

Manx Marine Environmental Assessment  
**Ecology/ Biodiversity**

**Marine and coastal  
conservation**



**Ramsey Marine Nature Reserve. Photo: J Cubbon.**

**MMEA Chapter 3.7**

**October 2013**

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# Manx Marine Environmental Assessment



## **Version: November 2013**

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This document was produced as part of the Isle of Man Marine Plan Project, a cross Government Department project funded and facilitated by the Department of Infrastructure, Department of Economic Development and Department of Environment, Food and Agriculture.

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## **Suggested Citations**

### **Chapter**

Gell, F.G., Thomas, A., Hanley, L., Tomlinson, P. 2013. Marine and Coastal Conservation. In Hanley *et al.*, (eds.), Manx Marine Environmental Assessment. Isle of Man Marine Plan. Isle of Man Government, pp. 47

### **MMEA**

Hanley, L.J., Gell, F.G., Kennington, K., Stone, E., Rowan, E., McEvoy, P., Brew, M., Milne, K., Charter, L., Gallagher, M., Hemsley, K., Duncan, P.F. (eds.) 2013. Manx Marine Environmental Assessment. Isle of Man Marine Plan. Isle of Man Government.

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# Marine and coastal conservation

## Summary

Marine biodiversity is an important resource to the Isle of Man, providing a wide range of services and making an important contribution to the biodiversity of the wider Irish Sea.

Over 2300 marine animal species had been recorded in the Isle of Man up to 1963 (Bruce et al 1963) and many more have been recorded since. At least 225 species of algae have been recorded in Manx waters. A full, up to date marine species list has not been compiled for the Isle of Man but should soon be possible.

The Department and Environment, Food and Agriculture is responsible for nature conservation designations in the Isle of Man. Manx Natural Heritage also play an important role in conservation. The work of these government entities is supported by a number of active conservation Non-Governmental Organisations (NGOs).

Marine Nature Reserves (MNRs) can be designated for subtidal sites and can also include intertidal areas (to the high water mark). Ramsey Marine Nature Reserve is the Isle of Man's first MNR and was designated in 2011. Approximately 2.6% of Manx territorial waters are designated as Marine Nature Reserve or protected from scallop dredging as part of the network of Fisheries Closed Areas and Restricted Areas.

The EU Habitats Directive does not extend to the Isle of Man but the Isle of Man is signed up (via the UK) to a number of Conventions identifying priority species and habitats for conservation, including:

- The Convention for the Protection of the Marine Environment of the North-East Atlantic
- Convention on the Conservation of Migratory Species of Wild Animals
- Convention on the International Trade in Endangered Species of Flora and Fauna
- Convention on the Conservation of European Wildlife and Natural Habitats
- Convention on Wetlands of International Importance
- Convention on Biological Diversity

Marine Nature Reserves (MNRs) are the main conservation designation available for subtidal sites. A range of conservation priority habitats are protected within Ramsey MNR, including horse mussel reef, eelgrass meadows and maerl beds. Other priority species and habitats including areas of eelgrass and the ocean quahog, *Arctic islandica*, are protected within the Fisheries Closed Areas and Restricted Areas.

Some important areas of subtidal habitat of conservation priority are not currently protected. It is therefore essential that appropriate habitat survey work is carried out as part of the Environmental Impact Assessment for offshore developments.

Areas of Special Scientific Interest are the most widely used terrestrial conservation designation and can include intertidal areas (to the low water mark). A significant proportion of Manx intertidal habitats are now designated as Areas of Special Scientific Interest. A range of other statutory and voluntary site designations are possible for coastal areas and these are presented in this chapter.

Marine invasive species are monitored in Manx waters to a limited extent, mainly by volunteers. Wireweed (*Sargassum muticum*) became established in Manx waters in 2005 and has since become widespread. The Pacific oyster (*Crassostrea gigas*) was first recorded in Manx waters in 2005 and has recently become established in Ramsey, while Darwin's barnacle (*Elminius modestus*) has been recorded from there since the mid 1950s. The carpet seasquirt (*Didemnum vexillum*) and the slipper limpet (*Crepidula fornicata*) have not yet been recorded in Manx waters.

## Baseline

The Isle of Man has a great diversity of marine and coastal habitats and high biodiversity in terms of species and ecosystems. Some aspects of Manx marine biodiversity are extremely well studied, mainly as a result of research carried out at Port Erin Marine Laboratory for over 114 years. The intertidal species and habitats of the south of the Isle of Man were particularly well studied in the past. Other aspects remain less well understood, particularly subtidal habitats, with the exception of the southern coast and the Calf, and the inshore environment. This chapter gives a brief overview of Manx marine biodiversity (aspects of subtidal ecology, coastal habitats and protected marine species are covered in dedicated chapters) and marine and coastal conservation in the Isle of Man.

Statutory marine and coastal conservation in the Isle of Man is the responsibility of the Department and Environment, Food and Agriculture (DEFA) of the Isle of Man Government. The main legislation available for protected species and habitats is the Wildlife Act 1990.

The Wildlife Act provides for the conservation of marine and coastal habitats through site protection and species protection.

The main coastal site designation in use is the Area of Special Scientific Interest (ASSI) which can extend to the low water mark. The main subtidal conservation designation in use is the Marine Nature Reserve.

Species protection is offered to a range of marine and coastal plants and animals.

The Isle of Man is also signatory to a number of international Conventions with obligations and guidance on the protection and management of other priority species and habitats.

Manx National Heritage also plays an important role in conservation, supporting biological recording and informing the public, for example through the Natural History Gallery in the Manx Museum and collections of marine specimens and historic and scientific resources. Government agencies are supported in conservation action and research by a wide array of Non-Governmental Organisations, including the Manx Wildlife Trust, Manx Birdlife, Manx Whale and Dolphin Watch and many others.

Garrad (1990) produced a comprehensive overview of the development of Manx conservation and the organisations involved which will be useful for those interested in the history of Manx conservation prior to 1972. The Manx Museum and National Trust and the Manx Nature Conservation Trust (now the Manx Wildlife Trust) played important roles in the development of conservation in the Isle of Man.

## **Wildlife Committee**

The Wildlife Committee of the Department of Environment, Food and Agriculture has a duty under the Wildlife Act 1990 to advise the Department on the administration of the Wildlife Act and in connection with the protection of birds or other animals or plants.

Plans to designate protected areas are put to the Wildlife Committee. The Wildlife Committee is made up of senior officers in the Department of Environment, Food and Agriculture and conservation specialists from DEFA and other organisations. Special scientists can be invited to join to Committee to consider particular issues. For example a number of marine scientists joined the Committee to advice on the work to designate the Ramsey Marine Nature Reserve.

## **Manx Nature Conservation Forum**

The Manx Nature Conservation Forum was formally launched in 2009. The Forum is chaired by the DEFA Minister and meets at least twice a year. The purpose of the Forum is outlined in the Terms of Reference, agreed in 2009:

1. A regular opportunity for dialogue between DEFA and other organisations
2. An opportunity to promote partnerships between Government and Non-Government Organisations and to extend joint working
3. A focus for the promotion and publicity of biodiversity conservation
4. Encouraging the dissemination of conservation research, assessing conservation status of Manx species and habitats, setting targets and monitoring progress.

The following conservation NGOs and countryside users' groups were invited to be members of the Conservation Forum and most attend meetings:

Beach Watch

Centre for Manx Studies (Liverpool University)

IOM Beekeepers Federation

IOM Farming and Wildlife Group

IOM Friends of the Earth

IOM Natural History and Antiquarian Society

IOM Woodland Trust

Mammal Society

Manx Basking Shark Watch affiliated to Manx Wildlife Trust

Manx Bat Group

Manx BirdLife

Manx Butterfly Conservation

Manx Fish Producers' Organisation

Manx Footpaths Conservation Group

Manx Game Preservation Society  
Manx Heritage Foundation  
Manx National Farmers Union  
Manx Rivers Improvement Association  
Manx Sea Matters  
Manx Society for the Prevention of Cruelty to Animals  
Manx Whale and Dolphin Watch  
Manx Wildlife Trust  
Native Oak Group  
Manx Ornithological Society  
Seasearch  
Society for the Preservation of the Manx Countryside and Environment  
Wildflowers of Mann Project a Government Partnership Project operated by Manx Wildlife Trust

For more information about the Manx Nature Conservation Forum see:

<http://www.gov.im/about-the-government/departments/environment,-food-and-agriculture/forestry,-amenity-and-lands-directorate/wildlife-and-biodiversity/manx-nature-conservation-forum/>

## **Manx Biodiversity Strategy**

The Convention on Biological Diversity (CBD) was extended to the Isle of Man in August 2012. In preparation for this, in 2011 DEFA began working with partner organisations to develop a Manx Biodiversity Strategy which was completed in draft form for public consultation in 2013.



## International Agreements and Conventions

The Isle of Man is signed up to a wide variety of international conservation conventions. Since 1950, such conventions have not been automatically applied to the Isle of Man as a UK Crown Dependency, but have required the Isle of Man to decide whether they wish the convention to be extended to the jurisdiction.

The following Multinational Environmental Agreements (MEAs) on nature conservation have been extended to the Isle of Man by the UK:

- Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) and the following agreements under the CMS:

Agreement on the Conservation of African-Eurasian Migratory Waterbirds

Agreement on the Conservation of Populations of European Bats

Agreement on the Conservation of Albatrosses and Petrels

Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas ASCOBANS

Memorandum of Understanding on Migratory Shark Species (Bonn) (applies to basking shark, porbeagle and spurdog). For more information about this: [http://www.cms.int/species/sharks/sharks\\_bkrd.htm](http://www.cms.int/species/sharks/sharks_bkrd.htm).

- Convention on the Conservation of European Wildlife and Natural Habitats (Bern(e) Convention)
- Convention on Wetlands of International Importance (Ramsar Convention)
- Convention on the International Trade in Endangered Species of Flora and Fauna (CITES)
- Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR)
- Convention on Biological Diversity (CBD or Rio convention, extended to the Isle of Man in August 2012)

The Isle of Man is not a member of the European Union and is not subjective to the EU Habitats Directive. However, other conventions which do apply to the Isle of Man such as OSPAR, the CMS and the CBD require good marine habitat protection.

## Marine Biodiversity

Despite many decades of marine research in Manx waters, we cannot currently put give a total number of marine species recorded in the Isle of Man. At the time of the publication of the Fauna of the Isle of Man (Bruce et al 1963) over 2300 marine animals had been recorded. In addition to this, 224 species of had been recorded at the time of the publication of the most recent Seaweed Atlas for the British Isles (Hardy and Guiry 2003), 128 red seaweeds, 69 brown seaweeds and 26 green seaweeds. In 2005 an additional species of brown seaweed, the invasive Wireweed (*Sargassum muticum*) was first recorded and has since become established, bringing the total number of species formally recorded to 70 brown seaweeds and 225 species in total (see Appendix 1 for seaweed species recorded in Manx waters). Some sites have been particularly well studied. For example, in dive surveys up to 1993 a total of 449 species of marine animals and plants had been recorded around the Calf of Man (Morrow et al 1993) and more species will have been recorded from the site since then. Between 1946 and 1950 Jones (1951) carried out 134 grab samples and 111 hauls within 15 miles of Port St Mary and identified more than 527 species, 75 of which were new species records. Just 10 grab samples in Ramsey Marine Nature Reserve in 2011 resulted in 260 different species being identified (Kennington 2011).

There has been a recent intensification in marine biological surveys, with the benthic surveys carried out by Bangor University, new work by DEFA and regular dive surveys by Seasearch Isle of Man.

Recent progress in biological recording, led by the Marine Biological Recording Partnership, will hopefully facilitate better marine recording and dissemination of marine survey data. It is hope that this will eventually all the compilation of a complete species list for Manx waters, and of rare, threatened and declining species.

The Subtidal Ecology Chapter (MMEA Chapter 3.3) gives a detailed account of our current knowledge of Manx marine habitats and some information on historical recording. Information about cetacean and bird diversity is also presented in the relevant chapters.



**Hotspots of biodiversity – a horse mussel reef in Manx waters encrusted with other species including a spider crab, numerous sponges, starfish, hydroids and bryozoans. Photo: Caroline and Phil Roriston.**

## Rare, threatened and declining species

More work is required to develop understanding of rare, threatened and declining species in Manx waters. In some cases, information now exists which requires further analysis. For other species groups, more survey work is required.

Sanderson (1996) lists 16 seabed species in Manx waters which are classified as Nationally Rare\* and Scarce in the UK and gives the reference for the species:

- The sponges *Stellata grubii*, *Stryphus ponderusus\**, *Tethyspira spinosa*, *Stylostichon dives*, *Plocamilla coriacea* (see Ackers et al 1992).
- The soft coral *Parerythropodium coralloides* and the anemones *Isozanthus sulcatus*, *Halcampoides elongatus*, *Mesacmaea mitchellii* and *Edwardsia timida* (Manuel 1988).
- The sea snail *Jordaniella truncatula\** (Graham 1988) now known as *Chrysallida truncatula*.
- The sea slugs *Trapania pallida* and *Aeolidiella sanguinea\** (Picton & Morrow 1994).
- The bryozoan *Hincksina flustroides\** (Hayward and Ryland 1990).
- The sea squirt *Molgula oculata* (Hayward and Ryland 1990).

- The seaweeds *Callophyllis cristata* (Irvine 1983) and *Cruoria cruoriaeformis* (Maggs and Guiry 1989).

All of the species above were identified around the south west of the Isle of Man.

The rare anemone *Edwardsia timida* was recorded from a number of new sites during the 2008 benthic survey in Manx waters (see Hinz et al 2010 and MMEA Chapter 3.3 'Subtidal Ecology').

Many other species lists and resources exist linked to rare species in Manx waters. For example, a field report by Killeen (1995) in the Porcupine Society Newsletter lists 101 mollusc species identified from one day of sampling around the south west of the Isle of Man, including the sea snail *Jordaniella truncatula*.

The OSPAR lists of Threatened or Declining Habitats and Species is a useful starting point to assess the status of threatened and declining species in Manx waters. Table 1 below gives an initial assessment of the status of some of the OSPAR Threatened and Declining Habitats in Manx waters. Table 2 gives an initial assessment of the status of some of the OSPAR Threatened or Declining Species in Manx waters.

More research and analysis of existing data would enable us to provide full assessments of each of the habitats. For information, the Isle of Man is in OSPAR Region III, the Celtic Seas (an area bounded by, on the east, longitude 5°W and the west coast of Great Britain and on the west by the 200 metre isobath (depth contour) to the west of 6°W along the west coasts of Scotland and Ireland).



**A daisy anemone (*Cereus pedunculatus*) in maerl beds in Ramsey Marine Nature Reserve. Maerl is on the OSPAR list of Threatened or Declining Habitats. Photo: J. Self, Seasearch Isle of Man.**

**Table 1: Manx occurrences of OSPAR Threatened or Declining Habitats (adapted and updated from a table in Tomlinson (2008))**

DESCRIPTION OF HABITATS	OSPAR Regions where habitat occurs	OSPAR Regions where habitats are under threat and/or in decline	Isle of Man details
Deep-sea sponge aggregations	I, III, IV, V	All where they occur	Not known to occur in Manx waters
Intertidal Mudflats	I, II, III, IV	All where they occur	Very little in IOM – mainly in and around harbours. For example in Ramsey Harbour. Also found at Derbyhaven. Significant area lost from Peel Harbour.
Maerl beds (calcareous algal communities)	All	III	Occur in a few locations around the Island: North Ramsey Bay (Veale et al 1998), off Langness and Douglas (divers/anecdotal). See Subtidal Ecology Chapter.
<i>Modiolus modiolus</i> beds (horse mussel reefs)	All	All where they occur	Reef habitats known to occur in at least 4 locations around the Island: Ballacash Channel, south of Douglas, off Langness and off Jurby. See Subtidal Ecology Chapter. In Bruce et al (1963) "Fairly common on all coarse grounds round the S. of the island, 6-33 fms., and very abundant, forming large masses on the bottom, in a narrow belt extending eastwards from about 4 mi S. of Spanish Head, 20-33 fms. (Often containing <i>Pinnotheres</i> [peacrabs]).
Intertidal <i>Mytilus edulis</i> beds on mixed and sandy sediments (edible mussels)	II, III	All where they occur	Edible mussels occur at several intertidal locations around the Island, e.g. Fenella Beach, Peel and on the Queen's Pier, Ramsey. Reported subtidally from Ramsey Bay (Veale et al 1998) and Chicken's Rock. In Bruce et al (1963): "Not common in the S. of the Island; on the rocks below the old Biological Station, outside Bradda Head, and at the Sloc. Poyllvaish. In the North, very abundant and well-grown on the Queen's Pier, Ramsey, where they often contain <i>Pinnotheres</i> [pea crabs]"
<i>Ostrea edulis</i> beds (Native oysters)	II, III, IV	All where they occur	There are historical records of oyster beds in Manx waters. Live specimens rarely recorded now in Manx waters. In Bruce et al (1963): "present in small numbers all round the island, and formerly abundant on banks round the north, especially off Maughold Head, 1939."
<i>Sabellaria spinulosa</i> reefs (Ross worm reefs)	All	II, III	Recorded in the extreme south of Manx waters. See Subtidal Ecology Chapter and Hinz et al (2010). In Bruce et al (1963): "On empty shells and shell-gravel, 25 fms., on <i>Modiolus</i> beds S. of Port St. Mary and elsewhere; on rocks and stones at LW, Port Erin and Fleshwick [Fauna, 1937].

Sea-pen and burrowing megafauna communities	I, II, III, IV	II, III	The Slender sea pen <i>Virgularia mirabilis</i> was recorded from 7 miles west of Peel in 1896 (Bruce et al 1963). There are muddy habitats/ <i>Nephrops</i> fishing grounds west of Peel with burrowing communities. More information in Hinz et al (2010) and White (2011).
<i>Zostera marina</i> (eelgrass) beds	I, II, III, IV	All where they occur	Eelgrass beds currently known from Langness Gully, south of Ramsey Bay and Garwick Bay. Historical records from Port Erin Bay. See Subtidal Ecology Chapter for more information.

**Table 2: Manx occurrences of OSPAR Threatened or Declining Species (adapted and updated from a table in Tomlinson (2008)).**

Species	OSPAR Regions where the species occurs	OSPAR Regions where the species is threatened or declining	Isle of Man details
<b>INVERTEBRATES</b>			
<i>Arctica islandica</i> (Linnæus, 1767)  Icelandic cyprine or Ocean quahog	I, II, III, IV	II	Listed in Bruce et al 1963 as <i>Cyprina islandica</i> (L.)  Present in Manx waters. Best known site off Laxey Bay but also found at many sites around the Isle of Man (see Butler 2009 and Subtidal Chapter)
<i>Nucella lapillus</i> (Linnæus, 1758)  Dog whelk	All	II, III, IV	From Bruce et al 1963: "Extremely abundant on rocks everywhere between tide-marks, usually feeding on <i>Balanus balanoides</i> . Breeding throughout the year." Localised declines have been recorded around harbours in the Isle of Man (Howe 2010). See Marine Pollution Chapter.
<i>Ostrea edulis</i> (Linnæus, 1758)  Native oyster	I, II, III, IV	II	From Bruce et al 1963 "present in small numbers all around the Island, and formerly abundant on banks round the north, especially off Maughold Head, 1939". Few recent records.
<b>FISH</b>			
* <i>Acipenser sturio</i> (Linnæus, 1758) Sturgeon	II, IV	All where it occurs	Occasionally recorded. "Single specimens at very long intervals from commercial trawlers." Bruce et al 1963.
* <i>Alosa alosa</i> (Linnæus, 1758)  Allis shad	II, III, IV	All where it occurs	Occasionally recorded. "Single specimens in herring nets off Peel, 1933-1948 and one in prawn nets off Port Erin 1960." Bruce et al 1963.
<i>Anguilla anguilla</i>  European eel	I,II,III,IV	All where it occurs	Recent surveys carried out on European eels in Manx rivers (2007 and 2010).  "In many streams; elvers in spring; young pigmented specimens in estuaries at all seasons. In shore-pools, and freshwater runnels on the beach". Bruce et al (1963).
<i>Centroscymnus coelolepis</i>  Portuguese dogfish	All	All where it occurs	No catches recorded in Irish Sea waters (AFBI 2009).

Species	OSPAR Regions where the species occurs	OSPAR Regions where the species is threatened or declining	Isle of Man details
<i>Centrophorus squamosus</i> Leafscale gulper shark	All	All where it occurs	Status in Manx waters unknown
* <i>Cetorhinus maximus</i> (Gunnerus, 1763)	All	All where it occurs	Frequently recorded in Manx waters in summer. See Basking Shark Chapter.  One of the species on the Convention on Migratory Species Memorandum of Understanding on Migratory Sharks.
* <i>Dipturus batis</i> (Linnæus, 1758) (synonym: <i>Raja batis</i> )  Common skate	All	All where it occurs	Recorded occasionally.  "Not uncommon in trawl catches." Bruce et al 1963.
* <i>Raja montagui</i> (Fowler, 1910) Spotted ray	II, III, IV, V	All where it occurs	Current status unknown.  "Common in trawl catches." Bruce et al 1963.
* <i>Gadus morhua</i> (Linnæus, 1758)–	All	II, III	No longer common in Manx waters. Approx 1 tonne per year landed commercially  "Common in trawl catches." Bruce et al 1963.
<i>Hippocampus guttulatus</i> (Cuvier, 1820) Long-snouted seahorse	II, III, IV, V	All where it occurs	No formal records in Bruce et al 1963 but some anecdotal historical records of seahorses from public.
<i>Hippocampus hippocampus</i> Short-snouted seahorse	II, III, IV, V	All where it occurs	No formal records in Bruce et al 1963 but some anecdotal historical records of seahorses from public.
<i>Lamna nasus</i>  Porbeagle	All	All where it occurs	Occasionally reported from Manx waters. No longer commercially targeted.  One of the species on the Convention on Migratory Species Memorandum of Understanding on Migratory Sharks.  "Single specimens in summer, at long intervals, off W and S coasts." Bruce et al 1963.



Species	OSPAR Regions where the species occurs	OSPAR Regions where the species is threatened or declining	Isle of Man details
<i>Petromyzon marinus</i> (Linnæus, 1758) Sea lamprey	I, II, III, IV	All where it occurs	One recorded attached to mackerel in 2005.  Lamprey are common on basking sharks in Manx waters but the species hasn't been confirmed.  "One 1919, one in herring nets off Niarbyl, 1955." Bruce et al 1963.
<i>Raja clavata</i> Thornback ray	I,II,III,IV,V	II	Occasionally caught as bycatch in queen scallop fishery (Duncan 2009).  "Common in trawl catches." Bruce et al 1963.
<i>Rostroraja alba</i> White skate	II,III,IV	All where it occurs	"Formerly taken in local target fisheries in the western Channel and Irish Sea (Isle of Man). Now extirpated from the Irish Sea." OSPAR Commission (2010).
* <i>Salmo salar</i> (Linnæus, 1758)	I, II, III, IV	All where it occurs	Salmon populations in Manx rivers are regularly monitored by DEFA Inland Fisheries staff. Main salmon rivers the Ned, the Douglas and the Sulby.  'Runs up the Sulby, Santon and Douglas rivers in autumn, net fishery Ramsey Bay and occasional fish netted in all bays of the island." Bruce et al 1963.
<i>Squalus acanthias</i> Northeast Atlantic spurdog	All	All where it occurs	No longer taken commercially in Manx waters. Small numbers taken as bycatch in queen scallop fishery (Duncan 2009).  One of the species on the Convention on Migratory Species Memorandum of Understanding on Migratory Sharks.  "Common; occasionally taken in very large numbers by trawl or in herring nets." Bruce et al (1963)
<i>Squatina squatina</i> Angel shark	II,III,IV	All where it occurs	Current status in Manx waters unknown.  "Single specimens at long intervals in trawl catches." Bruce et al 1963.
<b>REPTILES</b>			
<i>Dermochelys coriacea</i> (Vandelli, 1761). Leatherback turtle	All	All where it occurs	Between 2001 and 2011, 16 leatherback turtles were recorded in Manx waters and an additional 4 unidentified turtles. See Sea Turtles Chapter.

Species	OSPAR Regions where the species occurs	OSPAR Regions where the species is threatened or declining	Isle of Man details
<b>MAMMALS</b>			
<i>Balaenoptera musculus</i> (Linnæus, 1758) Blue whale	All	All where it occurs	Not known to occur in Manx waters.
<i>Eubalaena glacialis</i> (Müller, 1776) Northern right whale	All	All where it occurs	One recorded to the south of the Isle of Man (Reid et al 2003).
<i>Phocoena phocoena</i> (Linnæus, 1758) Harbour porpoise	All	II, III	The most common cetacean in Manx waters. See Marine Mammals – Cetaceans Chapter.  "Numerous in Manx waters esp. in summer months." Bruce et al 1963.



**An Icelandic cyprine (*Arctica islandica*) off Laxey, Isle of Man. This species is one of the OSPAR Threatened or Declining Species and is known to live for over 300 years in Manx waters. Photo: T. Nicholson.**

## Species Protection

The Wildlife Act 1990 is the legal basis for species protection in the Isle of Man. Many of the species on the schedules for protection have been protected since 1990 but there have been amendments over the years to add and remove species where appropriate.

The full list of species currently protected under the Wildlife Act 1990 can be found at:

<http://www.gov.im/categories/the-environment-and-greener-living/wildlife/protected-species/>

The marine species protected by the Act are relatively limited. Under Schedule 5 “Animals which are protected”, the following species are protected:

Basking sharks – *Cetorhinus maximus*

Seals (all species) – Pinnepedia

Turtle (marine) (all species) – Dermochelyidae and Cheloniidae

Whales (all species) - Cetacea

Under Schedule 7 “Plants which are protected” one species is protected:

Eelgrass – *Zostera marina*



**A basking shark near the Sound. Photo: F. Gell**

All birds are protected under the Wildlife Act 1990 (as amended), against intentional or reckless death, injury or removal, and their nests and eggs are also protected. Schedule 1 species receive special protection, including offences involving disturbance at the nest. A full list of Schedule 1 birds can be found the Bird Chapter of this report but examples of Schedule 1 coastal bird species include all species of terns (Sternidae) and the Manx shearwater (*Puffinus puffinus*).

Detailed information about the status of basking shark, turtles, seals, cetaceans and birds in the Isle of Man are provided in separate chapters of this report and the status of eelgrass is addressed in the Subtidal Ecology chapter.

Under some circumstances, e.g. for research or educational purposes, licences can be issued for activities that will disturb protected species or otherwise impact on them. For example, DEFA Fisheries Directorate issues licences for basking shark research, including tagging work and for filming basking sharks in the water. These licences are issued with clear conditions for the work to minimise the impact on the protected species and a requirement to provide a report on the work.

DEFA Biodiversity Officers are supported in their enforcement of the Wildlife Act by the Isle of Man Constabulary Wildlife Crime Officers who take an active role in investigating wildlife crime incidents. A number of prosecutions have been made under the Wildlife Act, particularly related to birds. As of August 2012 no prosecutions have been made in relation to marine protected species crime. Education and awareness raising are key to reducing the risk of marine wildlife crime. See also: <http://www.gov.im/dha/police/wildlife.xml>.

## Marine Site Protection

In addition to species protection, the Wildlife Act also provides a wide range of tools for site protection.

Section 27 of the Wildlife Act includes the following provision:

*(1) Where the Department, after consultation with the Wildlife Committee is of the opinion that any area of land is of special interest by reason of any of its flora, fauna, or geological or physiographical features, it may notify that fact to-*

*(a) the Department of Local Government and the Environment; and*

*(b) to every owner and occupier of any of that land.*

Such areas include Areas of Special Scientific Interest (ASSIs), Areas of Special Protection, National Nature Reserves and Marine Nature Reserves. There are a variety of other non-statutory designations applicable to the Isle of Man, including locally important Wildlife Sites and internationally recognised Ramsar Sites.

### Marine Nature Reserves

The Isle of Man has had legislation for Marine Nature Reserves (MNRs) since the Wildlife Act was introduced in 1990. In the Wildlife Act it states that:

“(1) Where, in the case of any land covered (continuously or intermittently) by tidal waters or parts of the sea in or adjacent to the Island up to the seaward limits of territorial waters it appears to the Department expedient, on an application made by the Wildlife Committee that the land and waters covering it should be managed by the Department for the purpose of-

(a) Conserving marine flora or fauna or geological or physiographical features of special interest in the area; or

(b) Providing, under suitable conditions and control, special opportunities for the study of, and research into, matters relating to marine flora and fauna and the physical conditions in which they live, or for the study of geological and physiographical features of special interest in the area, the Department may, subject to section 37(3), by order designate the area comprising the land and those waters as a marine nature reserve; and the Department shall manage any area so designated for either or both of those purposes.”

There was an initial attempt to designate a Marine Nature Reserve in 1992 (DAFF 1992). The Calf Marine Trust put forward a detailed proposal for an extensive MNR around the Calf of Man, based on a high level of scientific information from the Port Erin Marine Laboratory. A misunderstanding at the consultation stage, whereby stakeholders believed that decisions had already been made without their input, led to a group being formed to oppose the

proposal. The proposal was eventually abandoned and although conservation organisations like Manx Wildlife Trust have continued to support the idea of MNRs, no further attempt was made to establish the Calf of Man or any other site as an MPA for many years.

### **Public consultation on Marine Nature Reserves**

From 2004 onwards the Department of Agriculture, Fisheries and Forestry began to consider the best approach to conserving important marine sites. The department hosted public lectures, courses and other opportunities for stakeholders to learn more about marine conservation and Marine Protected Areas. New research and surveys were also carried out by local students, visiting scientists and in partnership with other organisations. The new research included ecological aspects of Manx waters and also social and economic issues.

For example, in 2007 a Manx BSc student at Aberdeen University (Halsall 2008), working with DAFF, carried out a postal survey of a random sample of Manx residents to gauge public support for marine conservation and Marine Protected Areas. Out of a total of 2000 questionnaires sent out, 741 responses were received, an extremely high response for a random postal survey. The majority of respondents (91%) valued the health of the marine environment very highly and were aware of its importance to habitats and wildlife and 95% of the respondents considered Marine Protected Areas to be a good idea. A large proportion (85%) of the respondents also believed that there should be a percentage of the Manx seas protected from all harmful practices (known as a No Take Zone).

In 2008, a new process to designate a Marine Nature Reserve in Manx waters was launched with the intention of involving stakeholders from the outset to achieve good community support for the site eventually selected. The main aim of the Manx Marine Nature Reserve Project was to establish the Isle of Man's first Marine Nature Reserve by the end of 2011, effectively protecting important marine habitats and species with the involvement and support of stakeholders.

In October 2008 the first public meeting about the project was held for fishermen. The meeting was attended by over 30 fishermen. In November 2008 over 130 people were invited to a full day Marine Nature Reserve Project Stakeholder Workshop to introduce the project and give key marine stakeholders the opportunity to participate at the earliest stage of the project. In total, 74 people attended representing a wide variety of marine groups, including commercial and recreational fishermen, divers, government officers involved in marine management and representatives of local conservation organisations.

Following on from these initial meetings, community meetings were held around the Island during January and February 2009. The aim of these meetings was to make people aware of the MNR project, collect local information and make contact with key stakeholders. The meetings were also an opportunity for stakeholders to raise concerns about the designation of MNRs and to ask questions. Meetings were held in Port Erin, Port St Mary, Peel, Castletown, Onchan, Douglas, Laxey and Ramsey.

In April 2009 the Wildlife Committee of DEFA approved selection criteria for Manx Marine Nature Reserves based on the OSPAR “Guidelines for the Identification and Selection of Marine Protected Areas in the OSPAR Maritime Area” which include Ecological Criteria/Considerations and Practical Criteria/Considerations (including socio-economic aspects). DEFA made an assessment of sites meeting the OSPAR Marine Protected Area selection criteria and the intention was to use a further round of stakeholder consultation to arrive at the best possible site to take forward for designation. The sites identified as candidate Marine Nature Reserves in the initial assessment against the OSPAR criteria are given in the Subtidal Ecology chapter (MMEA Chapter 3.3). See Gell and Hanley (2010) for more details.



**Marine Nature Reserve Project Stakeholder Workshop November 2008. Photo: L Hanley.**

### **Background to the designation of Ramsey Marine Nature Reserve**

The original intention of the Manx Marine Nature Reserve Project was to use the list of sites meeting OSPAR criteria as a basis for further stakeholder consultation to identify the most suitable site for the Marine Nature Reserve. However, this plan was overtaken by events and the identification of the site happened much earlier than expected.

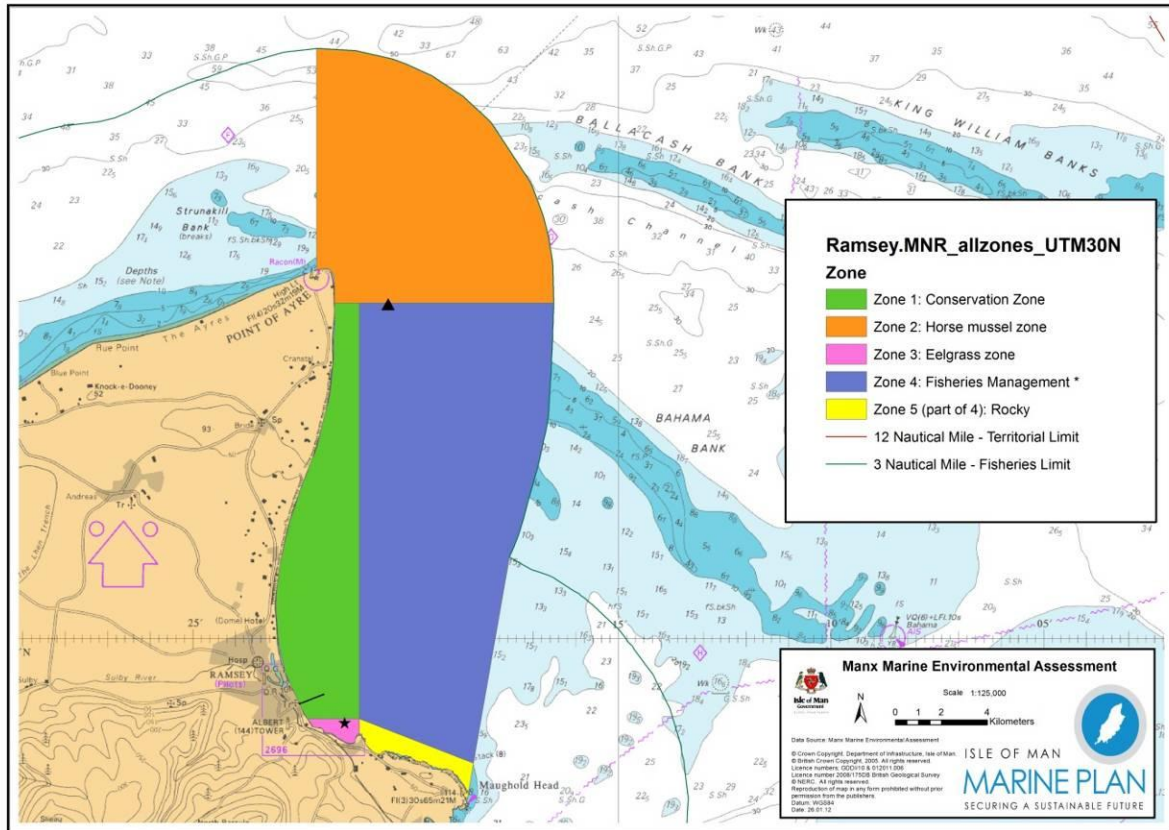
In June 2010 the Manx Fish Producers’ Organisation, which represents most of the Manx scallop industry, proposed Ramsey Bay as the Island’s first MNR. At that time Ramsey Bay was already closed to scallop fishing as an Emergency Closure and the fishermen were willing to see some of the bay closed permanently. The MFPO made some initial suggestions about combining a Marine Nature Reserve with a Fisheries Ranching Area. Further negotiation between DEFA and the MFPO resulted in a proposal for protecting part of Ramsey Bay, to include part of the maerl habitat and the eelgrass beds, and also protecting the horse mussel reef in the Ballacash Channel.

The two sites which made up the proposed Ramsey Marine Nature Reserve, Ramsey Bay and the Ballacash Channel, had already been assessed as meeting OSPAR criteria and had been suggested as candidate sites through the initial stakeholder consultation. Additional information was put together for the whole site and in August 2010 a paper went to the Fisheries Directorate Committee of DEFA where the change in process was approved from a political and management perspective. In October 2010, a paper was submitted to the Wildlife Committee of DEFA and to additional marine scientists for their technical advice. The Wildlife Committee approved the proposal from a scientific perspective. DEFA and the Manx Fish Producers' Organisation issued a joint press release in 2010 announcing the intention to work together to develop the Marine Nature Reserve ("Fisherman lead the way in Marine Nature Reserve Selection").

In December 2010 a formal consultation process was launched to get specific stakeholder input on the options for designating Ramsey Bay as a Marine Nature Reserve. The consultation closed in February 2011 and over 200 people responded formally, with many more attending drop in sessions in Ramsey to ask questions and provide information. The majority of respondents (86%) were users of Ramsey Bay, representing a wide range of commercial, recreational and interest groups. The majority of respondents (86%) supported the designation of the MNR (42% supported and 43% strongly supported). Only 1.5% of respondents said that they were opposed the MNR.

Based on the input from the consultation and the available science a zoning plan of Ramsey Marine Nature Reserve was developed. This plan was released to stakeholders in July 2011. Additional marine survey was carried out in Ramsey Bay, improving the scientific baseline for the area. The proposed zones (shown in Figure 1) were approved in October 2011 and went into immediate operation. Following input from a small group of recreational anglers, changes were proposed to the Marine Nature Reserve byelaws and these were incorporated in the final version of the Marine Nature Reserve byelaws which were approved by Tynwald in January 2012.





**Figure 1. Draft Map - The zoning plan for Ramsey Marine Nature Reserve, showing the five management zones.**

Table 3 shows the management regulations in each zone of the Marine Nature Reserve.

**Table 3. Summary of management in the MNR zones.**

Name of Zone	Location	Area (km <sup>2</sup> )	Permitted	Not Permitted
<b>Conservation Zone</b>	Inner Ramsey Bay	13.9	Potting, Angling	Trawling, Dredging, Other extraction of scallops and queenies
<b>Horse Mussel Zone</b>	Point of Ayre to Ballacash Channel	31.0	Angling	Potting, Trawling, Dredging, Other extraction of scallops and queenies.
<b>Eelgrass Zone</b>	Southern corner of Ramsey Bay (Port Lewaigue to Ballure)	0.5	Restricted bait digging, keep pots	Potting, Trawling, Dredging, Angling, any extraction of living resources
<b>Fisheries Zone</b>	Outer Ramsey Bay	47.4	Potting and Angling. Restricted Trawling, Dredging and scallop diving under MFPO and DEFA control.	Trawling and dredging not authorised by MFPO and DEFA.
<b>Rocky Coast Zone</b>	Narrow strip from Gob ny Rona to Maughold Head	1.6	Potting, Angling	Trawling, Dredging, Other extraction of scallops and queenies

**Management in all zones**

Some regulations apply to all zones in the Marine Nature Reserve. Gill-netting, long-lining, aggregate extraction, dumping of dredged material, littering, construction (unless licensed by DEFA) are not permitted anywhere in the Marine Nature Reserve.

**Conservation Zone (green in Figure 1, Table 1)**

Trawling and dredging and any other extraction of scallops and queenies are not permitted in the Conservation Zone. Potting, angling and many other activities are permitted in this area. This provides protection to maerl beds, kelp forests and other important marine habitats.

**Horse Mussel Zones (orange in Figure 1, Table 1)**

Trawling, dredging and potting are not permitted in the Horse Mussel Zone, primarily protecting the extensive horse mussel reef in the Ballacash Channel and other important habitats.

**Eelgrass Zone (pink in Figure 1, Table 1)**

The eelgrass zone has an area of 0.5km<sup>2</sup> and is the most highly protected zone in Ramsey Marine Nature Reserve. It is protected from all extractive activities with the exception of bait collection for lugworms and razorshells from 1 October to 31 March. This concession to bait collectors will be reviewed in 2014. The Eelgrass Zone is also protected from anchoring which can damage eelgrass habitats. (The anglers were concerned about losing the opportunity to dig for bait in the highly protected Eelgrass Zone so the new byelaw permits winter digging for razorshells and lugworms, as requested by the anglers until 2014 when this byelaw will be reviewed.)

**Rocky Shore Zone (yellow in Figure 1, Table 1)**

The rocky shore zone is an area which is protected voluntarily from trawling and dredging. This was offered by the Manx Fish Producers Organisation as part of their proposed responsible management of the Fisheries Management Zone. The area was negotiated with the MFPO after survey dives in July 2012 showed that eelgrass beds extend from Carrick Bay to Cor Stack.

**Fisheries Management Zone (purple in Figure 1, Table 1)**

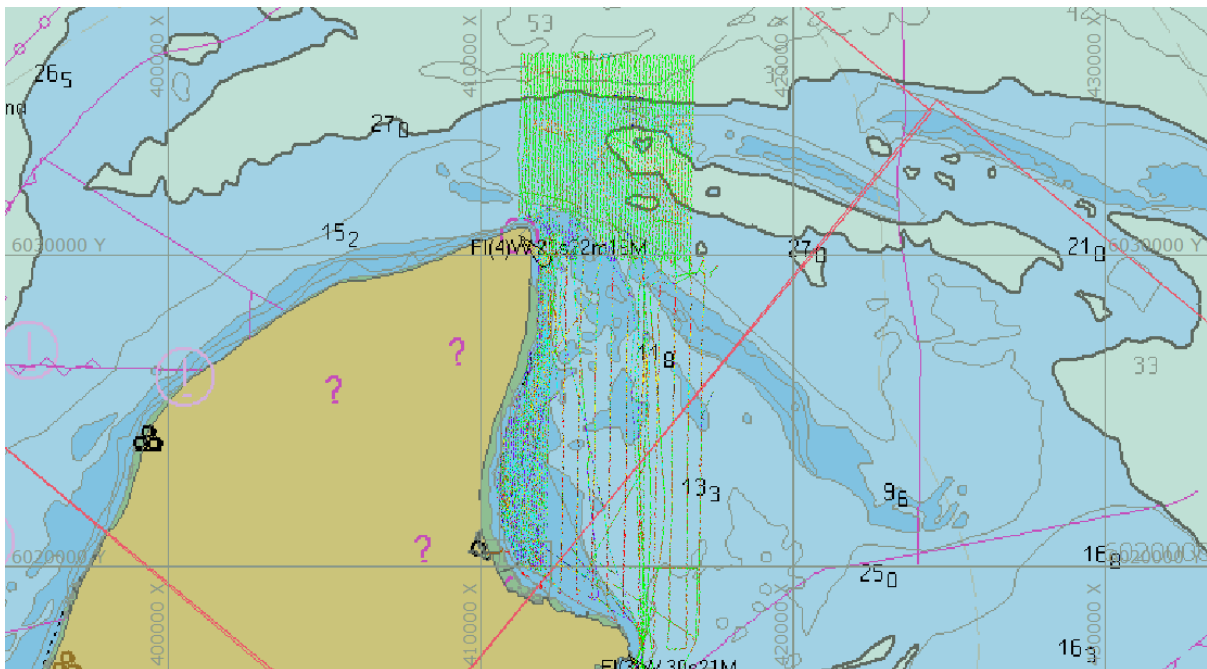
The Fisheries Management Zone is currently (July 2012) closed to scallop fishing. In future the intention is that it will be managed by the Manx Fish Producers' Organisation who will lease the seabed within the area.

ArcView shapefiles of Ramsey Marine Nature Reserve and the management zones are available from the Fisheries Directorate of DEFA.

### DEFA Habitat Surveys in Ramsey Marine Nature Reserve

Detailed benthic habitat information has been collected by DEFA (Isle of Man Government) in Ramsey Bay as part of the survey and monitoring for Ramsey Marine Nature Reserve (Kennington 2011). In August 2011, a boat-based survey from the Fisheries Protection Vessel *Barrule* used Hy-Pack ground discrimination system to map seafloor characteristics and they were ground-truthed using sledge-mounted video surveys and grab sampling. Figure 2 shows the area covered during these surveys.

Higher resolution information was collected in July 2011 by a team of volunteer Seasearch divers in collaboration with DEFA. They carried out Seasearch surveys and 50m by 3m transects, recording main habitat types and abundance of key marine species such as scallops. Four main sites were surveyed – maerl beds at the High Shellags and north of Ramsey and eelgrass beds at Port-e-Vullen and Maughold Broughs.



**Figure 2. Area covered by the Hypack Ground Discrimination Survey of Ramsey Marine Nature Reserve (from Kennington 2011). Transect distance separations are; Horse Mussel Zone = 100m, Conservation Zone = 75m, Fisheries Management Zone = 500m.**

The results of the boat-based survey were analysed for each zone of the Marine Nature Reserve. The Horse Mussel Conservation Zone was found to be dominated with a substrate of mobile sediments of medium to coarse grade sands and gravels. Dead shell (primarily horse mussel shell) was also found to be an important feature of the site. The video surveys confirmed the presence of horse mussel reefs of varying quality overlaying sand substrate. Some of the horse mussel reefs showed a high level of structural complexity and species diversity.

The Conservation Zone (inner Ramsey Bay) was found to be primarily composed of mobile sediment, varying in grade from fine sand to small stones. Around the Shellags there are also occasional rocky outcrops. Boulder clay deposits were also identified, overlain by coarse sands. Areas of kelp were common within this area. The grab samples also confirmed the presence of live maerl over significant areas. The rocky outcrops were colonised by kelp forest. Additional dive surveys revealed a high level of biodiversity in the live maerl sites.

The Fisheries Zone, in the middle of Ramsey Bay was found to be dominated by mixed sandy substrate from very fine sands to coarse sands and small stones. Occasional rocky outcrops were also identified. The associated communities included abundant soft corals (*Alcyonium digitatum*) and occasional clumps of horse mussel. Cobbles and boulders in this area were often found to be colonised by large numbers of plumose anemones (*Metridium senile*). The Rocky Shore Zone, the stretch of subtidal habitat off the Maughold Brooghs, had a mixture of rocky shore habitat dominated by kelp and sandy substrate. Video surveys and additional dive surveys revealed a substantial area of eelgrass *Zostera marina* in a narrow band on the 5-7m contour along the coast. Additional surveys revealed deeper eelgrass beds further offshore in 10-12m.

To calibrate the sediment information obtained from the ground discrimination, ten Van Veen grab samples were taken across the Marine Nature Reserve, samples of the sediment were analysed in more detail and the infauna species identified by a taxonomic expert (Salma Shalla at CMACS). In total, 260 species were identified including 82 species of worms, 59 species of crustacea, 23 species of bryozoans, 14 species of cnidaria and 11 species of echinoderms. This demonstrates a high level of diversity, considering the small volume of samples used in this study. For more information and a full species list see Kennington (2011).

Annual dive surveys are planned in Ramsey Marine Nature Reserve to monitor changes in habitat quality and abundances of scallops and other marine species.



**Ramsey Marine Nature Reserve with Maughold Cliffs and Brooghs Area of Special Scientific Interest in the foreground. Photo: F. Gell**

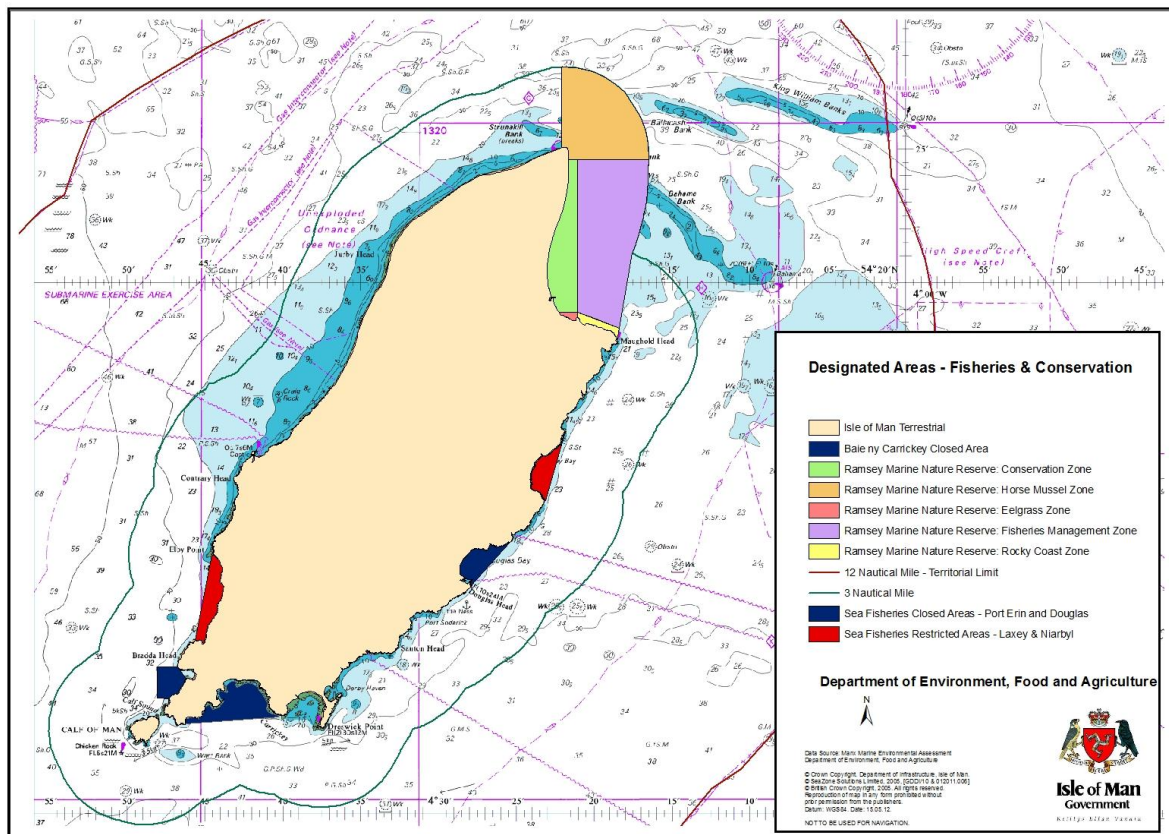


## Fisheries Closed Areas and Restricted Areas

In addition to the habitat protected within Ramsey Marine Nature Reserve under the Wildlife Act, a further four sites are protected from scallop dredging under fisheries legislation. Port Erin Closed Area was originally closed to scallop dredging in 1989 as an experimental area for the Port Erin Marine Laboratory. The area showed improvements in habitat quality and complexity (Bradshaw et al 2001) and dramatic increases in scallop densities compared to surrounding areas (Beukers-Stewart et al 2005). Crucially, after the Closed Area had been in place for some years, fishermen also saw the benefits of the area in their catches from adjacent fishing grounds.

Once fishermen realised the potential for Closed Areas to help with fisheries management, they were proactive in supporting additional closures. Douglas Closed Area was established in 2008 as a second area protected long term from scallop dredging to act as a replenishment zone to surrounding fishing grounds. In 2009, Laxey Bay and Niarbyl Bay were closed to scallop dredging as Restricted Areas, with the support of the fishing industry.

For a map of current (2013) Marine Protected Areas in Manx waters please see Figure 3.



**Figure 3. Draft Map - Marine Protected Areas in Manx waters showing Ramsey Marine Nature Reserve (multi-coloured), Port Erin Closed Area, Douglas Closed Area, Baie ny Carrickey Closed Area (all in blue) and Laxey Restricted Area and Niarbyl Restricted Area (both in red).**

**Table 4 . A summary of the Fisheries Closed Area in Manx waters. For more information see the Fisheries Chapter.**

Closed Area	Legislation	Year implemented	Restrictions	Area
Port Erin Closed Area	Sea Fisheries (Experimental Area) Byelaws 2006 (I) & Amendments in 2007 (II), 2009 (III).	1989  (extended in 2003 + 2006)	Fishing with towed gear not permitted  Scallop Closed Area	4 km <sup>2</sup>
Douglas Bay Closed Area	Sea Fisheries (Douglas Bay Closed Area) Byelaws 2008	2008	Fishing with towed gear not permitted.  Scallop Closed Area	4.5 km <sup>2</sup>
Niarbyl Restricted Area	Sea Fisheries (Scallop Ranching) (Restricted Area) Byelaws 2009	2009	Not permitted to fish Queen or Great scallops without permission	6 km <sup>2</sup>
Laxey Restricted Area	Sea Fisheries (Scallop Ranching) (Restricted Area) Byelaws 2009	2009	Not permitted to fish Queen or Great scallops without permission	4 km <sup>2</sup>
Baie ny Carrickey Closed Area	Sea Fisheries (Baie Ny Carrickey Closed Area) Byelaws 2012	2012 (and renewed in 2013)	Not permitted to fish Queen or Great scallops by any means. Temporary limitations on pot fishing.	11 km <sup>2</sup>

Laxey Bay Restricted Area currently protects an eelgrass bed and areas of the long-lived Ocean Quahog (*Arctica islandica*) from scallop dredging.

In 2010, the Manx queenie trawl fishery was assessed for accreditation by the Marine Stewardship Council. One of the conditions for the accreditation of the fishery was that statutory marine habitat protection was strengthened in Manx waters. Since then, the designation of Ramsey Marine Nature Reserve has protected significant areas of priority marine habitats. DEFA have also produced a Marine Habitat Protection Strategy (DEFA 2012).

The majority of marine areas remain undesignated and quality of marine habitats in these marine sites varies from extremely modified (for example by intense fishing activity) through to excellent examples of well established marine habitats such as horse mussel reefs that may taken tens to hundreds of years to develop. See Subtidal Ecology Chapter for more details.

See also MMEA Chapter 4.1 (Commercial Fisheries and Sea Angling) and MMEA Chapter 3.3 (Subtidal Ecology).

## Coastal Site Protection

A range of protective measures are available for conservation of terrestrial coastal sites, based on the level of importance of the site, as shown in Table 5.

**Table 5: Summary of nature conservation site protection measures on the Isle of Man (with an emphasis on terrestrial designations).**

Scale of priority for protection				
Greater priority ←		→ Lesser priority		
Ramsar Sites	National Nature Reserves (NNRs)	Wildlife Sites	Habitats in farmland and wider countryside	Improved farmland
Emerald Network Sites	Areas of Special Scientific Interest (ASSIs)			
	Marine Nature Reserves (MNRs)			
	Areas of Special Protection (ASPs)			
	Bird Sanctuaries			
Manx National Trust land – could apply to any of the above.				

### Undesignated areas

The abundance of improved farmland habitats in the wider countryside, whilst important for some species, makes it usually the lowest priority for designation as a protected area. Likewise, semi-improved habitats along the coast and in the wider countryside which don't meet the criteria for designation as a Wildlife Site are unlikely to receive special protection on the grounds of nature conservation. However, these habitats may occasionally fall within areas under the protection of Manx National Heritage (see below), and are all protected to a certain extent by agricultural codes of practice and planning regulations. It should also be remembered that some important wildlife species, such as Chough, depend on productive farmland which is subject to ordinary farming practices. These species would not normally be protected through designating their habitat but by conservation management agreements (under Section 30 of the Wildlife Act 1990). In the intertidal environment tends to be less heavily impacted than the terrestrial environment, so more examples of unmodified or lightly modified sites can be found.

### **Wildlife Sites**

This is a non-statutory designation, used widely throughout the British Isles as a site protection system which is generally operated by local planning authorities and/or the Wildlife Trusts. On the Isle of Man, Wildlife Sites are a voluntary designation, selected using criteria designed by the Manx Wildlife Trust and agreed amongst relevant organisations. Wildlife Sites can include intertidal and subtidal areas.

For further information about Manx Wildlife Sites see the Manx Wildlife Sites Handbook (Manx Wildlife Trust 2008) available at:

[http://manxwt.org.uk/index.php?option=com\\_content&task=view&id=26&Itemid=42](http://manxwt.org.uk/index.php?option=com_content&task=view&id=26&Itemid=42)

### **Bird Sanctuaries**

These sites were designated under the Protection of Birds Acts 1932 & 1955, and remain protected although this legislation has now been superseded by the Wildlife Act 1990.

The Bird Sanctuaries designated in the Isle of Man are:

- Langness, Derbyhaven & Fort Island, Malew – which includes a significant coastal area
- Ballamoar Reservoir, Patrick
- Renscault and East Baldwin
- The Willows, Ballamodha
- Tynwald Park and Arboretum, St Johns

### **Areas of Special Protection**

Areas of special protection may be designated under Section 13 of the Wildlife Act 1990 in order to extend the provision of the Wildlife Act for certain species in certain areas. The only current Area of Special Protection for Birds is the Ayres Gravel Pit.

### **National Nature Reserves (NNRs)**

Designated under Section 31 of the Wildlife Act 1990, may be on private or public land, and may be subject to protective byelaws. NNRs are likely to be of ASSI quality or higher, i.e. of national importance.

There is one National Nature Reserve in the Isle of Man, the Ayres National Nature Reserve, which includes a long stretch of coast, and important coastal and intertidal habitats. For detailed information about the Ayres National Nature Reserve see:

<http://www.gov.im/categories/the-environment-and-greener-living/protected-sites/the-ayres/>

Annual reports on species and habitat monitoring and management measures are produced for the Ayres National Nature Reserve, including numbers and breeding success of Arctic terns, little terns and sandwich terns in the area (e.g. Spencer 2010).



**Land in the ownership of the Manx National Trust** (administered as Manx National Heritage).

This land is protected under the Manx Museum and National Trust Act (1959-1982), which provides for the protection of places 'of natural interest or beauty' and places of historic interest. This includes wildlife, historic buildings and also the landscape setting and physical features within it. Whilst land owned by Manx National Heritage will not always be acquired on the basis of its wildlife interest alone (since cultural heritage and landscape setting may also be important factors), the fauna and flora of that land is protected by byelaws whether they are of local, Manx national, or international value.

### **Manx Wildlife Trust Reserves**

The Manx Wildlife Trust own a number of important wildlife sites which they manage as Reserves. Manx Wildlife Trust Reserves may meet the criteria for ASSI designation while other areas may meet Wildlife Site selection criteria. Information about Manx Wildlife Trust Reserves can be found at:

[http://manxwt.org.uk/index.php?option=com\\_content&task=view&id=57&Itemid=64](http://manxwt.org.uk/index.php?option=com_content&task=view&id=57&Itemid=64)

### **Ramsar Sites**

Ramsar Sites are internationally important wetland sites chosen according to criteria agreed by parties to the Ramsar Convention on Wetlands (1971). The Isle of Man is a signatory to this convention, and thus has an obligation to investigate potential Ramsar Sites on the Island. Such sites will be of ASSI or higher status.

The only Ramsar Site in the Isle of Man at present is a wetland (curragh) area in the north of the Island, the Ballaugh Curragh Ramsar Site. There are no coastal Ramsar Sites in the Isle of Man.

Prior to the designation of Ballaugh Curraghs Ramsar Site in 2006, Pienkowski (2005) carried out an assessment of potential Ramsar sites in the Isle of Man for Defra and identified a number of coastal and marine sites that meet Ramsar criteria.

### **Emerald Network**

Emerald Network sites are internationally important wildlife areas comparable with the European Union's Natura 2000 network. Sites consist of Areas of Special Conservation Interest designated under a recommendation of the Bern Convention (to which the Isle of Man is signatory). Thus, although not part of the EU and its Natura 2000 network (which includes Special Areas of Conservation in the UK), the Island may still designate internationally important sites at the same level. No Emerald Sites have yet been identified in the Isle of Man but if designated, these sites are likely to include the most important ASSIs on the Island, but MNRs have the potential too. In terms of UK equivalents they would be like Special Protection Areas (SPAs) as well as SACs.

## Areas of Special Scientific Interest (ASSI)

ASSIs are the main terrestrial conservation designations in the Isle of Man and are established as part of a system, or network of sites. Through the ASSI network DEFA aims to:

- ensure the survival of the full diversity of Manx plants and animals by protecting a network of sites which are important for the survival of Manx species both now and into the future;
- protect the full range of semi-natural habitats in existence today for the future use and enjoyment of succeeding generations by protecting the best examples of each habitat type; and
- maintain the selected areas in favourable conservation status.

DEFA Forestry Directorate is responsible for ASSI designation.

As part of the notification of designation pack for each ASSI there is a list of potentially damaging operations (sometimes called 'Activities requiring DEFA's consent' or 'Operations likely to damage the special interest of the site'). This is a list of the activities that the owners/occupiers of a site must apply to DEFA for consent to carry out whether it is to be carried out by them or a third party such as a developer. Applications are made on a Notice Form which is signed by the owner/occupier and returned to the Forestry, Amenity and Lands Directorate of DEFA. DEFA then has four months to consider the effect of the proposed activity on the special interest of the ASSI before deciding whether to issue a consent. If consent is refused then DEFA is obliged to offer a Management Agreement (under Section 27 of the Wildlife Act) for positive management of the land.

### An Island-based approach

The Selection Criteria have been written to fulfil the needs of wildlife conservation in the context of the Isle of Man as a Crown Dependency, with its own Wildlife Act. Sites will be selected based on what is important for the Island as a nation rather than as if it were a county of the UK.

The reasons for an Island-based approach, rather than simply using the JNCC criteria for Sites of Special Scientific Interest in the UK, are:

- the need to retain areas of habitat and populations of species that are rare on the Island, even if they are commoner elsewhere, to maintain the biodiversity of the Island;
- the isolation of the Island, resulting in limited prospects for natural re-colonisation from surrounding land masses if species are lost and become extinct here;
- because small populations are more vulnerable to extinction, therefore wider habitat protection may be needed in order to maintain a viable population;
- to ensure the protection of any species or habitats which show a distinctly Manx characteristic not found elsewhere.

The objective is to maximise the conservation of species biodiversity through protection of their habitats. Sites will therefore be considered on the basis of their Island-wide/national, British Isles or international/European importance. The aim is for the ASSI series to include at least one good example of each main semi-natural habitat type and assemblage. For very scarce and important habitats, such as saltmarsh, the majority of examples will require protection.

ASSIs can be designated on land and on inter-tidal areas down as far as Lowest Astronomical Tide Mark.

### Current ASSI list (as at August 2012)

**Table 6. Areas of Special Scientific Interest (ASSI)**

Note: \* indicates a coastal site

ASSI No.	ASSI name	Area (hectares)
1	Central Ayres*	358.34
2	Langness, Derbyhaven & Sandwick*	310
3	Jurby Airfield	63.04
4	Ballaugh Curragh	0.55
5	Ballacrye Meadow	193.4
6	Rosehill Quarry	1.37
7	Ramsey Mooragh Shore*	2.65
8	Cronk y Bing*	17.71
9	Dhoon Glen*	20.92
10	Eary Vane	3.96
11	Glen Rushen	12.27
12	Poyll Vaaish Coast*	44.76
13	Glen Maye*	15.92
14	Greeba Mountain & Central Hills	1080.95
15	Dalby Coast*	62.1
16	Ballachurry Meadows	11.9
17	Port St Mary Ledges & Kallow Point*	15.17
18	Maughold Cliffs & Brooghs*	53.63

### Baseline environmental data

Baseline data for the terrestrial environment is provided by Phase 1 and Phase 2 Habitat Surveys. The data is beneficial, but somewhat out of date, since the surveys were carried out 1991-94. DEFA is working towards a repeat survey or sample survey of the Island.

### Potential effects of developments on ASSIs and other designated sites

Potential adverse effects of development on protected sites should be assessed. For ASSIs, any activity that is listed as a Potentially Damaging Operation (see Appendix 2 of the designation documents for the particular site) requires consent from DEFA in advance of the work. This covers activities carried out by the owner or occupier but there is not currently any control over third party damage to sites. Any development or activity that is planned on

or within a protected site will require an Environment Impact Assessment and consultation with DEFA.

**Further information on ASSIs and other designated sites**

Designation documents for ASSIs are available from DEFA Forestry, Amenity and Lands Directorate and further information about ASSIs is available on the DEFA website <http://www.gov.im/categories/the-environment-and-greener-living/protected-sites/>

An ArcView shape file is available from the Forestry Directorate of DEFA for confirmed ASSIs, Ramsar Sites, Areas of Special Protection and Bird Sanctuaries.



**The shore at Niarbyl, part of the Dalby Coast ASSI. Photo: J. Cubbon.**

**Wider Irish Sea Marine Conservation**

Whilst the Isle of Man can manage species and habitats within the 12nm territorial sea, it is also important to consider the conservation of these habitats and species outside Manx

waters. The Department of Environment, Food and Agriculture works with partner organisations in surrounding jurisdictions on a variety of conservation initiatives, to ensure the wider conservation of priority species and habitats.

### **The Irish Sea Conservation Zones Project 2009-2011**

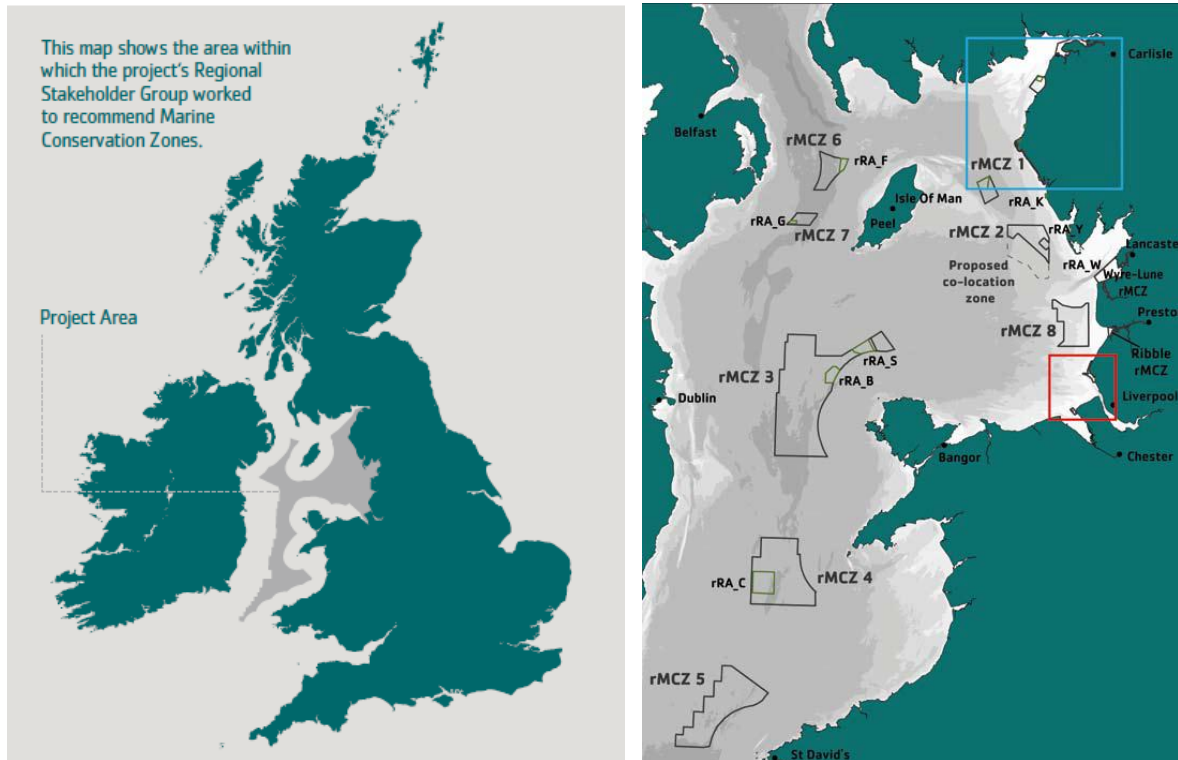
The Irish Sea Conservation Zones Project was one of the four UK regional projects set up to develop recommendations for a network of Marine Conservation Zones around the UK (outside of Manx territorial waters). The recommendations were formulated by a Regional Stakeholder Group made up of representatives of different sectors in the project area. The Isle of Man was represented on the project group by the Chief Executive of the Manx Fish Producers' Organisation and the Senior Marine Biodiversity Officer, Department of Environment, Food and Agriculture, Isle of Man Government.

The proposed Marine Conservation Zones and more highly protected Reference Areas have been put forward to the UK's Department of Environment, Food and Rural Affairs for further consideration.

The maps below (Figure 4) show the sea area of the Irish Sea Conservation Zone project and the location of the proposed Marine Conservation Zones and Reference Areas that have been put forward to Defra for consideration.

The Isle of Man actively supported the information gathering and stakeholder consultation process of the Irish Sea Conservation Zones project, assisting Liaison Officers to meet with key stakeholders and co-hosting drop-in sessions for the public. Information about Manx marine ecology and marine protection also assisted in the project, enabling a more regional approach.

For more information see: [www.irishseaconservation.org.uk/](http://www.irishseaconservation.org.uk/).



**Figure 4: Irish Sea Conservation Zone Project Area and recommended Marine Conservation Zones, reproduced from Irish Sea Conservation Zones (2011).**

In preparation for their Marine Conservation Zones work, Defra had a project to bring together relevant data: "Marine Protected Areas - gathering/developing and accessing the data for the planning of a network of Marine Conservation Zones - MB0102". The Isle of Man Government contributed funding and data to this project to ensure that Manx waters were included in the assessment of the Irish Sea. The outputs of this project are available at:

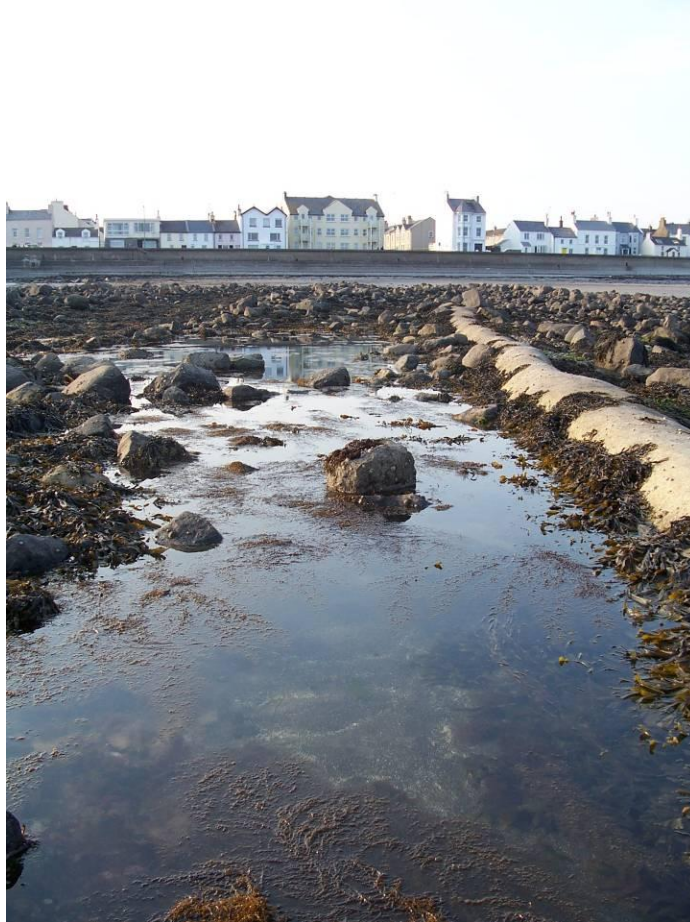
<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=16368>

## Marine Invasive species

Over the past few years DEFA have worked with local stakeholders to improve reporting and recording of marine invasive species. Non-native and invasive intertidal species are recorded as part of the work of Steve Hawkins and his team at Southampton University (see Climate Change in Manx Waters chapter). Volunteer Seasearch divers also record any invasive species observed. In 2012 marine invasive species expert Dr Elizabeth Cook, from the Scottish Association of Marine Sciences, visited the Isle of Man and carried out some rapid assessments of invasive species in harbours at Douglas and Peel but did not detect any new species.



Since Wireweed, *Sargassum muticum*, was first recorded in Manx waters in 2005, more records from around the Island have been recorded through intertidal and subtidal surveys. For example, subtidal wireweed is well established within the eelgrass bed in Langness Gully, between the harbour and the breakwater in Port Erin Bay and at many other sites. On the shore, wireweed is well established on the shore at Castletown where it was first recorded, between Niarbyl and White Beach and at many other sites.



**Wireweed (*Sargassum muticum*) in intertidal pools at Castletown in 2005. Photo: F.Gell**

Pacific oysters (*Crassostrea gigas*) were first recorded in Manx waters in 2005 on the walls of Ramsey's Stone Piers. The species still seems to be confined to the Stone Piers but a comprehensive survey has not been carried out.

Another invasive species known from the Ramsey Bay stone piers is the Acorn barnacle, or Darwin's barnacle (*Elminius modestus*) which is native to Australasia. It was first recorded from this site in 1954-55 (Crisp 1958), and subsequently surveyed a few years later (Crisp and Southward 1959). Recent preliminary evidence from a small-scale survey suggests no significant increase in abundance of this species at this location, but it has not been actively searched for elsewhere on the island, so its actual distribution is not known.

Informal surveys of harbours, marinas and coastal waters for damaging invasive species such as the carpet sea squirt *Didemnum vexillum* and the slipper limpet *Crepidula fornicata* have not resulted in records of these species but more survey work and regular monitoring

is needed. The carpet seasquirt has been a major issue in Holyhead Marina in Anglesey and subject to an expensive eradication programme. The nearest record of the slipper limpet to the Isle of Man is probably the recent recording in Belfast Lough in 2008 (Guy et al 2011).

Improved biological recording as part of the Manx Biological Reporting Partnership will improve reporting of invasive and non-native marine species and will also facilitate improve dissemination to the NBN and other UK and international databases.



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## Appendix 1

### The algae listed for Manx waters in Hardy and Guiry (2003).

Please check the original reference for details.

#### Rhodophyceae – Red Algae 128 species

<i>Ascorium venulosum</i>	<i>Dasya hutchinsiae</i>
<i>Aglaothamnion hookeri</i>	<i>Delesseria sanguine</i>
<i>Aglaothamnion sepositum</i>	<i>Dilsea carnosa</i>
<i>Ahnfeltia plicata</i>	<i>Drachiella heterocarpa</i>
<i>Antithamnion cruciatum</i>	<i>Drachiella spectabilis</i>
<i>Antithamnionella spirographidis</i>	<i>Dudresnaya verticillata</i>
<i>Apoglossum ruscifolium</i>	<i>Dumontia contorta</i>
<i>Asparagopsis armata</i>	<i>Erythodermis traillii</i>
<i>Boergesenella thuyoides</i>	<i>Erythroglossum laciniatum</i>
<i>Bonnemaisonia asparagoides</i>	<i>Furcellaria lumbricalis</i>
<i>Bonnemaisonia hamifera</i>	<i>Gastroclonium ovatum</i>
<i>Brongniartella byssoides</i>	<i>Gelidium pusillum</i>
<i>Calliblepharis ciliata</i>	<i>Gelidium spinosum</i>
<i>Calliblepharis jubata</i>	<i>Gracilaria gracilis</i>
<i>Callithamnion corymbosum</i>	<i>Grateloupia filicina</i> var. <i>filicina</i>
<i>Callithamnion granulatum</i>	<i>Halarachnion ligulatum</i>
<i>Callithamnion tetragonum</i>	<i>Halurus equisetifolius</i>
<i>Callocolax neglectus</i>	<i>Halurus flosculosus</i>
<i>Calosiphonia vermicularis</i>	<i>Halymenia latifolia</i>
<i>Callophyllis laciniata</i>	<i>Haraldiophyllum bonnemaisonii</i>
<i>Catenella caespitosa</i>	<i>Hildenbrandia crouaniorum</i>
<i>Ceramium ciliatum</i>	<i>Heterosiphonia plumose</i>
<i>Ceramium diaphanum</i>	<i>Hildenbrandia rubra</i>
<i>Ceramium shuttleworthianum</i>	<i>Holmsella pachyderma</i>
<i>Ceramium virgatum</i>	<i>Hydrolithon farinosum</i>
<i>Chondria dasphylla</i>	<i>Hypoglossum hypoglossoides</i>
<i>Chondrus crispus</i>	<i>Jania rubens</i> var. <i>rubens</i>
<i>Chylocladia verticillata</i>	<i>Laurenica obtusa</i>
<i>Coccotylus truncatus</i>	<i>Lithophyllum crouaniorum</i>
<i>Colaonema daviesii</i>	<i>Lithophyllum nitorum</i>
<i>Compsothamnion thuyoides</i>	<i>Lithophyllum incrustans</i>
<i>Corallina officinalis</i>	<i>Lithophyllum orbiculatum</i>
<i>Cordylecladia erecta</i>	<i>Lithothamnion glaciale</i>
<i>Cruoria pellita</i>	<i>Lithothamnion sonderi</i>
<i>Cryptopleura ramose</i>	<i>Lomentaria articulata</i>
<i>Cystoclonium purpureum</i>	<i>Lomentaria orcadensis</i>
	<i>Lomentaria clavellosa</i>

**Red Algae Continued**

*Mastocarpus stellatus*  
*Melobesia membranacea*  
*Membranoptera alata*  
*Mesophyllum lichenoides*  
*Monospurus pedicellatus*  
*Naccaria wiggii*  
*Nemalion helminthoides*  
*Nitophyllum punctatum*  
*Osmundea hybrida*  
*Odonthalia dentate*  
*Osmundea pinnatifida*  
*Palmaria palmata*  
*Peyssonnelia dubyi*  
*Peyssonnelia atropurpurea*  
*Phyllophora crispa*  
*Phycodrys rubens*  
*Phyllophora pseudoceranoïdes*  
*Phymatolithum calcareum*  
*Phymatolithon laevigatum*  
*Phymatolithon lamii*  
*Phymatolithon lenormandii*  
*Phymatolithon purpureum*  
*Plagiospora gracilis*  
*Plocamium cartilagineum*  
*Plumaria plumosa*  
*Polyides rotundus*  
*Polysiphonia brodiei*  
*Polysiphonia elongella*  
*Polysiphonia elongata*  
*Polysiphonia fucoïdes*  
*Polysiphonia nigra*  
*Polysiphonia lanosa*  
*Polysiphonia stricta*  
*Porphyra linearis*  
*Porphyra purpurea*  
*Porphyra umbilicalis*  
*Porphyropsis coccinea*  
*Pterocladia capillacea*  
*Pterosiphonia parasitica*  
*Pterothamnion plumula*  
*Ptilota gunneria*  
*Ptilothamnion pluma*  
*Rhodochorton purpuruem*  
*Rhodomela confervoides*  
*Rhodophysema elegans*  
*Rhodophyllis divaricata*  
*Rhodothamniella floridula*  
*Rhodymenia pseudopalmata*  
*Schizymenia dubyi*  
*Scinaia furcellata*  
*Schottera nicaeënsis*  
*Spermothamnion repens*  
*Sphaerococcus coronopifolius*  
*Sphondylothamnion multifidum*  
*Titanoderma corallinae*  
*Titanoderma pustulatum*

**Phaeophyceae –Brown Algae 70 Species**

*Acrothrix gracilis*  
*Alaria esculenta*  
*Ascophyllum nodosum*  
*Arthrocladia villosa*  
*Asperococcus bullosus*  
*Asperococcus fistulosus*  
*Botrytella micromora*  
*Chorda filum*  
*Chilionema ocellatum*  
*Chordaria flagelliformis*  
*Cladostephus spongiosus*  
*Cutleria multifida*  
*Desmarestia aculeate*  
*Demarestia ligulata*  
*Desmarestia viridis*  
*Dichosporangium chordariae*  
*Dictyopteris polypodioides*  
*Dictyota dichotoma*  
*Ectocarpus fasciculatus*  
*Ectocarpus siliculosus*  
*Elachista scutulata*  
*Elachista fuciola*  
*Eudesme virescens*  
*Fucus ceranoides*  
*Fucus serratus*  
*Fucus spiralis*  
*Fucus vesiculosus*  
*Halidrys siliquosa*  
*Halopteris filicina*  
*Halosiphon tomentosus*  
*Halothrix lumbricalis*  
*Herponema velutinum*  
*Himanthalia elongata*  
*Hincksia hincksiae*  
*Hincksia granulosa*  
*Isthmoplea sphaerophora*  
*Laminaria digitata*  
*Laminaria hyperborea*  
*Laminaria saccharina*  
*Laminariocolax tomentosoides*  
*Leathesia diffornis*  
*Leptonematella fasciculata*  
*Litosiphon laminariae*  
*Mesogloia vermiculata*  
*Mesogloia lanosa*  
*Microspongium immersum*  
*Myrionema strangulans*  
*Pelvetia canaliculata*  
*Petalonia fascia*  
*Petalonia zosterifolia*  
*Punctaria plantaginea*  
*Pylaiella littoralis*  
*Ralfsia verrucosa*  
*Saccorhiza polyschides*  
*Sargassum muticum\** (not in ref but recorded in 2005)  
*Sauvageaugloia griffithsiana*  
*Scytosiphon lomentaria*  
*Sorapion simulans*  
*Sphacelaria caespitula*  
*Sphacelaria cirrosa*  
*Sphacelaria plumosa*  
*Sphacelaria plumula*  
*Sphaerotrichia divaricata*  
*Sporochnus pedunculatus*  
*Spongonema tomentosum*  
*Stictyosiphon soriferus*  
*Stictyosiphon tortilis*  
*Stypocaulon scoparium*  
*Taonia atomaria*  
*Tilopteris mertensi*

## **Chlorophyceae – Green Algae (26 species)**

*Acrosiphonia arcta*  
*Blidingia minima*  
*Blidingia marginata*  
*Bryopsis plumosa*  
*Chaetomorpha linum*  
*Chaetomorpha melagonium*  
*Cladophora pellucida*  
*Cladophora sericea*  
*Cladophora rupestris*  
*Codium fragile subsp. tomentosoides*  
*Enteromorpha compressa*  
*Enteromorpha intestinalis*  
*Enteromorpha linza*  
*Enteromorpha muscoides*  
*Epicladia perforans*  
*Eugomontia sacculata*  
*Monostroma grevillei*  
*Ostreobium quekettii*  
*Phaeophilia dendroides*  
*Prasiola stipitata*  
*Rhizoclonium riparium*  
*Rhizoclonium tortuosum*  
*Spongomorpha aeruginosa*  
*Ulothrix flacca*  
*Tellamia contorta*  
*Ulva lactuca*