Living Shetland

Action for Shetland's Biodiversity

Species Action Plan

'Harbour Porpoise'

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May 2004

Species Action Plan

Harbour porpoise *Phocoena phocoena*

Species profile

UK B/D status
UKBAP Priority species

UK lead partners
Joint Nature Conservancy Council

Shetland status
The harbour porpoise is common in Shetland coastal waters and found year-round.

Relevant HAP's
Marine BAP

Statutory Protection
International protection

CITES, Appendix II (Appendix I in EU), Bonn Convention– Appendix II, Bern Convention – Appendix II, EU Habitats Directive – Annex II & IVa, ASCOBANS (Agreement on the Conservation of Small Cetaceans of the Baltic and North Sea)

National protection

Wildlife & Countryside Act 1981 – Schedules 5 & 6, Nature Conservation (Scotland) Act 2004,

Current Status

UK status
Estimating populations of harbour porpoises using UK waters is problematic because of their considerable mobility. However, a 1994 census of the North Sea and adjacent waters (known as SCANS) estimated the UK population to be 341,366 animals and noted that harbour porpoises were most densely concentrated around the Northern Isles where the estimated abundance was 24,335 porpoises, the area having the highest overall density (animals per km^2) of 0.784. Anecdotal reports from Shetland fishermen and other local folk indicate that porpoises were more abundant prior to the 1970's than currently observed, possibly reflecting a decline in sandeel and herring stocks in the North Sea, North Atlantic, and Baltic Seas.

Concern over recent declines in the population of harbour porpoises in the North Sea, North Atlantic and the Baltic Sea as a consequence of human activities, has led to a number of agreements and directives providing protection to the species and its habitats. However, the effective implementation of these measures has been constrained by a basic lack of understanding of the animal's ecology and difficulty of monitoring.

Local status
Land-based surveys by the Sea Watch Foundation in the early 1990s (Evans, 1996) and more recently by the Shetland Sea Mammal Group (Fisher *et al*., 2001) have indicated that Shetland has one of the largest concentrations of harbour porpoise in European coastal waters. The precise number using coastal waters is difficult to census because of their small size and often 'shy' and elusive nature, which makes them difficult to observe. This lack of information on numbers is also compounded by the fact that individuals are rarely distinguishable to the human eye and therefore little is understood regarding their movements or their home range. The Shetland population may be reproductively isolated from the Scottish mainland and Norwegian / Danish populations.

A combination of land-based observations and acoustic monitoring in Shetland indicates that the group size and abundance of harbour porpoises in coastal waters increases seasonally. Peak numbers were recorded from March to November and porpoises with calves tend to move into coastal waters during July and August (P.Evans)

Culture and Folklore.

Jakobsen in his Dictionary (compiled from fieldwork carried out in Shetland in 1893-5) lists neesick (he spells it nisek) deriving form the Old Norse hnísa (sneeze): the porpoise, and compares it to the Norse word nisa and Faroese nísa.

They were also known locally as 'pig-fish', due to the grunting noise they produce when they surface for air.

Years ago, porpoises were shot by fishermen as they used to herd fish away from the fishing boats. They were also hunted on a small scale by Shetlanders and used oil rendered from their blubber as fuel for lamps.

Ecology & Management

The harbour porpoise (*Phocoena phocoena*, local name *'neesick'*) is the smallest and most numerous of the cetaceans found in north-western European continental shelf waters. Adults are between 1.3 – 1.8 m in length, and calves (newborns) are 0.6 - 0.8m. They are distinguished from other cetacean species by a blunt head, and small triangular dorsal fin. Porpoises rarely bow-ride or breach and often display elusive behaviour around boats. They can live up to the age of 17-18 years old, though records show that they can live up to the age of 23.

Harbour porpoises are seasonal breeders, although it is unknown where in Shetland breeding occurs. Their peak mating period is in July and August and the peak calving month is June. Females attain sexual maturity at about 5 years old and on average, the female produces one offspring every 1-2 years (Evans, 1997).

Porpoises lie at the top of the marine food chain and can thus be considered key indicators of the health of the inshore marine environment. Like other cetaceans, they are heavily reliant on active echolocation (animals emitting sound waves and listening to the echo in order to locate objects or navigate) for prey capture, communication and possibly for navigation. This makes them vulnerable to acoustic pollution in their marine environment.

The harbour porpoise's diet consists of shoaling pelagic and semi-pelagic fish as well as invertebrates found by "grubbing" around on the seabed. Feeding habits appear to vary on a wide geographical scale as well as regionally and seasonally with most studies examining the stomach contents of stranded animals.

Current Factors Causing Loss or Decline

Incidental capture (bycatch) is considered to be the most significant threat to UK harbour porpoise populations, particularly from bottom-set gill nets causing entanglement and eventual drowning. (This problem is particularly related to bottom-set gillnets when porpoises forage at or near to the seabed). This and over-fishing of commercial fish prey species (e.g. herring and sandeels) have been suggested as factors causing declines in North Sea, North Atlantic and Baltic harbour porpoise populations. In addition to this, there is an unknown impact from fisheries, in particular trawling on marine benthic habitats

Acoustic Disturbance is considered to be having a significant impact on harbour porpoise populations and may, particularly, be affecting overall range and localised use of available habitat. Disturbance from oil and gas exploration, ships' propellers and echosounders in busy sea lanes and around aquaculture sites, the development and installation of offshore renewable technology, from seal scaring devices at fish farms, and from the use of military equipment all impact on harbour porpoise utilising coastal habitats

Physical disturbance from recreational activity and vessel strike (although may be unlikely due to their elusive behaviour around boats and the relative lack of very fast large vessels) may also have an impact on harbour porpoises utilising coastal habitats

Siting of marine developments - such as salmon farms or renewable energy units, may have a direct impact on harbour porpoises, displacing them from favourable habitat for feeding and other behaviours. In particular, the use of acoustic deterrent devices developed to deter seals from salmon farms can potentially also affect non-target species such as harbour porpoise (and also otter *Lutra lutra*). There has been no study to assess the cumulative impact of marine development on marine mammals over larger areas (e.g. whole voes or sounds), and this will be partly addressed in the near future through the development of a Coastal Zone Management Plan.

Pollution is considered to be a significant threat, potentially suppressing harbour porpoise immune functions resulting in increased susceptibility to infectious disease mortality. Pollution may also potentially affect breeding success and thus, recruitment to the population. The main pollutants believed to be affecting porpoises and other cetaceans at present are chlorinated hydrocarbons (from unintentional oil spills), brominated flame-retardants (Chemicals using bromine to prevent fabrics burning, T.V's, computers, and other equipment from burning – toxic to the immune system and can affect behavioural development) and organic tin compounds (Such as TBT – used as an anti-foulant on boat hulls to eradicate barnacles).

Marine litter includes a huge range of discarded inorganic debris for example plastic bags and bottles, as well as discarded fishing gear. When ingested, this may result in death through starvation or internal injury. Entanglement may take place in different ways resulting in external injury and asphyxiation. Sources of marine litter are derived from sea-faring vessels, land-based sources, and offshore installations.

Reduced prey availability due to sea temperature rise, changing ocean currents, and other climatic factors, which may also affect porpoise distribution and abundance. As harbour porpoises are opportunistic feeders, they may change their diet, or alternatively move further away to more favourable feeding grounds within their geographical range.

Current Action.

Consultation Scottish Natural Heritage (SNH) is formally consulted on all proposed developments in the marine environment. SNH will consult with other organisations (e.g. Shetland Biological Records Centre (SBRC), RSPB, Shetland Sea Mammal Group (SSMG) and Sea Mammal Research Unit (SMRU)) to ensure that it has the most current information with regard to cetaceans. SNH will then advise the Council, other regulatory bodies or developers on the most appropriate decision to be taken. They will also advise on location, timings and use of any equipment. For example salmon farmers are required to ask the Council for permission before installation of use of Acoustic Deterrent Devices (ADDs). ADDs with outputs that are greater than 150db are not recommended and developers may also require a licence from the Scottish Executive if the proposed location is in an area important for cetaceans or adjacent to a SAC designated for seals, otters or cetaceans.

Developments Larger developments may also be required to undertake an Environmental Impact Assessment (EIA) that may include specific study of possible impacts on cetaceans. For example, a recent study was to assess the effect of the Stingray tidal power generator on porpoise habitat use.

SSMG submit records to national organisations e.g. Seawatch Foundation to assist with national monitoring of porpoise numbers.

KIMO Locally based International environmental organisation KIMO has undertaken a number of campaigns and projects with the aim of reducing pollution within the Northern Seas. A current project "Fishing for Litter" aims to remove large pieces of debris from the sea and thus may reduce the amount of old fishing net that could potentially cause entanglement of porpoises.

Post-mortem studies of cetacean corpses are carried out on stranded animals to determine the cause of death and animal condition at the time of death.

UK Small Cetacean Bycatch Response Strategy. There are no actions that apply to Shetland waters at present, mainly because the gill-net fishery is not very big here, but it could tie in with voluntary initiatives in the future (see Appendix I). A WDCS/Greenpeace report has published a report on bycatch. It addresses the problem caused to cetaceans and looks at mitigation of bycatch through offering solutions, as well as trials being undertaken, gear modification, and associated legislative tools. The main recommendation is the use of pingers on bottom set nets.

ADD's A research project due to start in 2004 by SMRU & SNH plans to look at the impacts of ADDs on non-target species. The Nature Conservation (Scotland) Act 2004 and amendments to the Habitats Regulations will strengthen the protection given to cetaceans outwith designated sites.

A SCANS survey has been planned for 2005. They will be attempting to cover a much greater area of coastal waters, using planes for aerial surveys where they can't get close enough to shore with their survey boats.

National campaigns to raise awareness of harbour porpoises and other cetaceans, and to promote conservation requirements are undertaken by several UK non-governmental groups, including:

- Whale and Dolphin Conservation Society
- Sea Watch Foundation
- Marine Conservation Society

Action Plan Objectives, Targets and Actions

Reduce the level of incidental bycatch of harbour porpoises and other cetaceans by:

- Working alongside local fisheries to highlight the problem of bycatch and encourage them to report bycatch to determine the precise scale and details of the problem. SSMG
- Introduce closed seasons/areas where the problem is highly seasonal in particular areas.
- Reduce net soak time in porpoise rich areas.
- Promote the use of impartial observers to monitor the Shetland bycatch situation.

Work with SSMG and other interested and relevant parties to encourage appropriate information collection. Some data may contribute to the designation of a harbour porpoise SAC in Shetland waters. The groups need to ensure that people know what they are doing, why they are doing it, and the importance of such data collection. Acoustic survey techniques, based on the detection of porpoise sonar 'clicks', offer the potential to overcome many of the problems associated with visual surveys and monitoring of harbour porpoise populations. SSMG

Work with relevant agencies and industries to minimise the impact of developments on harbour porpoises. Some suggestions are given in Appendix II. SNH

In conjunction with SSMG and Shetland Islands Tourism, develop a best practice guide for boat owners and recreational users to reduce disturbance to porpoises in Shetland. Encourage adoption of DETR guidelines "Minimising disturbance to cetaceans from recreation at sea" by local maritime users. SSMG

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