



Harbour porpoise *Phocoena phocoena*



Biodiversity Action Plan

Background

The harbour porpoise (*Phocoena phocoena*) is the smallest cetacean found in Manx waters and the only species which is resident year-round. It is monitored by the voluntarily run charity Manx Whale and Dolphin Watch (MWDW) who have collected data on this species and other cetaceans since 2006.

Description

The harbour porpoise is one of the smallest cetacean species worldwide, and the smallest found in the waters of the British Isles with an adult size of around 1.5m. They are a continental shelf odontocete of northern hemisphere temperate waters usually observed in small groups of 1-3 individuals. They have a dark grey dorsal surface, a white ventral surface, small triangular dorsal fin, and rounded head with no beak. They are timid and often shy away from boats.

British Isles Distribution

The harbour porpoise is the most frequently observed cetaceans in British and Irish waters (Evans et al., 2003), and are found in all coastal waters throughout the region. They appear to follow a general distribution pattern of increased relative abundance moving northwards up the west coast of Britain through the Irish Sea (Goodwin and Speedie, 2008).

Isle of Man Distribution and Population

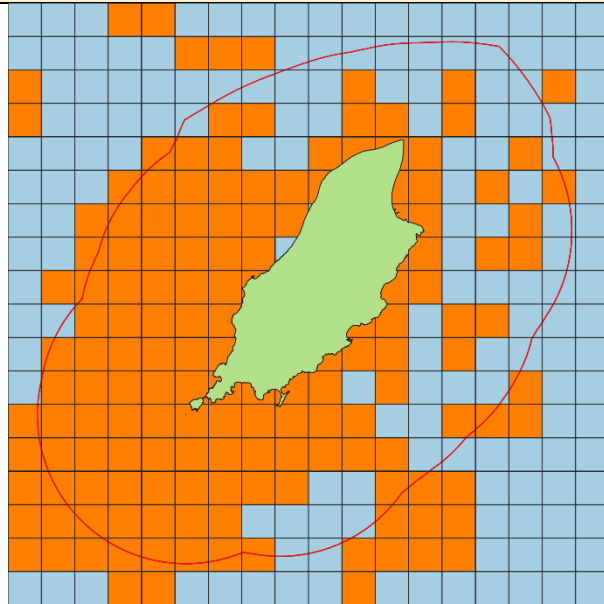


Figure 1: Harbour porpoise sighting presence from boat-based sightings and public sightings reported from 2006-2022 in Manx waters.

Through the surveys of MWDW since 2006 it has been established that the harbour porpoise is the most commonly sighted cetacean species in Manx waters. There is no indication of a change in the harbour porpoise status around the Isle of Man whilst being studied by MWDW. The species is observed all year round throughout Manx waters, with potential hotspots seen in some locations such as Port St Mary.

MWDW surveys between 2006 and 2009 provided a population estimate of around 900 individuals in Manx waters. This population estimate has not been updated since so current numbers and trends are unknown. Anecdotally there is no dramatic change though estimating abundance is challenging due to low detection probability in the species. Harbour porpoise individuals per unit effort (IPUE) calculated from boat-based surveys in Manx waters fits in to the pattern of relative abundance of the UK.

Habitat Range and Site Fidelity

Due to their high metabolic rate, it is likely that prey distribution strongly influences porpoise habitat range and usage. In Manx waters the site fidelity of harbour porpoise is not known, and the habitat

range of the species is unclear. Therefore, it is not known whether the species usual range extends far outside of Manx waters and if there is regular or limited mixing between Manx porpoises and those using nearby areas such as Wales and Ireland. Studies of stranded porpoises around the British Isles indicate a genetic blending from southwest to northeast suggesting a level of interaction rather than discrete population clusters (Fontaine et al., 2017).

Ecology - Diet

Literature suggests the diet of the harbour porpoise in the waters of Scotland is predominantly whiting and sand eels along with smaller proportions of many other species such as cod, haddock, herring, and mackerel (Santos et al., 2004). There have been no diet studies in Manx waters, so it is unknown the proportional importance of their prey species here. The fish species composition is similar in Manx waters to the rest of the British Isles, so it is likely that the same species are of importance in the diet here.

Commuting

Harbour porpoise are not known to undertake long-distance migrations. There is likely to be some seasonal movement around the coastal waters linked to prey availability but as noted in habitat range and site fidelity the extent of this is unclear.

Breeding

As harbour porpoise are present in Manx waters year-round the area must be used for mating, birthing, and the rearing of calves. Around 20% of sightings are with calves or juveniles. Calving takes place around spring-summer, with the peak of observations of porpoises with calves during July surveys.

Legal protection

Under international conventions the harbour porpoise is listed on Appendix II of CITES and Appendix II of the Bern Convention. It is also covered by the Bonn Convention under the terms of the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) which was extended to the Isle of Man in 2017.

Harbour porpoise, and all cetaceans, are protected by Manx law under Schedule 5 of the Manx Wildlife Act through which it is an offence to intentionally or recklessly kill, injure, take, or disturb any scheduled species.

Threats

Current factors affecting this species may include:

Physical Disturbance

By-catch in fishing nets, particularly gill nets, is thought to be the single biggest direct threat to this species currently. There is unlikely to be a large effect from gill net by-catch in Manx waters due to the lack of a gill net fishery. There is a pair trawl which operates in Manx waters which does have the potential for porpoise by-catch.

Acoustic Disturbance

Harbour porpoise are sensitive to noise disturbance, almost exclusively showing evasion reactions and can be temporarily displaced from locations based on high levels of noise such as seismic surveys and pile driving. Marine mammals can also be affected by temporary or permanent auditory threshold shifts on exposure to loud noise and masking of biologically important sounds (prey and conspecifics) due to chronic noise such as ship traffic. Small odontocetes have been seen to show lateral spatial avoidance to seismic airguns (Stone and Tasker, 2006).

Chemical Pollution and Marine Litter

Due to their typically near shore distribution and high trophic level harbour porpoise are exposed to land and coastal sources of pollution and subject to bioaccumulation. They are subject to immunotoxic effects of chemical such as PCBs which accumulate and increase the risk of infectious disease mortality (Jepson et al., 2005). Harbour porpoise have been known to ingest marine debris in the UK (Baulch and Perry, 2014). Limited testing of a few harbour porpoise strandings on the Isle of Man shows no levels of concern for heavy metals or polycyclic aromatic hydrocarbons (PAHs) in the samples tested (Fox and Howe, 2016).

Habitat Degradation

Any effects of habitat degradation are likely to be felt through consequent changes to prey range, availability, and quality.

Prey Changes

Harbour porpoise are likely to be highly dependent on prey distribution due to their high consumptive needs. Any changes in prey density or distribution in Manx waters is likely to have large effects on the porpoise population in the area. Porpoises have a high metabolic rate and have been known to switch to less favourable prey species when one declines (e.g., sand eels) and not switch back with local recovery of the preferred prey.

Climate Change

Climate change may not directly affect porpoise distribution around the Isle of Man, but any effects will likely be felt through consequent changes in prey distribution and abundance.

Reason for BAP

As top marine predators cetaceans are good ecosystem indicators. Though only five cetacean species regularly use Manx waters there are aspects of their ecology which are poorly understood and they face numerous threats.

Aims

The aim of this BAP is to ensure the ongoing monitoring of harbour porpoise as an internationally protected species and as part of the Manx cetacean community with ambitions to improve knowledge gaps wherever possible.

Linked BAPS

Delivery Plan	
Action	Lead
Land-based surveys <ul style="list-style-type: none"> Ongoing use of the same survey sites to allow continuity of data collection and possible detection of any long-term population changes 	MWDW
Boat-based surveys <ul style="list-style-type: none"> Continuation of ad hoc surveys whenever possible Re-introduction of line-transect surveys throughout Manx territorial waters to generate population estimates 	MWDW
Public sightings scheme <ul style="list-style-type: none"> Continued collection of public sightings to maintain long-term dataset, and increased awareness of species identification and reporting 	MWDW
Acoustic surveys <ul style="list-style-type: none"> Introduce towed-hydrophone surveys alongside transect surveys to generate population estimates 	MWDW
Photo-identification study <ul style="list-style-type: none"> The 600mm lens will allow photo-identification from land with the aim to conduct a photo-identification study of harbour porpoise site use 	MWDW
Strandings <ul style="list-style-type: none"> Continued monitoring of strandings More in depth sampling for chemical contamination of strandings throughout seasons and age classes – harbour porpoise are important to monitor as the only resident cetacean species in Manx waters and should be tested in such a manner as to allow comparison to samples from around the British Isles 	MWT/DEFA

References

- Baulch, S., Perry, C., 2014. Evaluating the impacts of marine debris on cetaceans. *Mar. Pollut. Bull.* 80, 210–221. <https://doi.org/10.1016/j.marpolbul.2013.12.050>
- Evans, P.G., Anderwald, P., Baines, M.E., 2003. UK cetacean status review. Rep. Engl. Nat. Countrys. Counc. Wales UK.
- Fontaine, M.C., Thatcher, O., Ray, N., Piry, S., Brownlow, A., Davison, N.J., Jepson, P., Deaville, R., Goodman, S.J., 2017. Mixing of porpoise ecotypes in southwestern UK waters revealed by genetic profiling. *R. Soc. Open Sci.* 4, 160992. <https://doi.org/10.1098/rsos.160992>
- Fox, L., Howe, L., 2016. Dead marine megafauna strandings annual report 2016. Manx Wildlife Trust.
- Goodwin, L., Speedie, C., 2008. Relative abundance, density and distribution of the harbour porpoise (*Phocoena phocoena*) along the west coast of the UK. *J. Mar. Biol. Assoc. U. K.* 88, 1221–1228. <https://doi.org/10.1017/S0025315408001173>
- Jepson, P.D., Bennett, P.M., Deaville, R., Allchin, C.R., Baker, J.R., Law, R.J., 2005. Relationships between polychlorinated biphenyls and health status in harbor porpoises (*Phocoena phocoena*) stranded in the United Kingdom. *Environ. Toxicol. Chem.* 24, 238–248. <https://doi.org/10.1897/03-663.1>
- Santos, M.B., Pierce, G.J., Learmonth, J.A., Reid, R.J., Ross, H.M., Patterson, I. a. P., Reid, D.G., Beare, D., 2004. Variability in the diet of harbor porpoises (*Phocoena phocoena*) in Scottish waters 1992–2003. *Mar. Mammal Sci.* 20, 1–27. <https://doi.org/10.1111/j.1748-7692.2004.tb01138.x>
- Stone, C.J., Tasker, M.L., 2006. The effects of seismic airguns on cetaceans in UK waters. *J. Cetacean Res. Manag.* 8, 255.