific oyster	II, IV		France 1980s	
	<i>Mya arenaria</i>	Soft-shelled clam, soft clam, long-necked clam	I, II, III, IV		1245	
	<i>Rapana venosa</i>	Rapa whelk, veined whelk	IV		France 1997 North Sea 2005	
	<i>Venerupis philippinarum</i>	Japanese clam, Manila clam	II, IV		UK 1992	
	<i>Teredo navalis</i>	Ship worm	II, III, IV, V		Netherlands >1730	
	<i>Eriocheir sinensis</i>	Chinese mitten crab, Mitten crab, Chinese freshwater edible crab	II, III, IV		Germany 1912	
	<i>Hemigrapsus sanguineus</i>	Asian shore crab	II, IV		France 1999	
	<i>Hemigrapsus takanoi</i>	Asian shore crab	II, IV		France 1994	
	<i>Paralithodes camtschaticus</i>	Red king crab	I		Norway 1976	
	<i>Marsupenaeus japonicus</i>	Kuruma prawn	IV		Portugal 1985	
	<i>Ficopomatus enigmaticus</i>	A tubeworm	II, III, IV		France 1921	
	<i>Austrominius</i> (=Elminius) <i>modestus</i>	An acorn barnacle	I, II, IV		UK 1945	
	<i>Caprella mutica</i>	Skeleton shrimp	II, III, IV		Belgium 1998	
	<i>Telmatogeton japonicus</i>	A chironomid (insect)	II, III		Germany 1963	
	<i>Bugula stolonifera</i>	A bryozoan	II, IV, V		Netherlands 1993	
	<i>Styela clava</i>	Leathery sea squirt, Asian sea squirt	II, III, IV		France 1968	
<i>Didemnum vexillum</i>	A sea squirt or tunicate	I, III		Netherlands 1991		
<i>Tricellaria inopinata</i>	A bryozoan	II, IV		Spain 1996 UK 1998		
Protozoa	<i>Bonamia ostreae</i>	None	II, III, IV		France 1976	

Vectors for introduction have been classified as: planting; secondary spread; importation for aquaculture; ballast water; fishing nets; fouling; aquaculture. Probable impacts have been classified as: habitat modification; competition; fouling; algal blooms; food web impacts; nutrient regeneration; biodiversity loss; damage to structures; predation