

Megafauna hotspots

The missing link in our network of Marine Protected Areas



Spatial protection for
whales, dolphins,
porpoises and basking
sharks recommended by
The Wildlife Trusts





Basking shark, Kat Brown

Introduction

The seas around the UK are home to a biologically diverse array of marine species and habitats. Of the large marine megafauna, we have 29 species of whale, dolphin, porpoise (known collectively as cetaceans) and the second largest shark in the world – the basking shark. This report will consider where we have long-term datasets to enable us to make recommendations regarding the designation of Marine Protected Areas (MPAs) within English, Secretary of State and Welsh waters. Currently there are no areas of English waters protected for them, and only one in Wales. We want to change that.

The need for protection

Historical records¹ show that whale, dolphin, porpoise and basking shark populations are significantly lower than they once were^{2,3}. Today, thanks to ever

increasing development of the marine environment, the array of potential threats is even greater.

Conserving whales, dolphins, porpoises and basking sharks requires a knowledge and understanding of their life history, population ecology, migration routes, breeding and mortality. Direct measures to reduce the impacts of fishing, drilling or pile driving on mobile species are reasonably well accepted. But spatial protection, such as MPAs, has always been considered controversial.

In general, MPAs alone are unlikely to be an appropriate conservation tool for animals which frequently range across large areas of sea⁴. However, there is increasing evidence that MPAs in areas of high productivity can be important for specific life stages such as mating, pupping or nursing, or activities such as feeding, and if they fit into a framework of ecosystem-based management, they

can contribute to the protection of wide-ranging species.

It is widely recognised that MPAs, whether individual or part of a network, should be developed within a framework of ecosystem-based management⁵. Hoyt, (2011)⁶ states that “*Networks of marine protected areas, if well organised as part of ecosystem-based management to protect the critical habitat of cetaceans would ideally form the centrepiece for cetacean conservation*”.

Table 1 (right) provides a brief synopsis of a selection of MPAs designated because of the high productivity of the area and/or the concentration of wildlife. These are not isolated examples showing that it is possible to protect wide-ranging species with MPAs. A directory⁷ of marine areas and sanctuaries important as cetacean habitat (derived largely from Hoyt, 2011) lists over 900 entries.

Benefits of spatial protection

In Europe, the principle that wide-ranging species could and should be protected via protected areas was established with the adoption of the EU Habitats Directive⁸ in 1992, following years of discussion and negotiation.

Article 3 of the Directive requires that a European-wide ecological network of protected areas is identified comprised of habitats listed in Annex I to the Directive and the habitats of species listed in Annex II. Several of the terrestrial and marine species listed in Annex II can be considered “wide-ranging”, including brown bear, two lynx species, Eurasian or grey wolves, Arctic fox, bison, otter, a number of seal species, green and loggerhead turtles and bottlenose dolphins and harbour porpoises. While it may not be possible to protect these species’ entire range, it is certainly envisaged that habitats important for them should be included in the Natura 2000 network. Indeed Article 4 states “For animal species ranging over wide areas these sites shall correspond to the places within the natural range of such species which present the physical or biological factors essential to their life and reproduction”.

Inevitably the value and success of any protected area depends on the management measures implemented within it, and also on the timescales for measurement of change. While little work has been undertaken to empirically evaluate the benefits of the designation of MPAs for highly productive areas and wide-ranging species, a recent report assessing the results of the Banks Peninsula Marine Mammal Sanctuary, South Island, New Zealand, found that restrictions on gill netting in the reserve had resulted in an increase in the annual survival of Hector’s dolphins between 1986 and 2006. The corresponding increase in population growth was six per cent⁹. Large marine animals reproduce slowly, and stabilisation or improvements in populations may only be seen on decadal scales.

These MPAs benefit other species besides cetaceans. Recently, marine sanctuaries have been declared to protect pelagic species, in particular populations of sharks and other threatened elasmobranchs. Rather than focus on areas of high productivity or diversity, these sanctuaries simply seek to eliminate the primary threat. In national waters they use area-based management to ban the exploitation of sharks, and possession

Table 1:
MPAs already designated around the world



Gerry E. Studds Stellwagon Bank National Marine Sanctuary, 1992

This is an area of high productivity as a result of upwelling of nutrient-rich water from the Gulf of Maine being forced over the bank at the mouth of Massachusetts Bay. It is an important feeding area for endangered North Atlantic right whales, along with humpback, fin, and minke whales. Dolphins, and porpoises and seals are also recorded from the area along with sea turtles, seabirds, basking sharks, and a range of commercial fish species.

Pelagos Sanctuary for Mediterranean Marine Mammals, 1999

One of the first examples of an MPA based on a highly productive pelagic ecosystem. Identified for its cetacean populations, it has a permanent frontal system which concentrates primary productivity, along with high krill and zooplankton biomass. In turn this provides food for a rich pelagic diversity including one baleen whale and seven toothed whale/dolphin species, elasmobranchs (sharks and rays) and large fish such as tuna, swordfish and sunfish. Cetaceans use the area for feeding, breeding and migrating. A management plan for the MPA was adopted soon after the Sanctuary was designated.

The Gully Marine Protected Area, 2004

A highly productive and biodiverse submarine canyon on the Scotian Shelf off Eastern Canada. It is critical habitat for northern bottlenose whales, which are generally found in the central upwelling waters, but forage along the Scotian shelf too. The area is used as a feeding and mating/breeding area for at least seven other cetaceans.

Southwest Crete-Hellenic Trench Marine Protected Area, 2007

Agreed in principle by ACCOBAMS parties in 2007, the area was proposed to protect cetacean habitat including areas used by sperm whale mothers and calves, and is also important for Cuvier’s beaked whales.

Hanifaru Marine Protected Area and An’gafaru Marine Protected Area in Baa atoll, and Maamigili Marine Protected Area in South Ari atoll, 2009

Three new MPAs designated in the Maldives in 2009, to protect the incredible biodiversity including whale sharks and manta rays (the sites include a manta ray cleaning station). They also support important coral formation and breeding grounds for grey reef sharks.

Common dolphins,
Lissa Batey



or sale of their products.

In December 2012, the Cook Islands became the latest country to declare all their waters a shark sanctuary¹⁰ – following French Polynesia (in 2012), the Marshall Islands (in 2011)¹¹, Palau (in 2009)¹², the Bahamas (in 2011)¹³, the Maldives (in 2009)¹⁴, and Tokelau, and Honduras. As the International Union for the Conservation of Nature's (IUCN) Carl-Gustaf Lundin puts it: "The time for setting aside tiny areas of sea that only protect a few sedentary species is over"¹⁵.

Discussion on national commitments and advice

The government intends to establish a well-managed, ecologically coherent network of MPAs¹⁶. Under the Marine and Coastal Access Act 2009, it is also required to designate Marine Conservation Zones (MCZs) as part of a network of conservation sites which aim to protect representative habitats and species in English and Welsh waters¹⁷.

The government believes that MPAs should be targeted at protecting flora or fauna that are rare, threatened or representative of UK biodiversity in order to conserve a diverse ecosystem and improve resilience to human activity¹⁸. It also intends the sites making up the network to be large enough and close enough together to support functioning communities of wildlife¹⁹.

The government's strategy sets out seven principles as the basis for the development of an ecologically coherent

Marine Protected Area network. These are: representativity, replication, viability, adequacy, connectivity, protection, and best available evidence.

The government does not intend that every species present in UK waters will be represented in the network. However, it does assume that by selecting representative habitats, the range of species will also be representative.

In particular, the government's strategy suggests that, for wide-ranging pelagic species, area-based conservation tools are not always suitable. However, it intends to examine whether there are "spatially predictable aggregations" of wide-ranging pelagic species at "key life stages".

The government states that it is important that the connectivity of the network be considered, and it intends to maximise and enhance the linkages between MPAs. Thus for some species, sites should be identified which ensure protection at different stages of their life cycles.

It is important that sites are identified on the basis of scientific data, but the government also says: "Lack of full scientific certainty should not be a reason for postponing proportionate decisions on site selection".

In addition to the seven principles, the Defra guidance²¹ and the Joint Nature Conservation Committee and Natural England's MCZ Project Ecological Network Guidance²² also identifies five further ecological and practical considerations that are of relevance when

identifying MCZs and which are based on OSPAR Guidance²³.

The Ecological Network Guidance²⁴ indicates that prioritising ecologically important areas – for example ones which support ecological processes that lead to high production or support high biodiversity – when identifying MCZs will help the ecological coherence and effective management of the MPA network. These are often important for particular life stages and behaviours of mobile species. Identifying important ecological areas is recognised as a critical element of applying an ecosystem-based approach.

The Guidance identifies areas of additional ecological importance, among them:

- areas for key life cycle stages and behaviours such as breeding, foraging, moulting, resting and wintering, including spawning aggregations and nursery areas for mobile species;
- areas of high biodiversity;
- areas of high productivity.

The Guidance recognises that areas of "comparatively high pelagic productivity" are important to the delivery of ecosystem-based management. It also refers to the possibility of protecting specific foraging, spawning or nursery areas.

In developing its ecological network guidance, Natural England commissioned advice on representativity and replication of sites for a coherent network of MPAs. However, the report²⁵ admits that it focuses on benthic features,



Bottlenose dolphins off Ballard Down, Purbeck, Nigel Horsman



Basking shark,
Colin Speedie

and that for full representativity of England's marine biodiversity it would be necessary to incorporate information on pelagic habitats and species.

The government has also issued specific advice²⁶ in relation to whale, dolphin, porpoise and basking sharks and MCZs which was last updated in 2012 after the supplementary advice issued by JNCC and Natural England, which states "*The government's view is that spatial protection mechanisms are not always in isolation, the most effective way of protecting highly mobile species. However, protecting some habitats important to mobile species can aid their conservation as part of wider, more bespoke protection measures that can be applied across all or parts of their range, and where appropriate Marine Conservation Zones could be used to protect these habitats.*"

Conclusion

A report prepared for the Joint Links in 2014 (Wildlife & Countryside Link, Wales Environment Link, Scottish Environment Link and the Northern Ireland Marine Task Force) carried out an assessment of ecological coherence of the UK's MPA network. While the tests conducted did not have the data required to assess the highly mobile species considered here, the combined data layers for some mobile species suggests that there are potential gaps in the network which will require further investigation²⁷.

It is clear from the government's commitments and advice that the ecologically coherent network of MPAs under development should include areas of high productivity and which support wide-ranging species, along with sites which are important at key life stages.

Scotland's search areas for mobile species

Recently Scottish Natural Heritage examined statistical approaches to help identify MPAs for cetaceans and basking sharks^{28,29}. The MPA Selection Guidelines³⁰ include a list of MPA search features: species and habitats of conservation importance for which spatial protection is considered appropriate.

These features are helping to drive MPA selection. The work states that for mobile species MPAs may be appropriate for protecting:

- a) significant aggregations or communities;
- b) essential areas for key life cycle stages, including reproduction and nursery stages, that persist in time; and/or
- c) areas contributing to the maintenance of ecosystem functioning.

The habitat modelling presented in the

papers does not directly address all of the above three points:

“Density modelling can identify regions of high density for each species of interest, which when considered together does address point (a). Unless mothers/calves are modelled spatial modelling does not identify essential areas for key life history stages, just regions of highest density of the species at particular times (which may not be the same thing). However, the modelling could provide plots of the response of density to the various environmental predictors tested. Alongside other ecological information and more qualitative data it may be possible to interpret the outputs of these plots in terms of points (b) and (c)”.

Not only do the reports examine the methodology, but modelling is carried out on the Joint Cetacean Protocol database. As a result, three search areas have been put forward in Scottish waters:

■ Sea of the Hebrides which is important for minke whale and basking shark.



Minke whale,
Eleanor Stone

■ North East of Lewis has the highest density of Risso’s dolphin.

■ Southern Trench is important for minke whale.

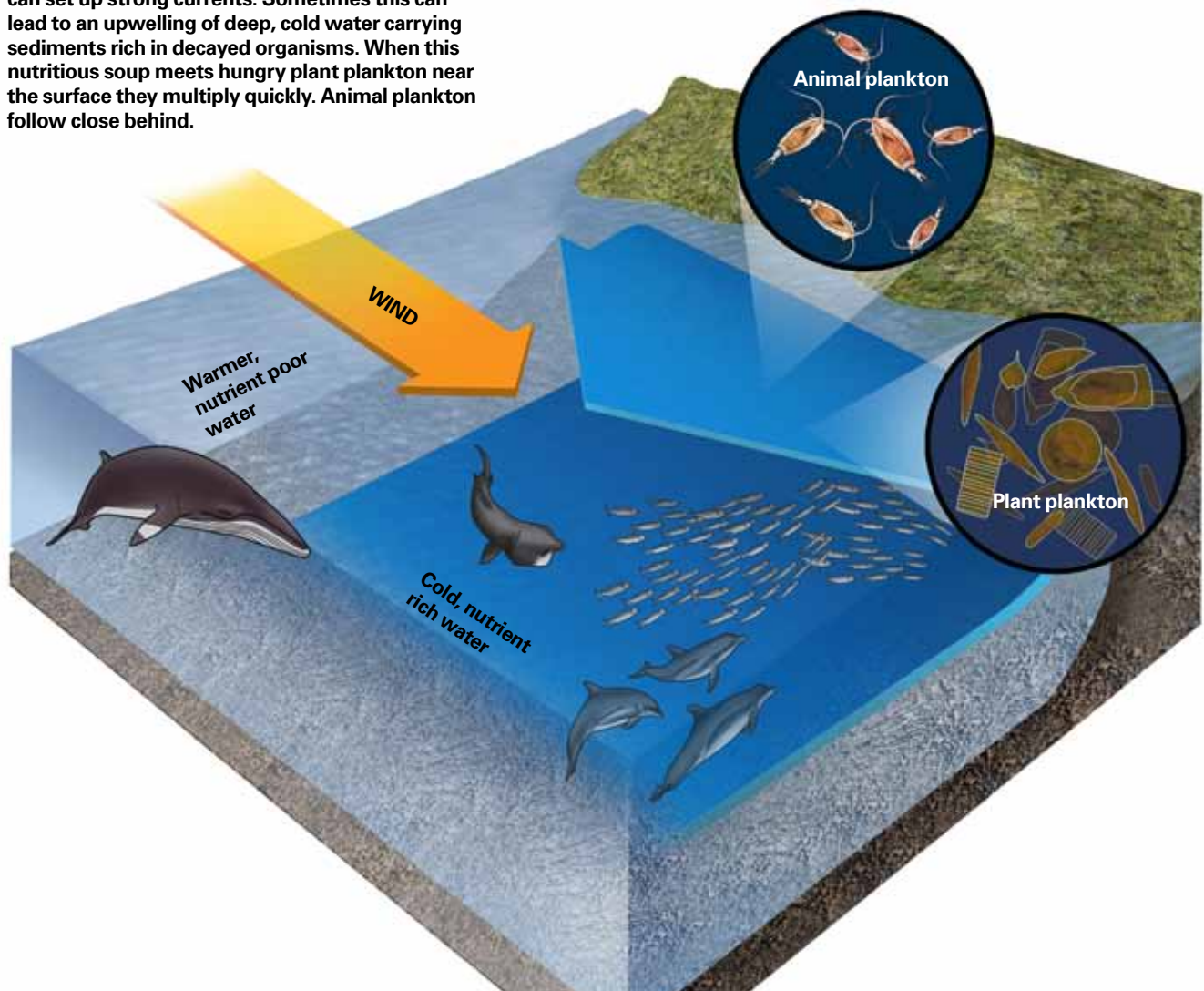
The project also identified several data-poor regions, notably west of the Hebrides, around the Isle of Arran, the coast of Sutherland and Caithness, Orkney and Shetland.

Can England follow Scotland’s example?

Whilst not all public data is effort-related, we believe there is sufficient for a parallel analysis to be carried out on cetaceans and basking sharks for English and Welsh waters to influence the MPA designation process.

How the sea creates areas of plenty

The interplay between weather, land and seabed can set up strong currents. Sometimes this can lead to an upwelling of deep, cold water carrying sediments rich in decayed organisms. When this nutritious soup meets hungry plant plankton near the surface they multiply quickly. Animal plankton follow close behind.



We acknowledge that MPAs on their own will not protect whales, dolphins, porpoises and basking sharks, but they can play an important part. Perhaps more important is the protection which an ecologically coherent network can give these species across their ranges – a benefit often overlooked or ignored.

MPA proposals for mobile species in English and Welsh waters

Our basic data source (Fig. 1, right) is The Wildlife Trusts' Areas of additional Pelagic Ecological Importance data layer³². It was built from several NGO datasets including Whale and Dolphin Conservation, Marine Conservation Society, Shark Trust and RSPB and two data layers provided by the Joint Nature Conservation Committee (JNCC) for the initial consultation on MCZs. It also includes the latest survey work from the Farnes and Coquet to St Marys, conducted by Yorkshire Wildlife Trust and Marine Life, presented here with the data analyses carried out by WWF³³.

These maps provide some data on areas of pelagic biodiversity around the UK, but are by no means the complete picture. Our data layer will complement the Marine Biological Association's 'benthic biodiversity hotspot' information and is a starting point for considering features in both MCZs and Special Areas of Conservation for whales, dolphins, porpoises and basking sharks.

MPAs in the UK are not designated for the site as a whole, but to protected named species and/or habitat features. Conservation objectives will only be set for these features. So in some cases we recommend the inclusion of species to existing sites, and in others the designation of new sites. We are also calling for boundary extensions to encompass areas of high use by mobile species.

The government has also established the principle that identifying ecological networks of MPAs should use the best available science, and that it is not appropriate to avoid decisions due to lack of scientific information. It also recognises that local and lay knowledge should be taken into account³¹.

This work is not to be considered a substitute for a full and thorough modelling exercise as carried out by Scottish Natural Heritage. Resources for such an analysis were, however, beyond the scope of this project.

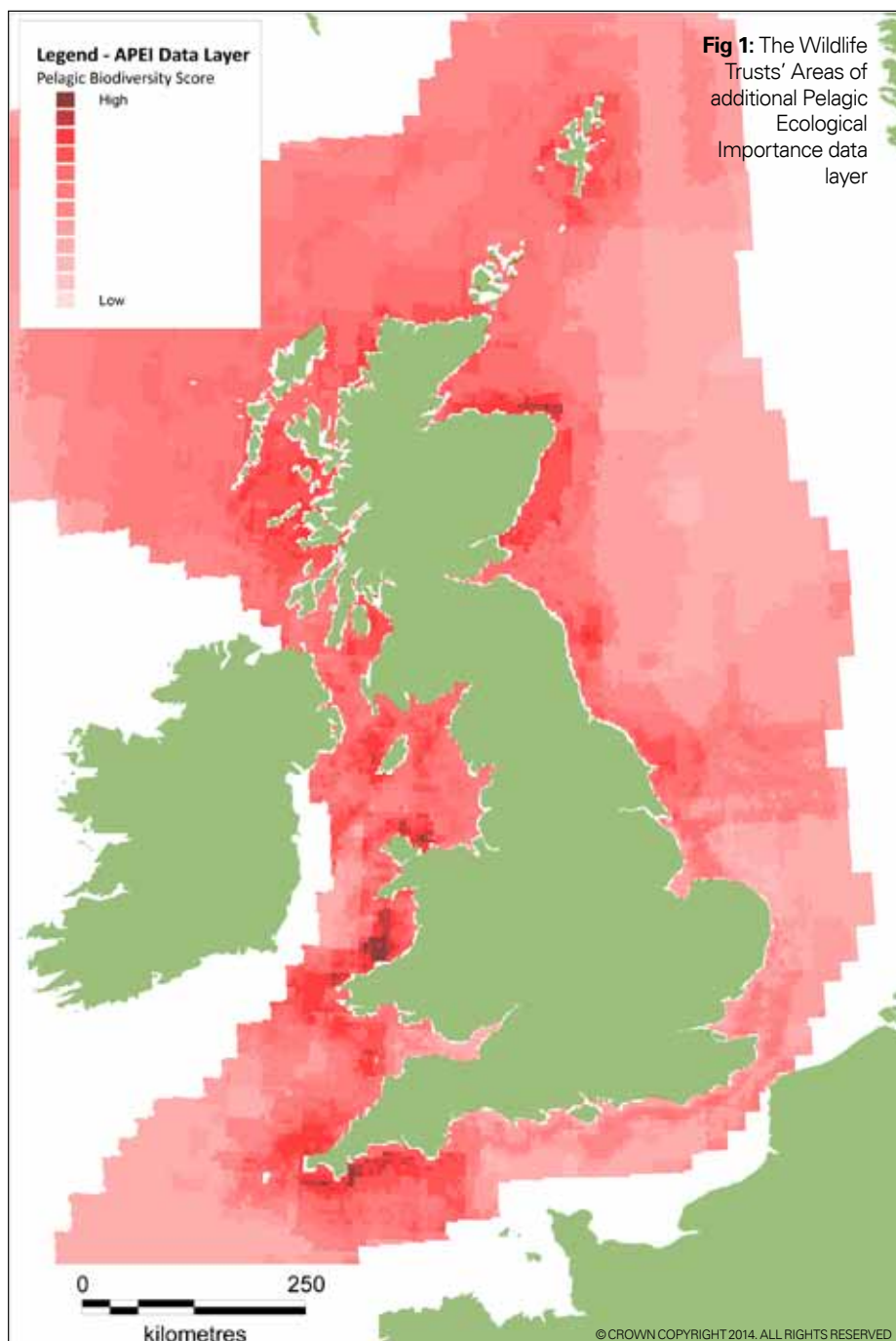


Fig 1: The Wildlife Trusts' Areas of additional Pelagic Ecological Importance data layer

Why these areas matter

These areas share one characteristic: they are areas of high productivity. Productivity in the ocean increases in areas of upwellings or frontal systems, where a body of colder nutrient-rich water is brought to the surface. The resulting bloom of phytoplankton, which feeds on these nutrients, kick off the food chain by attracting and supporting large populations of zooplankton which in turn attract diverse and vast shoals of fish – and finally these draw in the charismatic ocean giants.

Our proposals

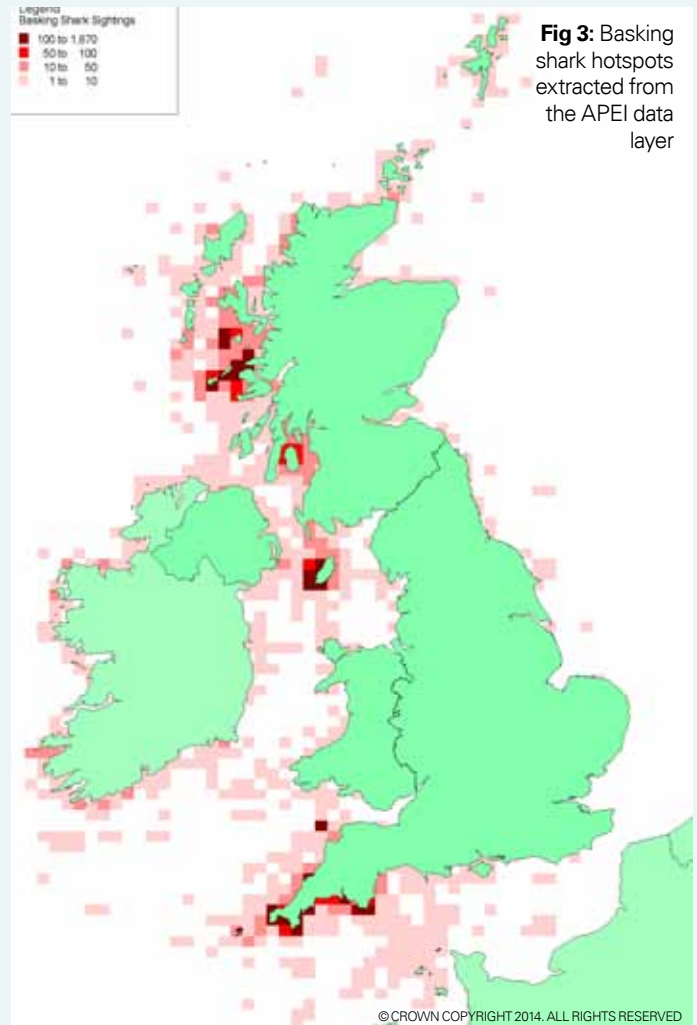
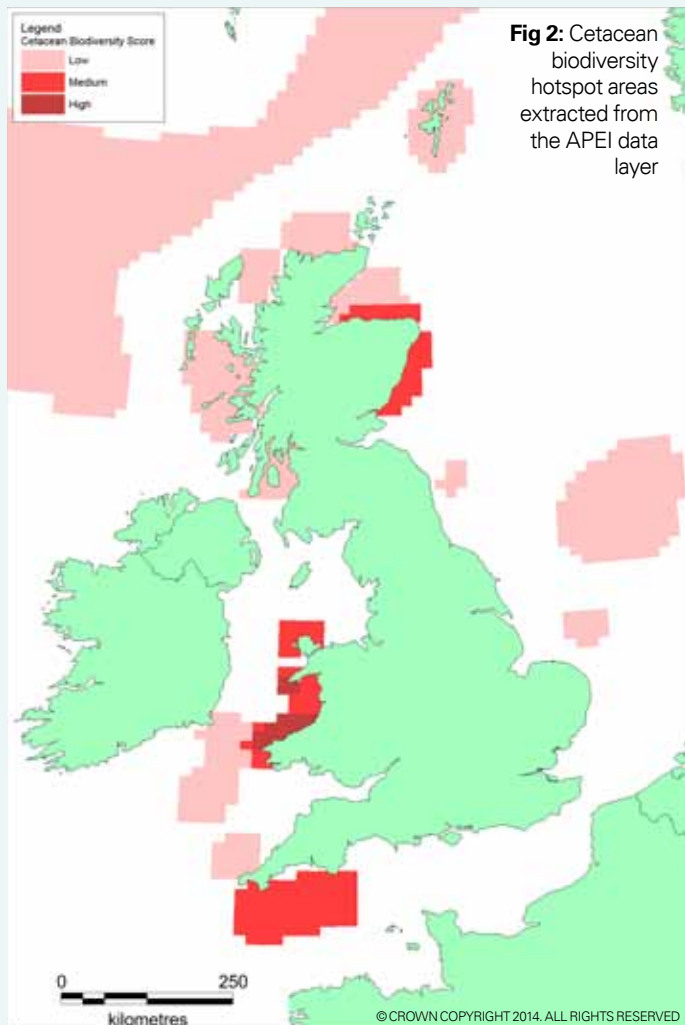
The government's consultation document³⁴ recognises that, in addition to sectoral measures, MCZ designation

should be considered for whales, dolphins, porpoises and basking sharks if there is clear evidence that the species' conservation would benefit from site-based protection mechanisms.

On this basis, The Wildlife Trusts propose seven boundary extensions/species additions to the 37 proposed sites in the tranche 2; a boundary extension and species addition to one designated MCZ; the designation of a new MCZ; three new sites (which could be MCZs or SACs); three species additions within existing SACs; and two search areas.

These are based on the importance of the sites for pelagic habitats, high levels of productivity and diversity, and associated species.

The Wildlife Trusts' recommendations for extension



Proposed candidate MCZ extension to boundary and/or feature

1. Farnes East to Coquet St Marys

Boundary extension; inclusion of three new species: white-beaked dolphin, harbour porpoise and minke whale.

2. Mid St George's Channel

Inclusion of common dolphin.

3. Bideford North to Foreland Point

Boundary extension; inclusion of harbour porpoise.

4. East of Celtic Deep

Inclusion of common dolphin and fin whale.

5. Celtic Deep

Inclusion of common dolphin and fin whale.

6. South of Celtic Deep

Inclusion of common dolphin and fin whale.

7. Western Channel

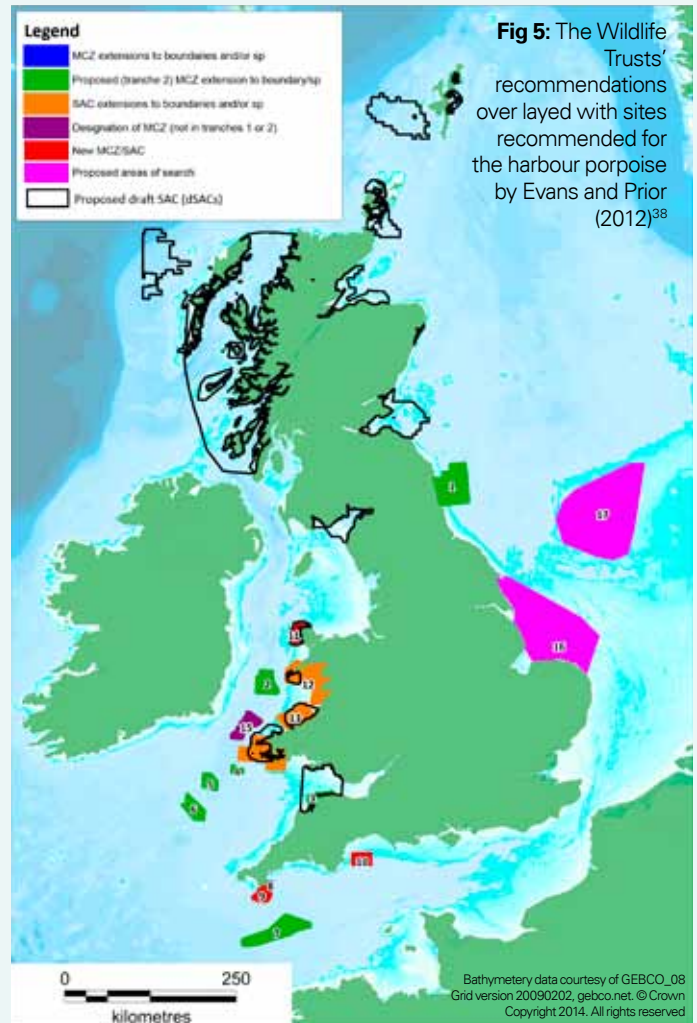
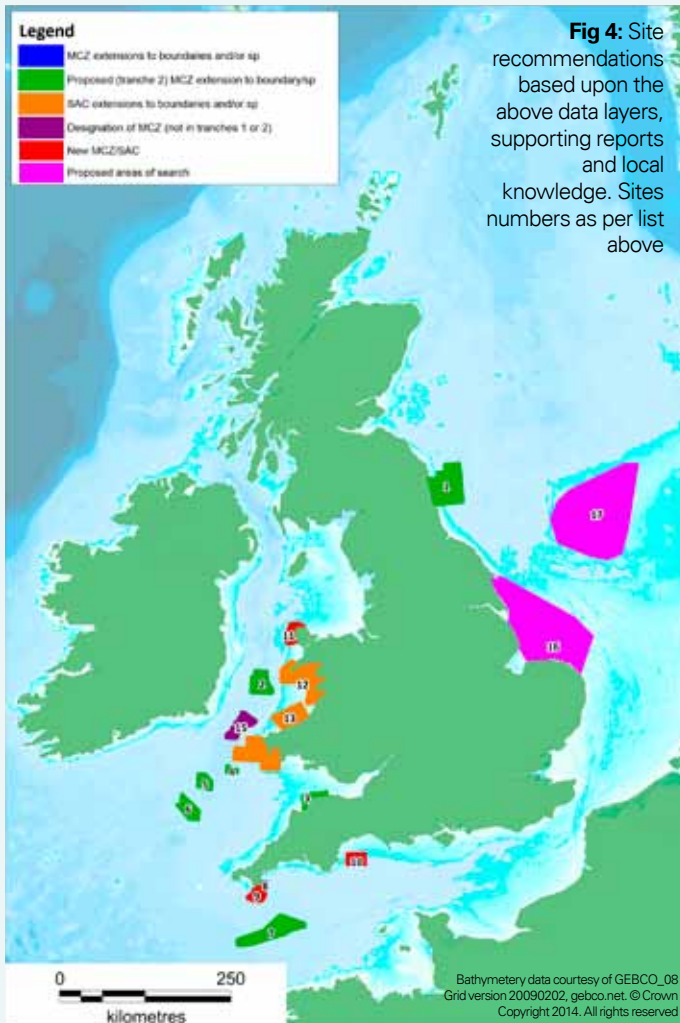
Inclusion of common dolphin, humpback whale and fin whale.

MCZ extension to boundary and/or feature

8. Manacles

Boundary extension; inclusion of basking shark, harbour porpoise and (seasonally) minke whale.

Extension or designation of Marine Protected Areas



Proposed new MCZ

9. Lizard and Western Channel off Cornwall

Inclusion of common dolphin, harbour porpoise, basking shark and bottlenose dolphin.

Proposed new MCZ/SAC

10. Lyme Bay

Inclusion of harbour porpoise, common dolphin and white-beaked dolphin.

Proposed new SAC

11. North and west coasts of Anglesey

Inclusion of harbour porpoise.

SAC inclusion of species

12. Llyn Peninsula and the Sarnau

Inclusion of harbour porpoise and Risso's dolphin.

13. Cardigan Bay

Inclusion of harbour porpoise.

14. Pembrokeshire Marine

Inclusion of harbour porpoise.

Proposed designation of a MCZ in tranche 3

15. North of Celtic Deep

Inclusion of common dolphin.

Areas for additional search

16. Eastern coastline, including Silver Pit

Harbour porpoise.

17. Dogger Bank

Harbour porpoise and white-beaked dolphin.

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1. Farnes East³⁵ and Coquet to St Marys

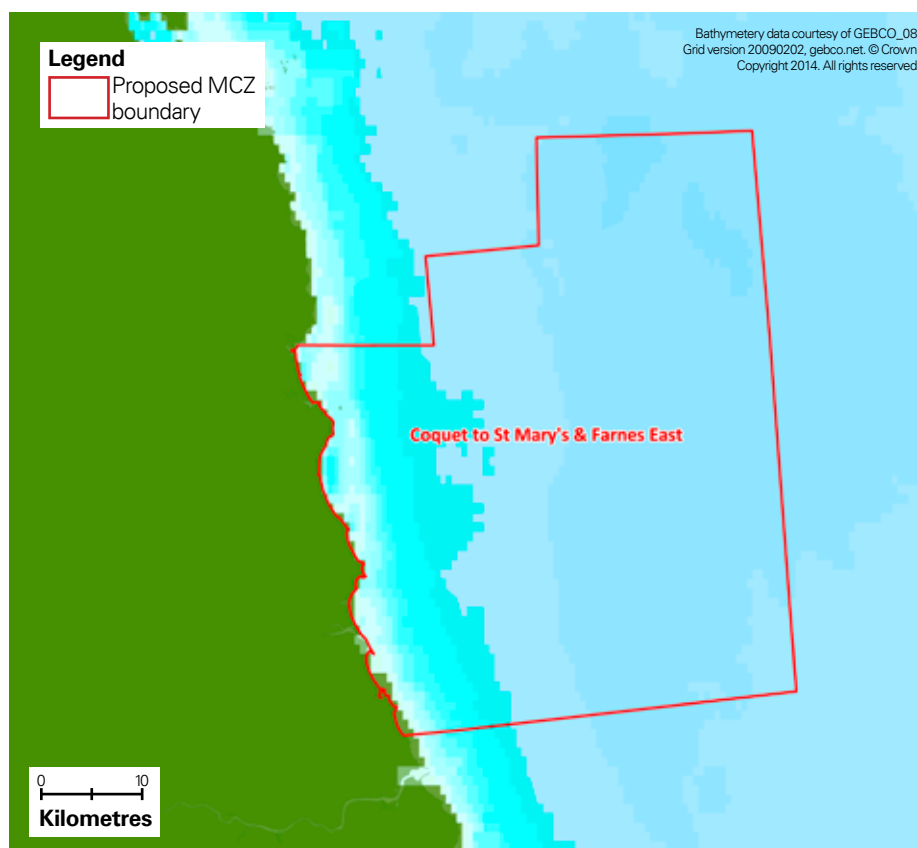
We propose to extend Farnes East further south to encompass the area of deep water beneath it and link it to the coastal site of Coquet to St Marys. We additionally propose the inclusion of white-beaked dolphin, harbour porpoise and minke whale, as this is an area of high pelagic importance³⁶ and supports several cetaceans for long periods of time. Humpback and killer whale, while not as frequently seen, are also recorded occasionally.

The southern region and the deep glacial feature of Farne Deeps provide an important breeding and foraging area for white-beaked dolphin. It is also an important feeding ground for seabirds using the Farne Islands.

Coquet to St Marys is an area of exceptional pelagic productivity. The surrounding area provides spawning grounds to plaice and sandeels, as well as nursery grounds for juvenile cod, ling, monkfish and sandeels⁴¹.

Consequently, this site is of particular importance for white-beaked dolphin. Adults and calves are regularly seen, suggesting the area is both as a feeding and calving ground^{42,43,44}. The site is also an established haul out area for seals and their pups.

Thanks to the pelagic features of Coquet to St Marys, the area is of significant value in terms of nature tourism. We therefore highly recommend mobile species are included as features of this site.



References

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- ³⁶ Areas of Additional Ecological Importance data layer overlain with Net Gain rMCZ final recommendations.
- ³⁷ Marine mammal presence in relation to rMCZ Farnes East (Raw data for marine mammal survey – collected by The Wildlife Trusts, MARINELife, Northern Experience Wildlife Tours and Northumberland Inshore Fisheries Conservation Authority).
- ³⁸ ESAS – European Seabird at Sea maps developed during the Net Gain project – NG_ESAS Seabird density in summer, NG_ESAS Seabird density in winter and NG_ESAS Seabird density in breeding seasons.
- ³⁹ RSPB foraging radii data highlighting seabird usage within rMCZ Wash Approach. RSPB should be contacted for full access to this data.
- ⁴⁰ Presence of cetaceans in relation Sea-pens within the Farnes East (NG14N) and NG14S (the area removed from the process).
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- ⁴⁶ RSPB foraging radii data highlighting seabird usage within rMCZ Coquet to St Marys.

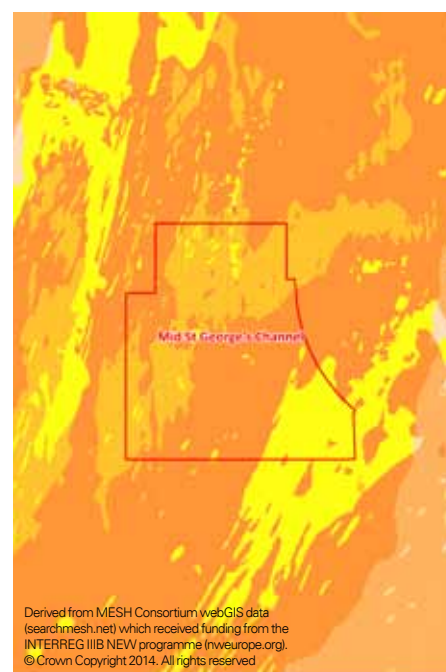
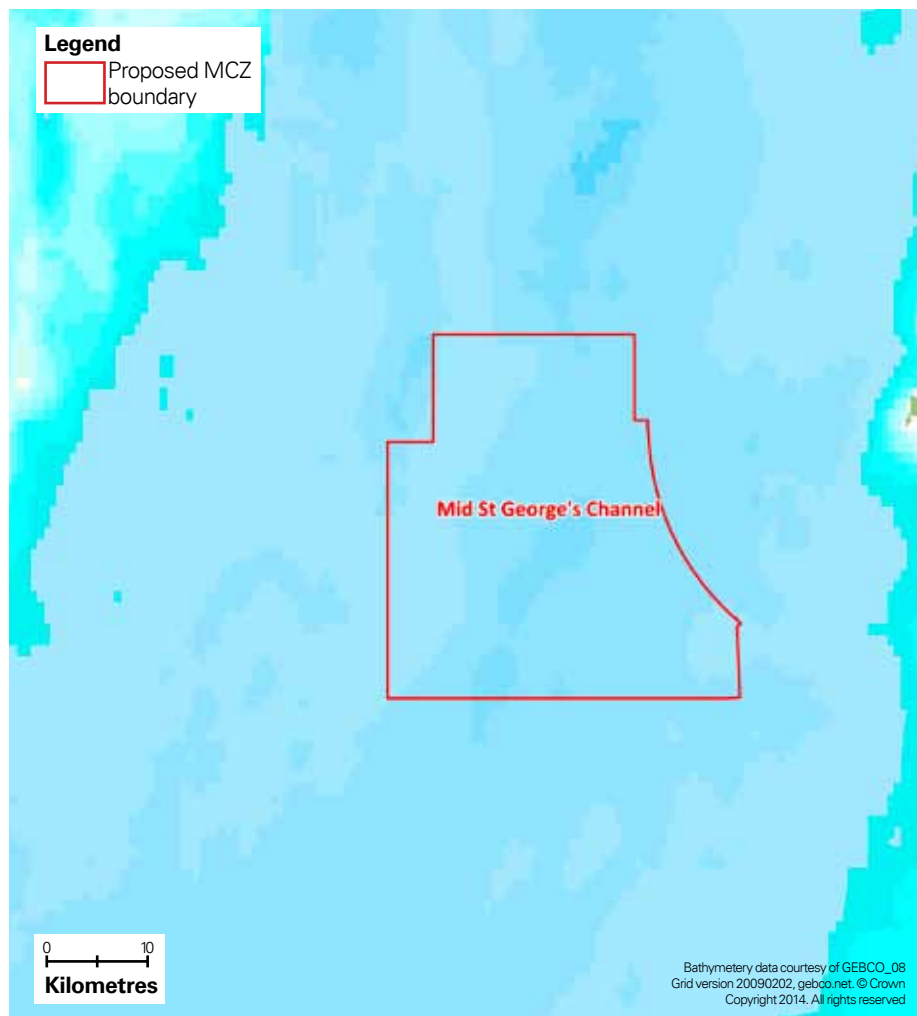
2. Mid St George's Channel

We propose that the feature list for Mid St George's Channel candidate MCZ should include the common dolphin and further consideration should be given to minke and fin whale.

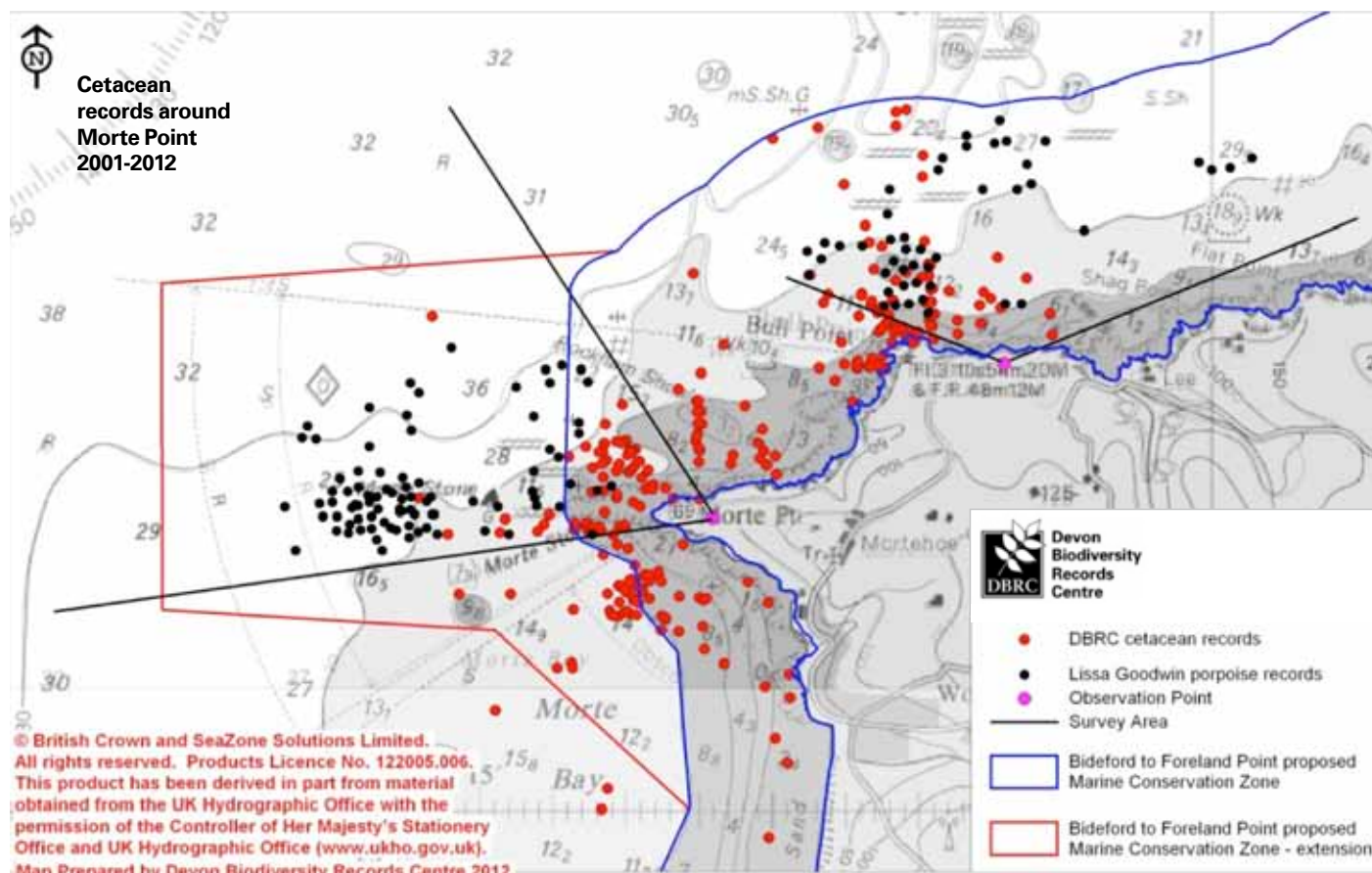
Mid St George's Channel lies 23km offshore from the coast of mid-Wales, between Irish offshore waters to the west and Welsh territorial waters to the east. The depth ranges from 60 to 125 metres, and seasonal thermal fronts increasing phytoplankton productivity make the area an important feeding ground for passing whales and dolphins.

An increase in solar energy during spring causes the relatively warm, less dense water to sit on top of colder, denser, deep water. This increase in temperature triggers an increase in biological productivity. In autumn, cooling surface water creates a system which brings nutrient-rich deeper waters coming in from the Atlantic to mix with the surface waters, again boosting productivity.

The seabed is rich in species which play a key role in recycling organic matter within the sediment, thus feeding the primary production of plankton. This in turn attracts herbivorous species, and, in turn, larger predators. Mid St George's Channel is a key part of their migratory route.



3. Bideford North to Foreland Point⁴⁷



We believe that the harbour porpoise should be listed as a designated feature of this candidate tranche 2 MCZ and the site's boundary should be altered to capture additional areas of importance for this species.

The proposed new boundary shown in the map above is based on records from Devon Biodiversity Records Centre⁴⁸, and data from harbour porpoise research carried out along the North Devon coast⁴⁹. In their report WWF suggest a much larger area that suggests further consideration should be given to the boundaries of this site³³.

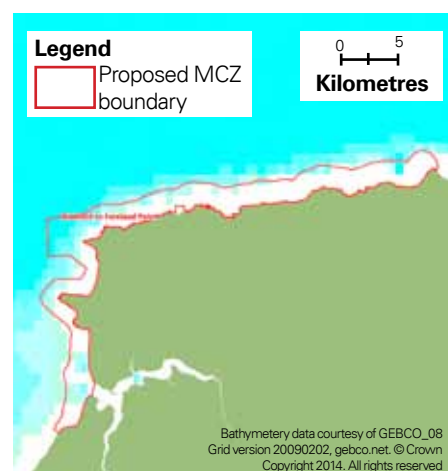
This stretch of coastline has a long and diverse list of interesting and scarce species, such as the native oyster,

peacock's tail seaweed, Celtic sea slug and European eel. It is characterised by cliffs and rocky shores, small sandy bays and inlets with an expanse of sandy shoreline at Bideford Bay.

Notable species here include the native oyster, peacock's tail seaweed, Celtic sea slug, European eel, and reef-building Ross and honeycomb worms. Other rare, scarce and sensitive species present are the pink sea fan, scarlet and gold star coral, Weymouth carpet coral, policeman anemone, Devonshire cup coral, stalked jellyfish and short-snouted seahorse.

The area is important for seabirds and cetaceans, with harbour porpoises visible almost daily from headlands, and mothers with calves frequently seen. The

area lies within the North Devon Biosphere project and is significantly important for nature tourism.



References

- ⁴⁷ Annex 1: 127 Annex H: Form for sites not in the first tranche – Bideford to Foreland Point (Richard White, Senior Marine Advocacy Officer, Devon Wildlife Trust)
- ⁴⁸ Devon Biodiversity Records Centre Cetacean Records
- ⁴⁹ Goodwin L (2008) Diurnal and Tidal Variations in Habitat Use of the Harbour Porpoise (*Phocoena phocoena*) in Southwest Britain. *Aquatic Mammals* 34: 44-53

4. East of Celtic Deep

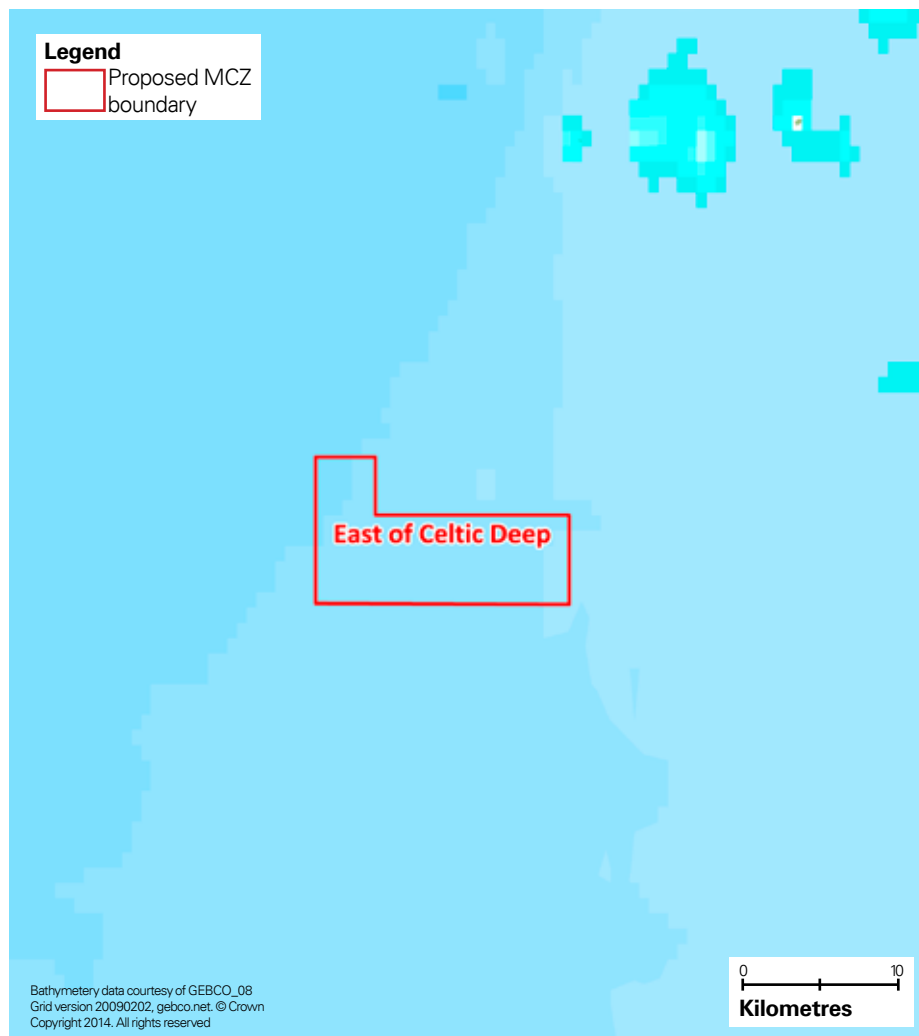
We believe that this area should be designated. Common dolphin and fin whale should be included in the features list for the site.

The East of Celtic Deep candidate MCZ lies 40km south of the Pembrokeshire coast in Wales. As an area of upwelling this is a highly productive area during the summer months. This increase in food supply attracts a significant number of whales, common dolphins and seabirds.

The site is an important foraging ground for the common dolphin and large pods have been seen here. The area is also likely to be important for fin whale, with Celtic Deep, a further site under consideration for tranche two nearby. The area is also important for seabirds in the Irish Sea including guillemots, gannets, razorbills, terns, Manx shearwaters and puffins.

Outside of summer the area remains important for wintering birds.

“The site is an important foraging ground for common dolphin”



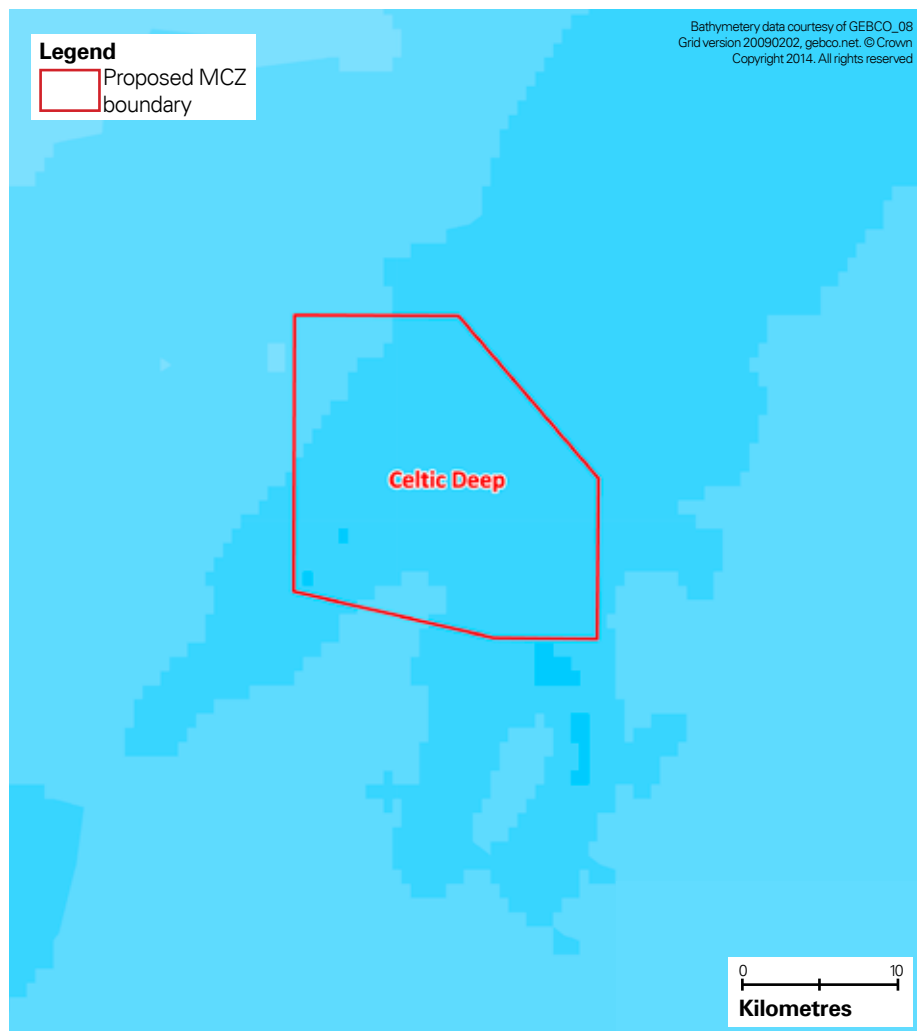
5. Celtic Deep

We believe that Celtic Deep candidate MCZ should be designated for both common dolphin and fin whale. The southern tip of Celtic Deep is 112km north-west of Trevoose Head and the western tip is 84km from the Pembrokeshire coast in Wales.

The area is an important aggregation site for seabirds and common dolphins. It is particularly important for its deep water mud habitats, which are rare for this region. Important frontal systems during summer create high productivity, demonstrated by the recording of large aggregations of copepods. Copepods are essential for the health of the marine food web and contribute to the diet of the basking shark.

One of the largest ever known gatherings of fin whales in British waters was recently observed here.

“One of the largest ever known gatherings of fin whales in British waters was observed here”



Fin whale breaching,
CIRCE



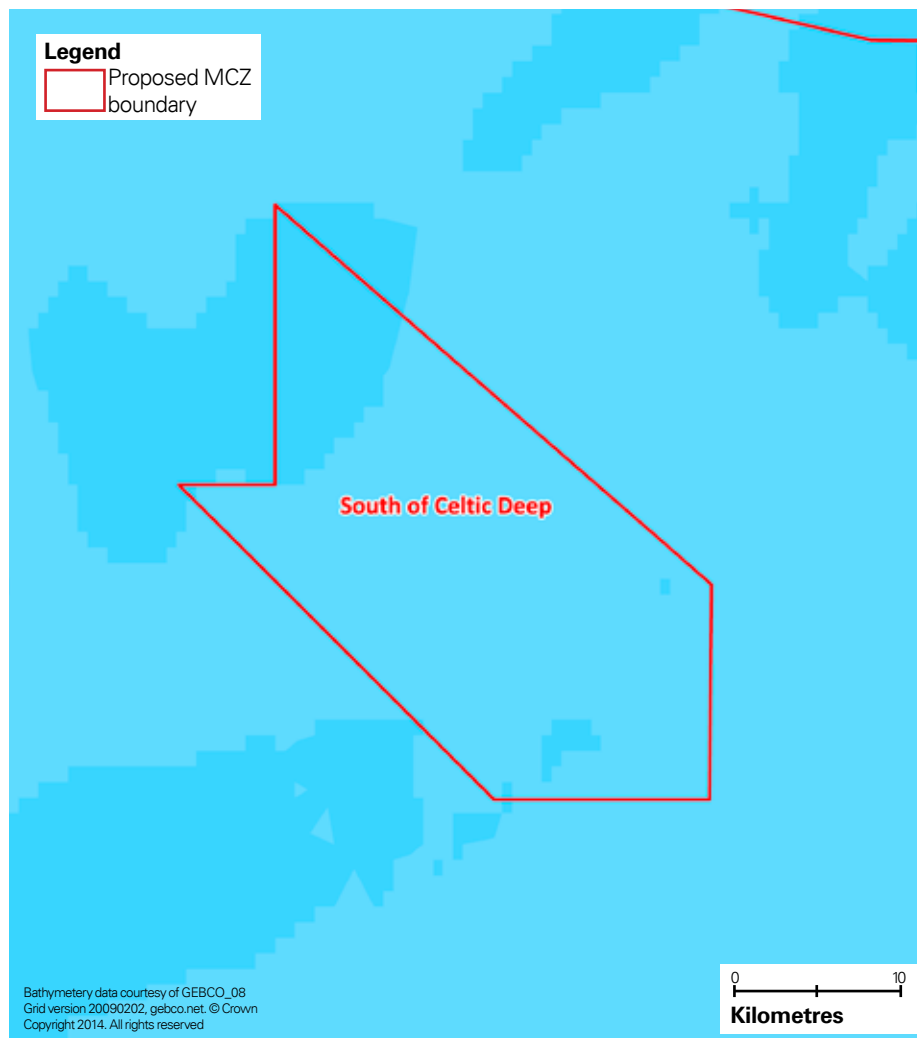
6. South of Celtic Deep

We believe that South of Celtic Deep should be designated as a MCZ and common dolphin and fin whale should be added to the features list for the site.

South of Celtic Deep is an arrow shaped site pointing south-east, bordering the UK continental shelf limit on the western side.

The site is particularly important as it contains a variety of habitats, including coarse sediment, mixed sediment and sand. These habitats provide opportunities for animals such as polychaete worms and bivalve molluscs to burrow, but also provide suitable surfaces against which fish can hide using their camouflage. This demonstrates a diverse food chain upon which the large predators can feed.

Ultimately, frontal systems which occur here give rise to a highly productive area during the summer months. This increase in food supply attracts a significant number of whales, common dolphins and seabirds. Outside of summer the area remains particularly important for wintering birds.



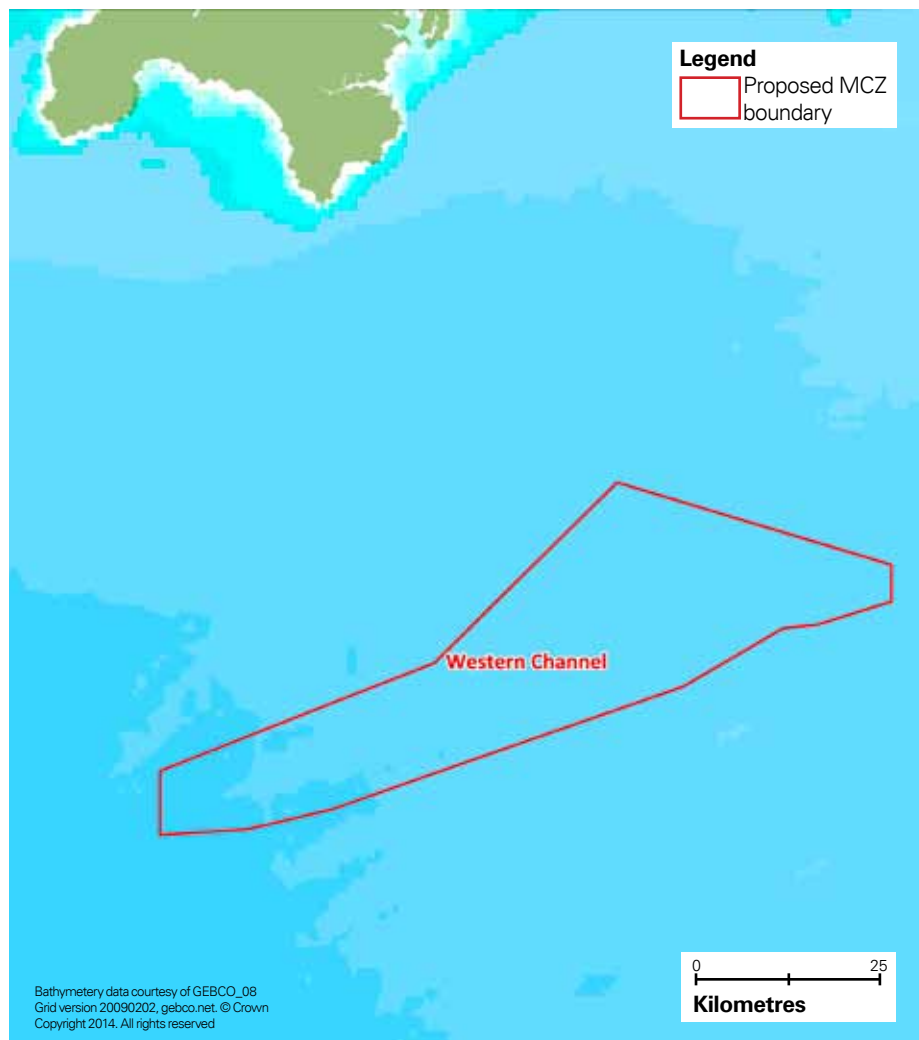
7. Western Channel

We believe that the designated features list for this site should include common dolphin, humpback whale and fin whale.

The Western Channel is located 54km south-east of Lizard Peninsula and its southern boundary follows the UK continental shelf limit.

A mosaic of habitats are included within this site under consideration for a tranche 2 MCZ, including coarse sediment, mixed sediment and moderate energy rock. These habitats support many benthic species, animals that live on the seafloor such as polychaete worms, bivalve molluscs and echinoderms.

Productive frontal systems are found in the Western Channel. These frontal systems carry an abundance of fresh food from cooler deeper waters into the sunlit surface waters where plankton can flourish. This feature acts as a catalyst for marine life and brings together many marine animals to feed including seabirds and cetaceans, such as the common dolphin, humpback and fin whale.



8. Manacles⁵⁰

We believe that the boundaries of this already designated MCZ should be extended to include important feeding and breeding habitat for both harbour porpoises and basking sharks. These species, along with minke whales, who use this area seasonally should be included on the designated features list.

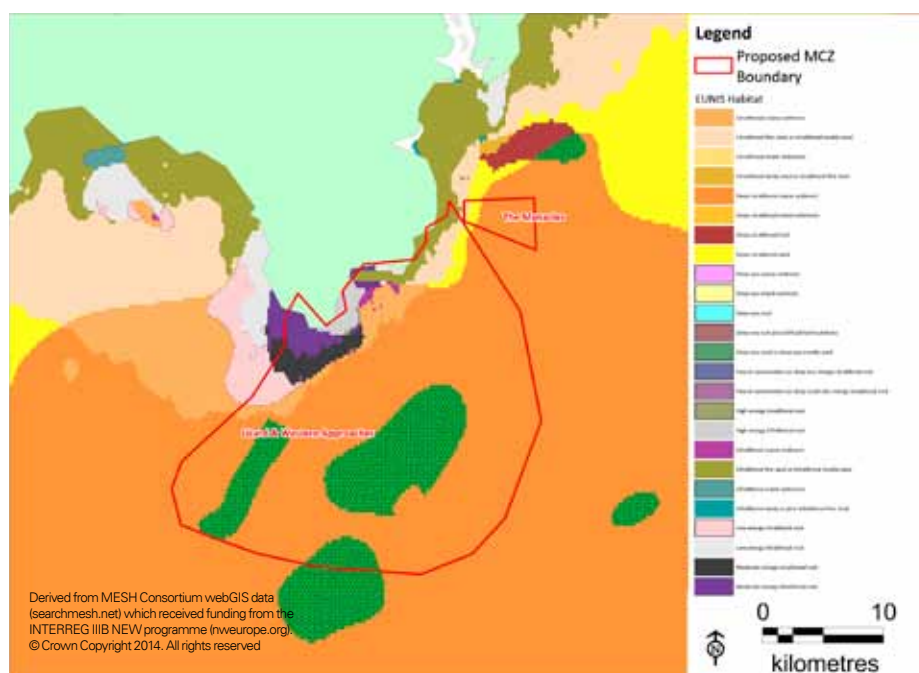
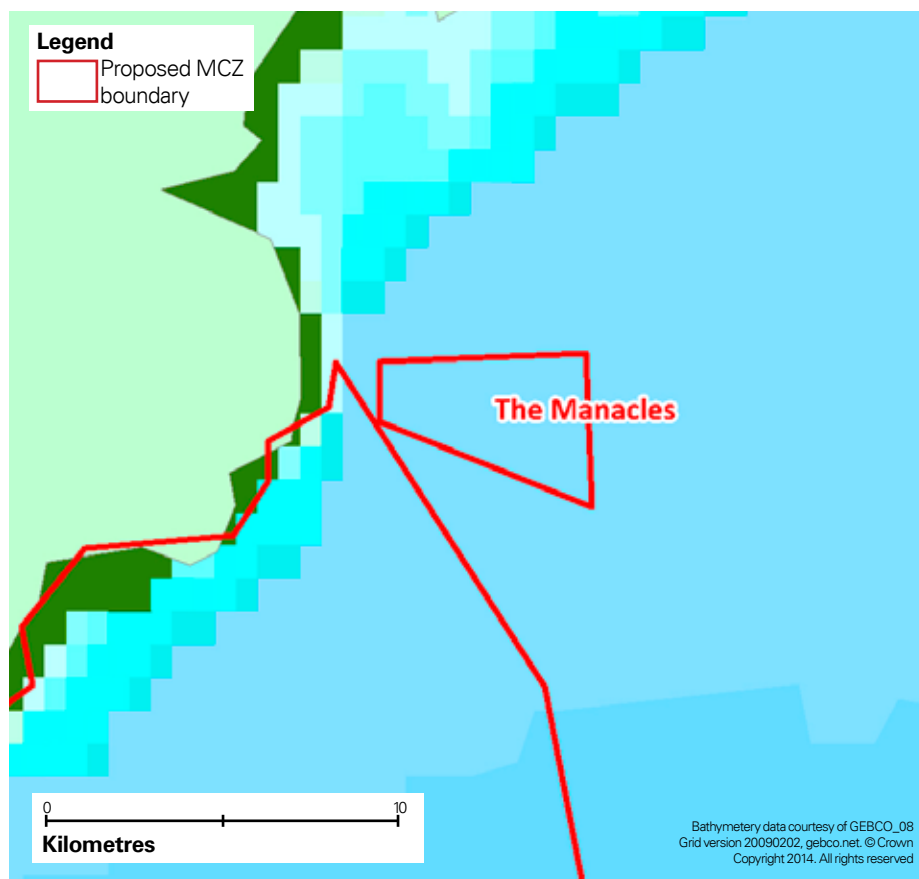
This is in line with Defra's commitment that MCZs will be considered if there is clear evidence that the conservation of a highly whale, dolphin, porpoise and basking shark would benefit from site-based protection measures³¹.

In addition to the marine invertebrate features for which it has been identified as a MCZ, the Manacles is also important for commercial species such as bass and mackerel, and is recognised as an area with high harbour porpoise and basking shark activity. In the original site report, the area is described as being of importance for basking sharks, and an important feeding ground for small cetaceans, due to its high productivity.

Acoustic monitoring data collected by Cornwall Wildlife Trust demonstrates the high use of the area by harbour porpoise³². Furthermore a number of reports support the addition of these species to this site³².

The area is known for its boating tourism and there has been an issue with boat strike of basking sharks.

“The area is described as important for basking sharks, and a feeding ground for small cetaceans”



References

⁵⁰ Annex 1: 127 Annex H: Form for 31 sites in the first tranche – Manacles (Ruth Williams, Marine Conservation Manager, Cornwall Wildlife Trust)

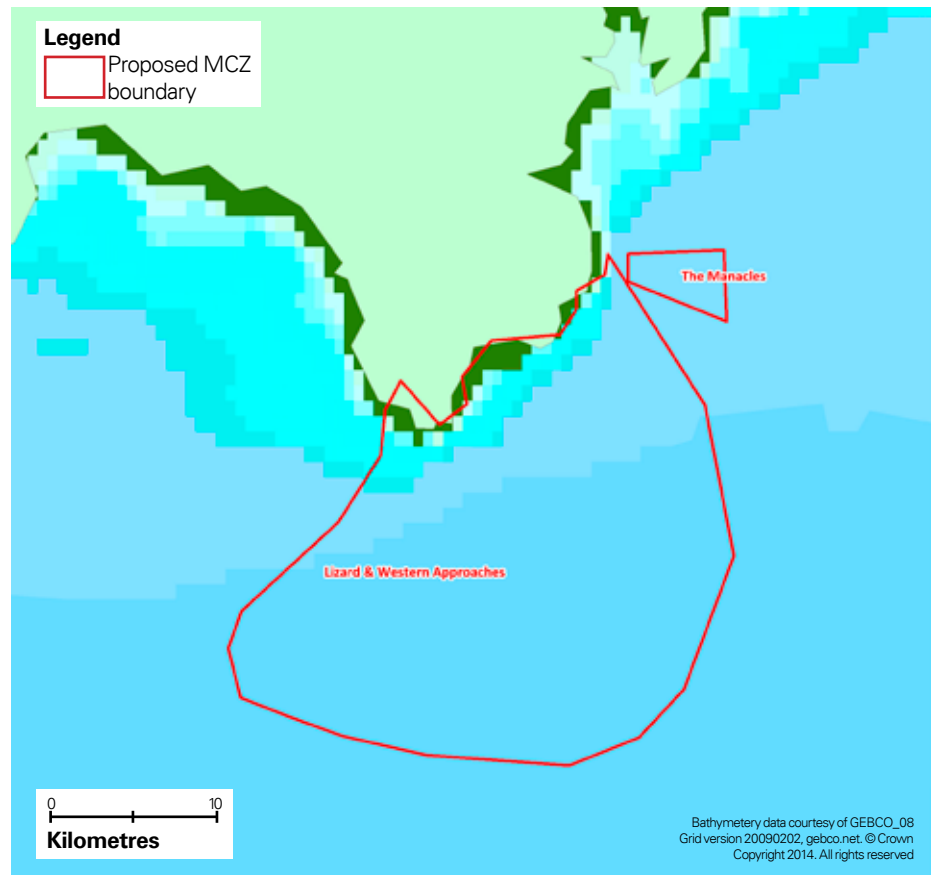
9. Lizard and Western Channel off Cornwall

We propose this site should be designated as a MCZ. The Lizard and Western Channel region is renowned for being rich in biodiversity and are one of the UK's four hotspots for cetacean activity. Fourteen species of cetaceans have been recorded in the waters, with the species encountered most frequently being the harbour porpoise, common dolphins and bottlenose dolphins, including the Cornish inshore pod of bottlenose dolphins.

Cornwall Wildlife Trust has been monitoring this group of inshore bottlenose dolphins since they first appeared off Cornwall in 1991. The group is sighted regularly off the Lizard peninsula.

In addition, the area is recognised as an important feeding ground for small cetaceans in particular the harbour porpoise and also minke, fin and killer whales.

In the original site report, the area is also of importance for basking sharks.



10. Lyme Bay⁵¹

We propose this area of Lyme Bay should be designated, either as a new MCZ or new SAC for harbour porpoise, common dolphin and white-beaked dolphin.

A third of the area of Lyme Bay ~820km² is identified as a priority area for white-beaked dolphins, with harbour porpoise and common dolphin also frequently seen. The area identified for white-beaked dolphins consists of circalittoral sandy mud, fine sand and muddy sand; with high front density (PML Unpublished data, Peter Miler pers. comm.). Water depth ranges from 50–60m, with an area of high Sprat (key prey item) densities at a western Channel scale (CEFAS, unpublished data).

Sightings of white-beaked dolphins demonstrate a nationally important foraging area, with high site fidelity (2006–2012). Additional assemblages of priority mega-vertebrates species (UK Amber listed to globally and critically endangered) associated with relatively deep frontal waters, are each present in locally to nationally important numbers, including harbour porpoise, common dolphin, bottlenose dolphin, minke whale, basking shark, and seabirds such as great skua, shearwaters, guillemots and razorbills.

“A third of Lyme Bay is a priority area for white-beaked dolphins, with harbour porpoise and common dolphin often seen”

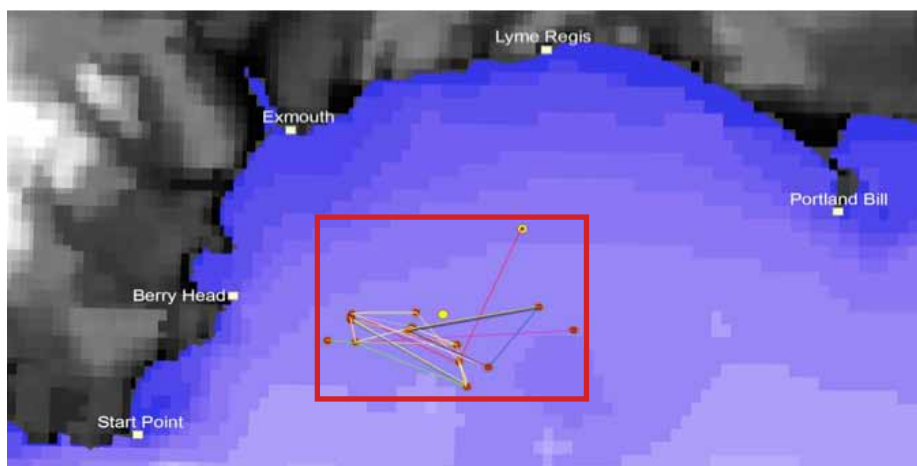
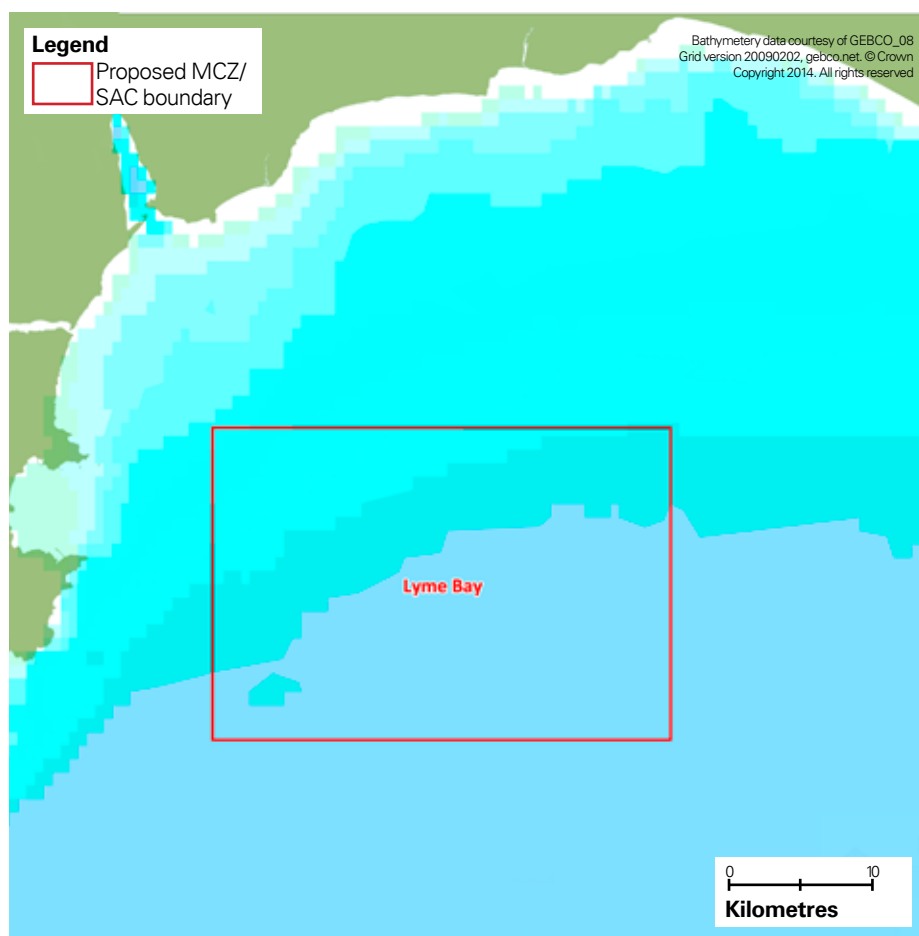


Fig.1 Red box highlights the area where 97% of white-beaked dolphins identified by photos have been re-sighted 2007–2012. Coloured lines are minimum linear distances between re-sightings



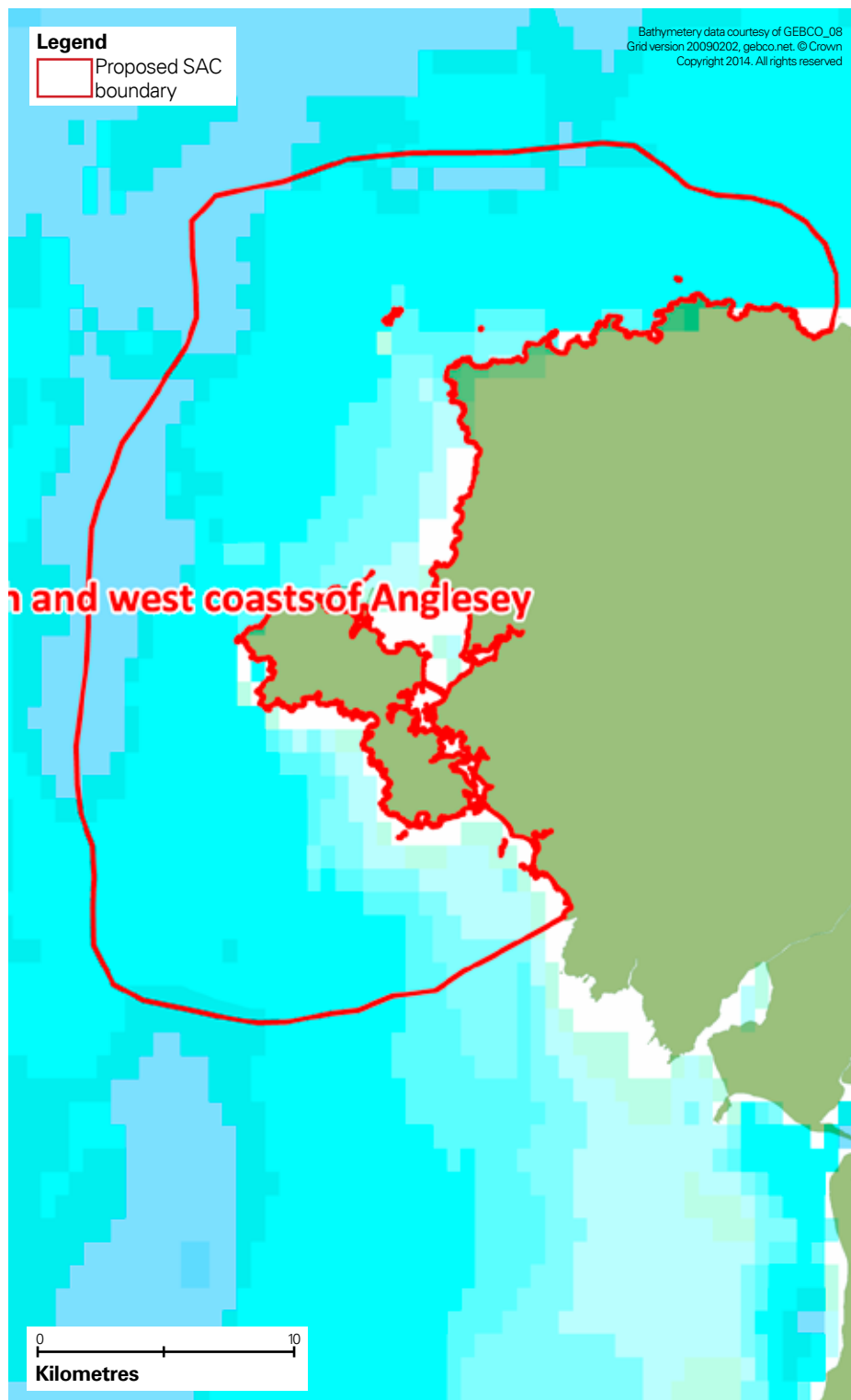
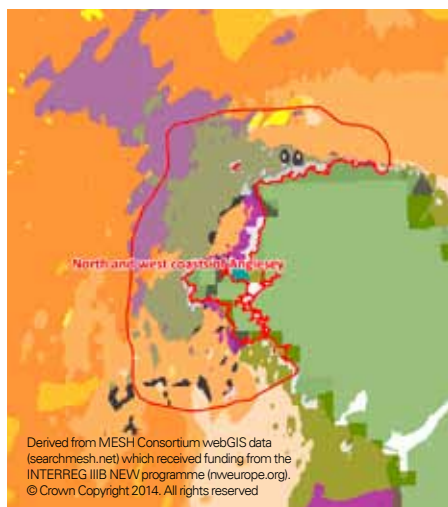
References

⁵¹ Brereton, TM, Lewis, K & MacLeod CM 2012. Surveys for cetaceans, seabirds and other large marine animals in the English Channel. Unpublished Charm III Project Final Report. Marinelife, Dorset.

11. North and West Coasts of Anglesey

The north and west coast of Anglesey has been shown to be an important area for harbour porpoise both in terms of density, compared with surrounding areas, and habitat use⁵¹. The waters around the north coast of Anglesey provide the fine-scale oceanographic features that porpoises are known to associate with, those such as headlands, strong tidal currents, tidal races and eddies that run along the coastline. Whilst these features make the area particularly suitable for foraging and feeding the site also has high numbers of newborn calves during the breeding season and has been shown to be used for social and mating purposes^{51, 52}. Harbour porpoises are recorded all year in this area. Other species which occur regularly within the site are the grey seal, bottlenose dolphin and Risso's dolphin.

“ Porpoises associate with the strong currents, tidal races and eddies ”



References

- 51** Shucksmith, R., Jones, N. H., Stoye, G. W., Davies, A., and Dicks, E. F. (2009). Abundance and distribution of the harbour porpoise (*Phocoena phocoena*) on the north coast of Anglesey, Wales, UK, *J. Mar. Biol. Assoc. U.K.* 89, 1051–1058.
- 52** Baines, M.E. and Evans, P.G.H. (2009) Atlas of the Marine Mammals of Wales. CCW Monitoring Report No.68. 82pp.

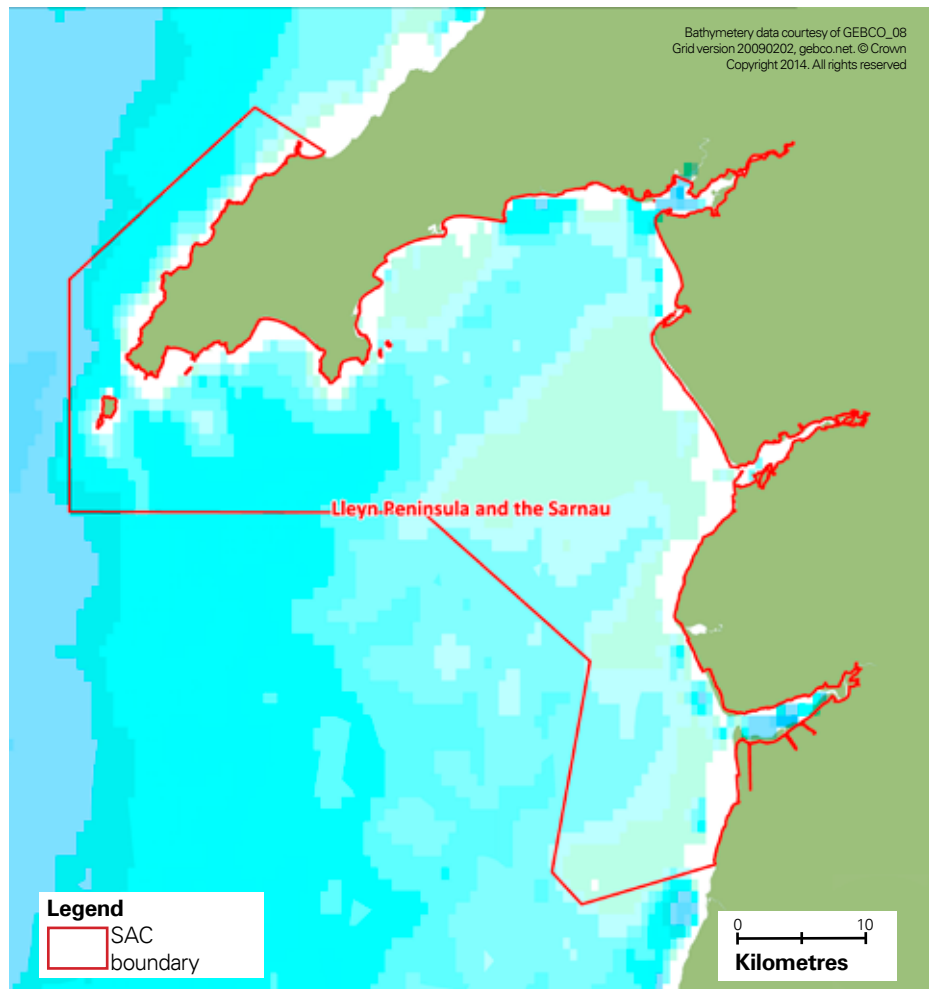
12. Lleyn Peninsula and the Sarnau

The Lleyn Peninsula and the Sarnau SAC is the second largest SAC in the UK stretching from Nefyn on the north of the Lleyn Peninsula to Aberystwyth in mid Wales, and covering 230km of coastline.

The area has 12 conservation features but does not include the harbour porpoise or Risso's dolphin. We believe that this SAC provides important breeding and feeding areas and therefore, these species should be added to the features list.

A significant amount of data has shown this area to be of noteworthy importance as an area for harbour porpoise. This area also has the highest density of Risso's dolphin sightings within the 12nm limit of Welsh waters.

“The area has significant numbers of bottlenose dolphin and grey seal”



13. Cardigan Bay

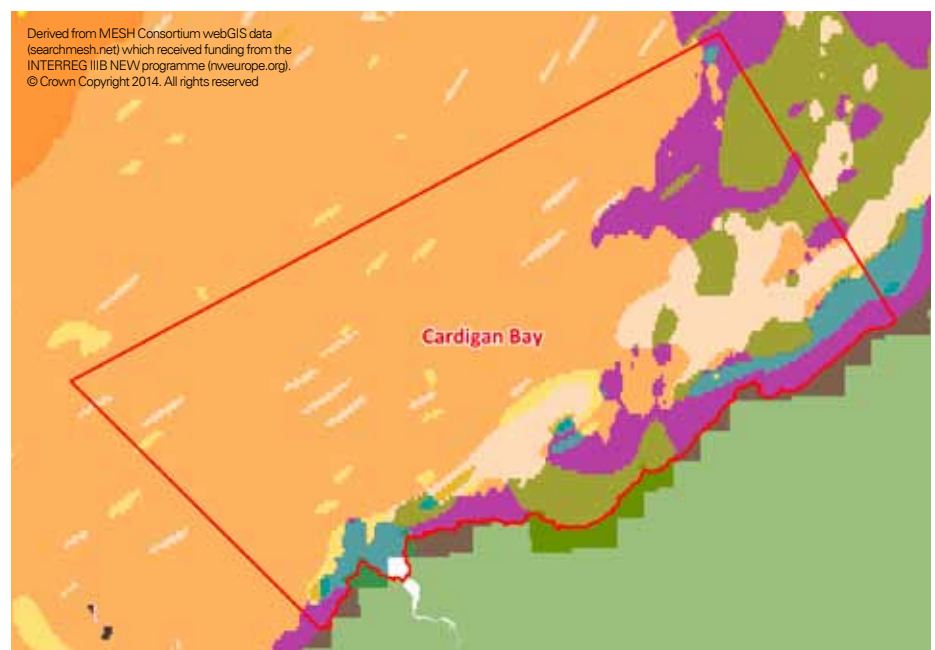
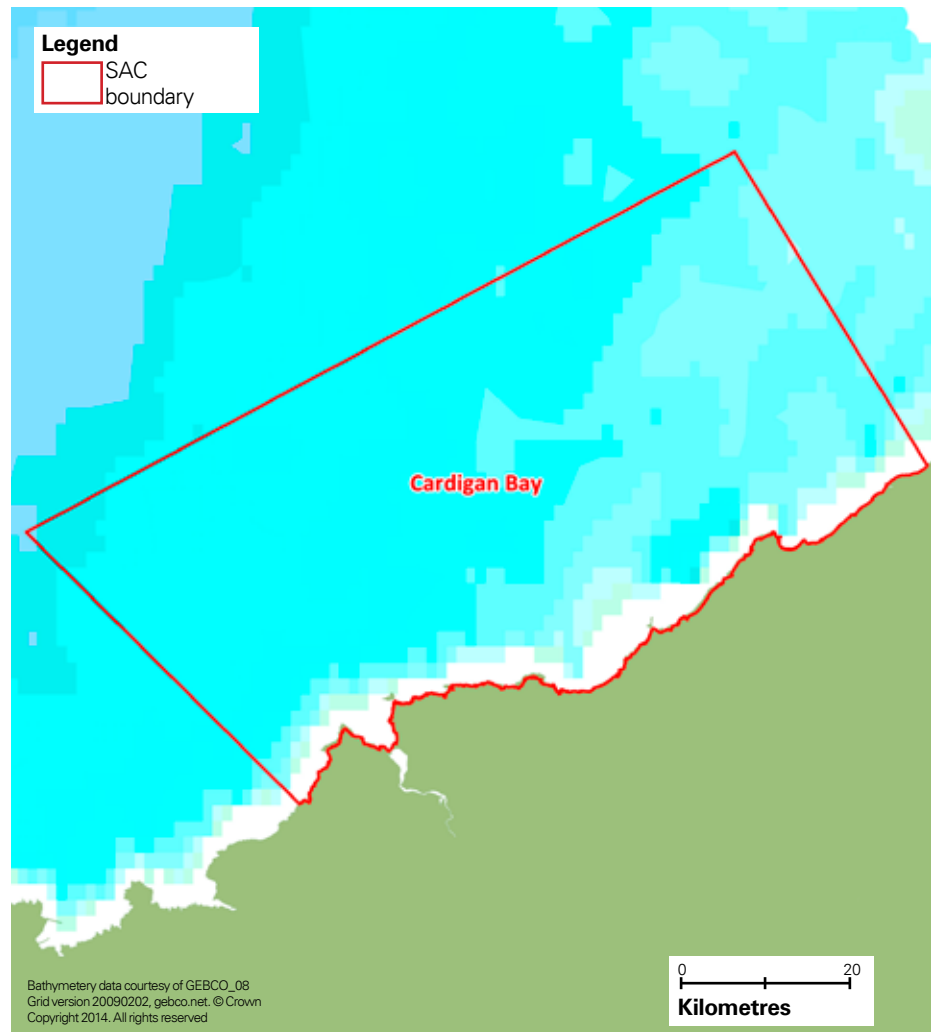
While designated to protect the bottlenose dolphin The Wildlife Trusts believe that the harbour porpoise should also be listed as a feature of this site.

Designated in 2004 under the EC Habitats and Species Directive, the Cardigan Bay Special Area of Conservation (SAC) extends from Ceibwr Bay in Pembrokeshire to Aberarth in Ceredigion and extends almost 20km offshore. Cardigan Bay SAC encompasses around 1000km² (958.6km²) of sea, helping to protect a rich variety of important European habitats such as subtidal sandbanks, reefs and sea caves and the wildlife which depend on them.

There are many species which make Cardigan Bay an important place such as marine and river lampreys, Atlantic grey seal, bottlenose dolphin and harbour porpoise. The bottlenose dolphins for which the site is designated appear to use the inshore waters of Cardigan Bay for both feeding and reproduction, and in the summer months calves and juveniles are often observed with adult individuals or groups.

Harbour porpoises are present in all months of the year, as a feeding site with a greater emphasis on social and mating during July to September. Porpoise numbers peak during the winter months. The site has relatively high densities compared with surrounding areas and includes high numbers of porpoises including newborns during the peak breeding season (May-August), when juvenile to adult ratios of 15-20% occur. Other cetacean species encountered but less regularly include minke whale, common dolphin, Risso's dolphin, killer whale and humpback whale³³.

“ Harbour porpoises are present all year, with numbers peaking during the winter ”

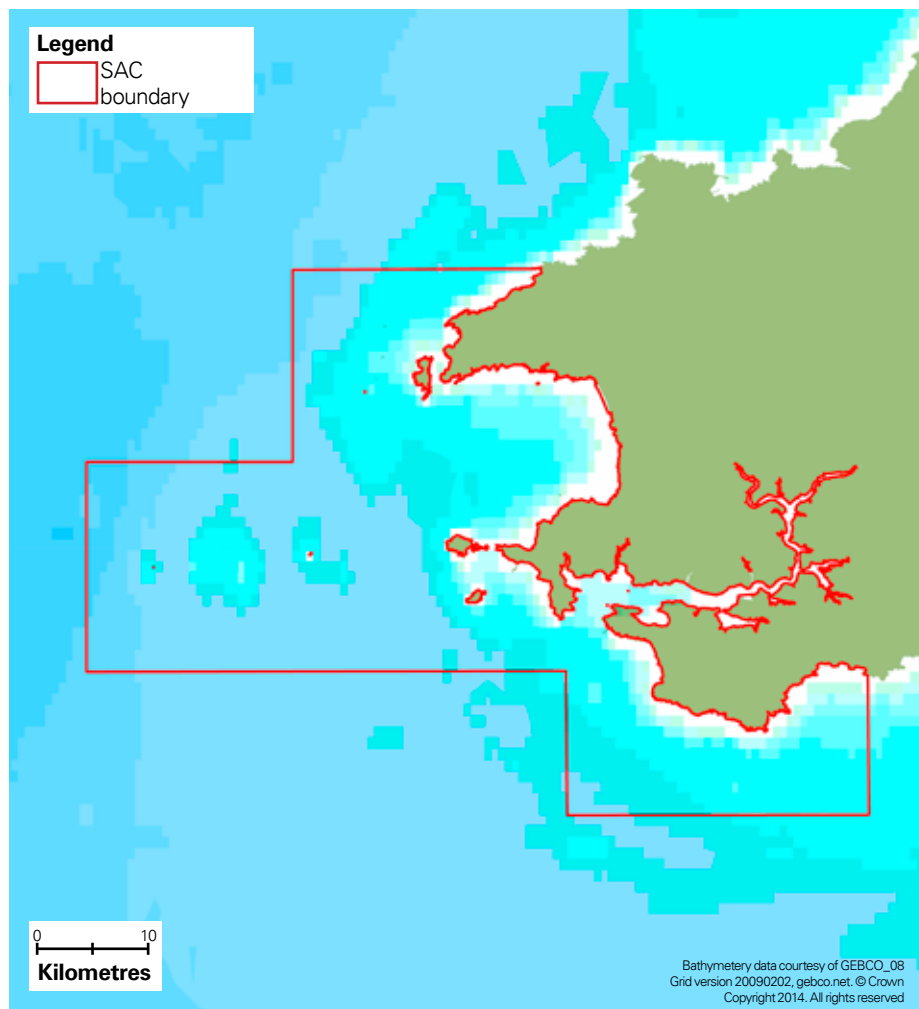


14. Pembrokeshire Marine

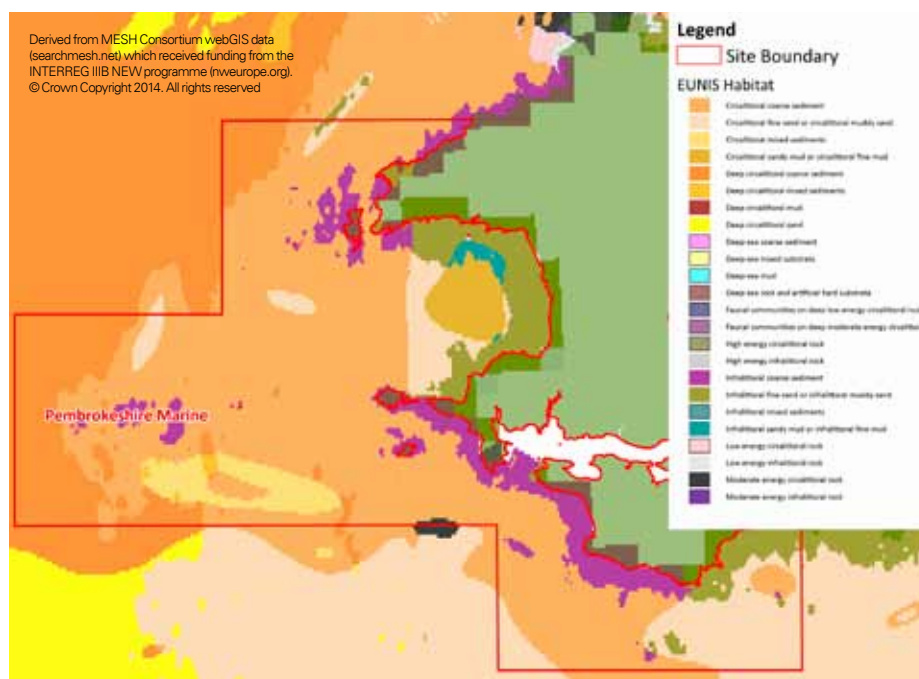
Pembrokeshire Marine is the UK's third largest marine SAC. It is particularly diverse and includes the islands of Ramsey, Skomer, Grassholm, Skokholm, the Bishops and Clerks. It extends 34km offshore to The Smalls. The landward boundary of the SAC follows the extreme high water mark. The site is designated as an SAC for eight habitats directive Annex I habitat types and seven Annex II species.

Habitats included for protection are reefs, estuaries, large shallow inlets and bays, mud and sand flats, subtidal sandbanks, saltmarsh, lagoons and caves. Species include Atlantic grey seals, shore dock, otters, sea and river lampreys and allis and twaite shad, but the harbour porpoise for which this site is also important is not included.

Porpoises are present in all months of the year, but with a peak presence in summer and autumn. The site has relatively high densities compared with surrounding areas, including newborns during the peak breeding season (May-August). Other species encountered regularly include the grey seal, minke whale, common dolphin, Risso's dolphin and less frequently bottlenose dolphin, killer whale, fin whale and humpback whale³³.



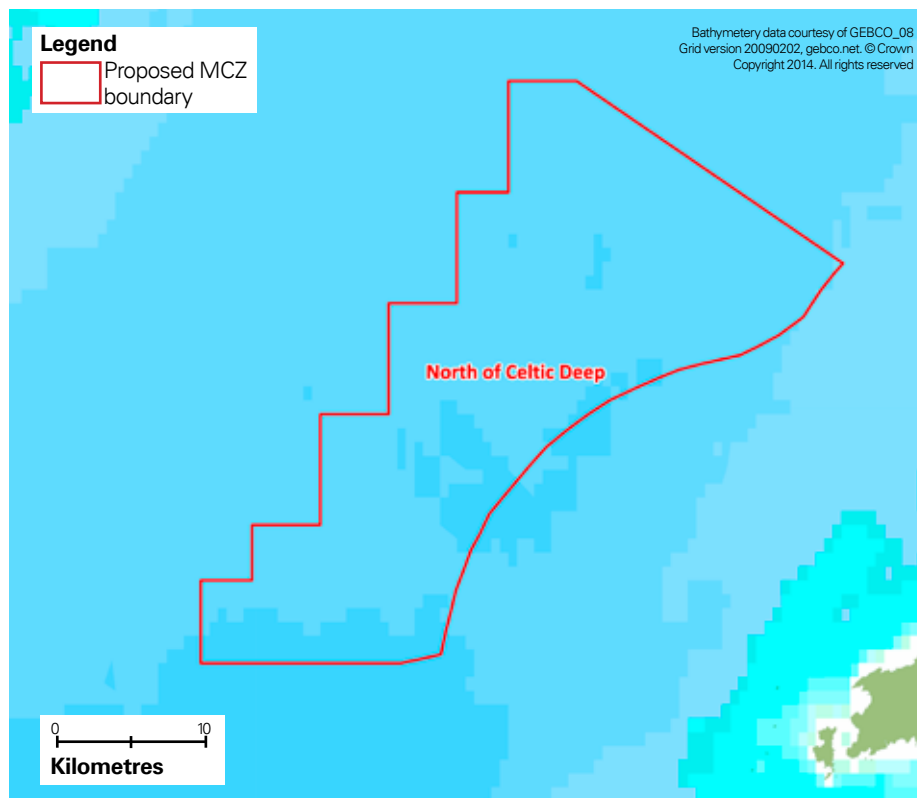
“ Porpoises are present all year, but with a peak presence in summer and autumn ”



15. North of Celtic Deep⁵⁴

St George's Channel provides a critical habitat for the common dolphin. Individuals of this species congregate there in large numbers, between May to November, for feeding and calving⁵⁵. Inclusion of this cetacean as a feature, based on the evidence in Clarke et al, 2010⁴³ and Sea Trust & Stena Europe, 2004-11⁵⁶, would be in line with Defra's commitment that MCZs will be considered if there is clear evidence that the conservation of a highly mobile species would benefit from site-based protection measures.

Common dolphins congregate in large numbers for feeding and calving



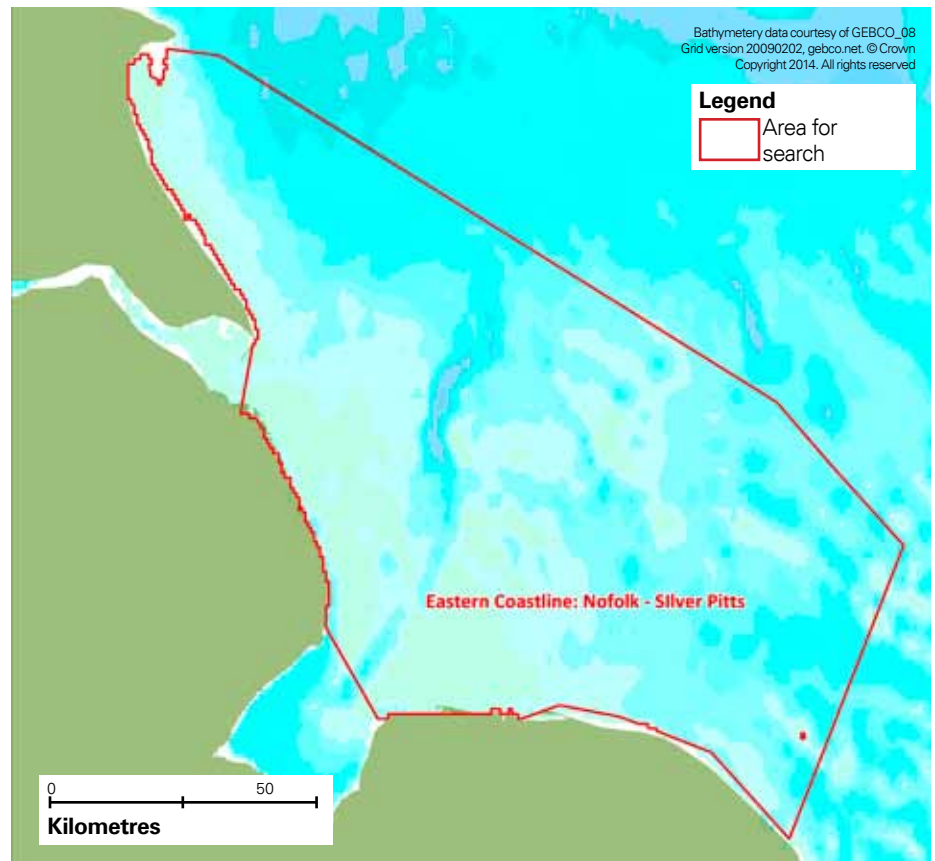
References

- ⁵⁴ Annex 1: 127 Annex H: Form for 31 sites in the first tranche – North of Celtic Deep (Dave Dunlop, Acting Marine Conservation Seas Officer, North West Wildlife Trusts)
- ⁵⁵ Clarke, J., Dolman, S. and Hoyt, E. 2010 Towards marine protected areas for cetaceans in Scotland, England and Wales. WDCC (Whale & Dolphin Conservation Society).
- ⁵⁶ Sea Trust & Stena Europe Survey of Cetaceans in the St George's Channel, April 2004 – April 2011

16. Eastern coastline, including Silver Pit

These ‘areas of additional search’ are areas where we know that small cetaceans, such as the harbour porpoise and white-beaked dolphin are seen regularly and/or seasonally. However, we don’t have significant data to back up designations within either of these sites. As such we propose that they are investigated further with designation in mind. Harbour porpoises are present off Eastern England in all months of the year, with a peak presence (once corrected for effort) in spring^{57,58,59,60}. Observations at coastal sites such as Cromer, Spurn Head, and Bempton/Flamborough Head show numbers peaking at the start of the breeding season (April-May), with newborns regularly observed^{61,62}. The general area appears to be used for calving (May-July) as well as feeding (year-round) purposes^{61,62,58}. It may also be used for mating purposes since animals are recorded during August and September, the peak period for mating^{61,62}.

Coastal observations show harbour porpoise numbers peaking at the start of the breeding season



References

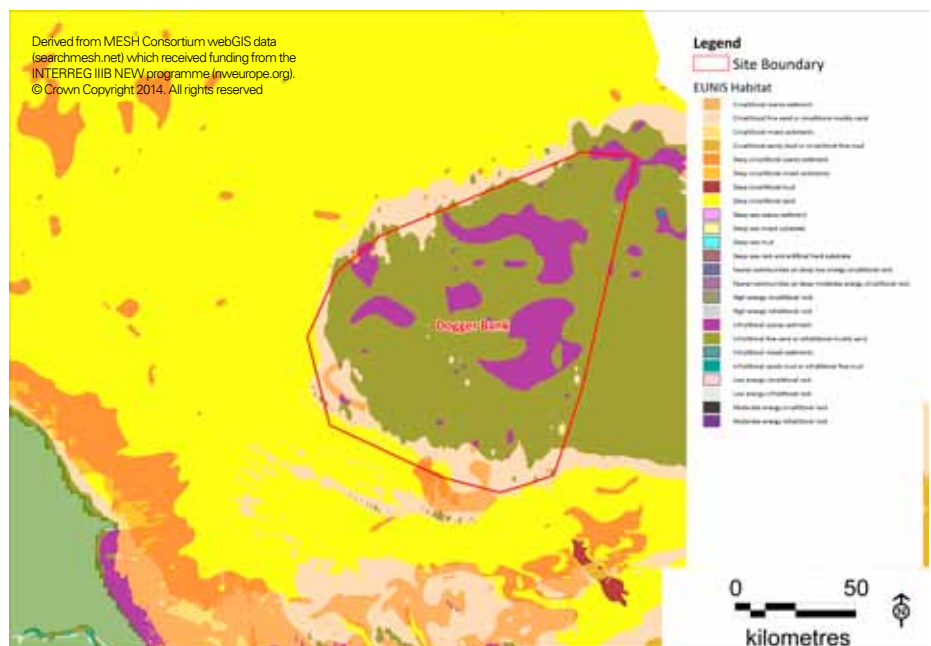
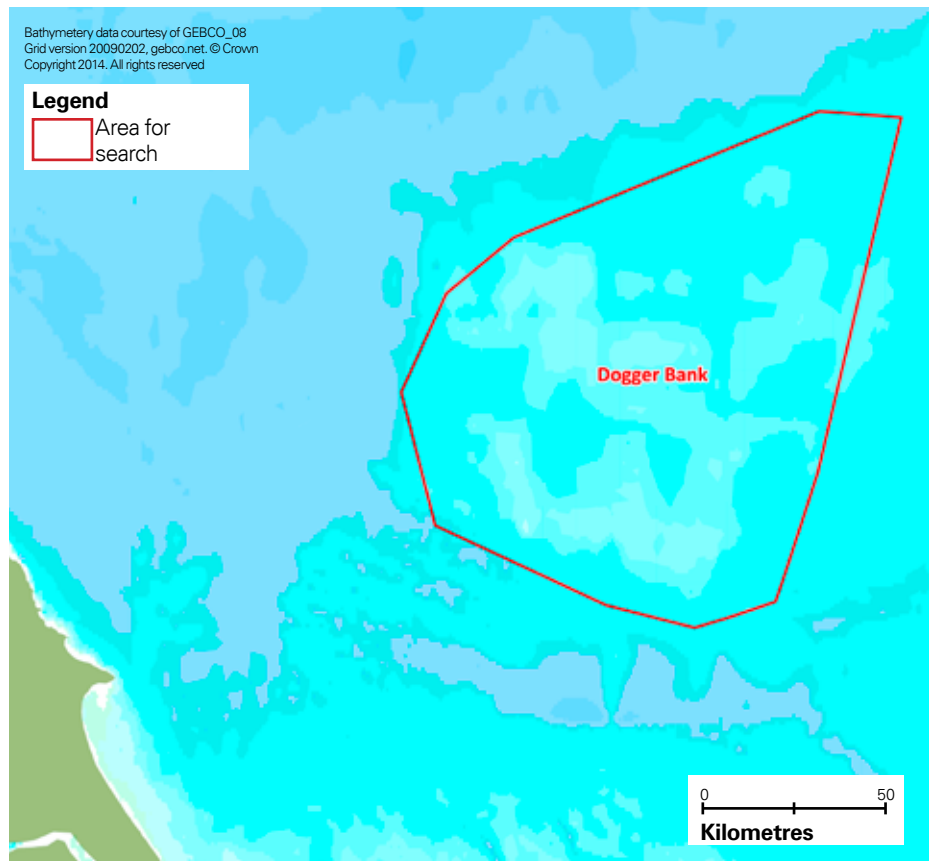
- 57** Evans, PGH (1995) Whales, dolphins and porpoises. Chapter 5.15. Pp. 129-131. In: Coasts and Seas of the United Kingdom. Region 6. Eastern England: Flamborough Head to Great Yarmouth. (Editors Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP and Davidson, NC). Joint Nature Conservation Committee, Peterborough.; Sea Watch Foundation, unpublished data.
- 58** Northridge, S, Tasker, ML, Webb, A and Williams, JM (1995) Seasonal distribution and relative abundance of harbour porpoises *Phocoena phocoena* (L.), white-beaked dolphins *Lagenorhynchus albirostris* (Gray) and minke whales *Balaenoptera acutorostrata* (Lacepède) in the waters around the British Isles. ICES Journal of Marine Science, 52: 55-66
- 59** Evans, PGH, Anderwald, P and Baines, ME (2003) UK Cetacean Status Review. Final Report to English Nature & Countryside Council for Wales. Sea Watch Foundation, Oxford, UK. 150pp
- 60** Evans, PGH and Wang, J (2005) Re-examination of distribution data for the harbour porpoise on the N.W. European Continental Shelf with a view to site selection for this species. CCW Contract Science Report No: 64
- 61** Evans, PGH (1995) Whales, dolphins and porpoises. Chapter 5.15. Pp. 129-131. In: Coasts and Seas of the United Kingdom. Region 6. Eastern England: Flamborough Head to Great Yarmouth. (Editors Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP and Davidson, NC). Joint Nature Conservation Committee, Peterborough.; Sea Watch Foundation, unpublished data
- 62** Hammond, PS (2008) Small cetaceans in the European Atlantic and North Sea (SCANS II). Final report to the European Commission under contract LIFE04NAT/GB/000245.
- 63** SMRU Ltd. (2010) Approaches to marine mammal monitoring at marine renewable energy developments. Final Report. SMRU Ltd, Sea Mammal Research Unit, St Andrews. 110pp.

17. Dogger Bank

We also believe that Dogger Bank should be considered as an area of additional search for harbour porpoise and white-beaked dolphin as potential designated features of the SAC. German and Dutch aerial surveys have already led to inclusion of harbour porpoises in their respective parts of Dogger Bank, yet the UK portion has yet to receive such designation despite years of campaigning.

The Dogger Bank is an offshore marine feature, located within the southern area of the North Sea. It is the UK's largest open area of shallow water, with depths ranging from 17m to 70m. The shallowest areas are in the South and South-East. Depth also declines to 50m along the edges of the area. The Dogger Bank is flat in the centre, with steep slopes in the South.

This is an ecologically diverse area, comprising of a rich variety of marine species and habitats. It has also been shown to have relatively high densities of harbour porpoise, compared with surrounding areas^{62,63}. More recently new data has come to light which would indicate that white-beaked dolphins are overwintering here.



“German and Dutch aerial surveys have led to inclusion of harbour porpoises in their parts of Dogger Bank”

References

64 Gilles, A, Scheidat, M and Siebert, U (2009) Seasonal distribution of harbour porpoises and possible interference of offshore wind farms in the German North Sea. *Marine Ecology Progress Series*, 383: 295-307.; M. Scheidat, personal communication.

Conclusion

The development of an ecologically representative network of Marine Protected Areas requires prioritising ecologically important areas – areas which support particular ecological processes, are important for particular life stages and behaviours of species, are highly productive, or support high biodiversity. Government commitments and advice indicate that an ecologically

coherent network of Marine Protected Areas should include areas of high productivity, such as fronts and upwellings, and which support wide-ranging species and congregations of species, along with sites which are important at various stages of species life-cycles, i.e. breeding areas, spawning and nursery areas, feeding areas, etc. A unique opportunity exists now to start

identifying and protecting important sites with high productivity and high biodiversity in UK waters and including information on pelagic habitats and species in the designation of Marine Conservation Zones. Only with the inclusion of such sites can ecological coherence and effective management of a Marine Protected Area network be achieved.

Male killer whale,
Anna Bunney



“A unique opportunity exists now to start identifying and protecting important sites for our ocean giants in UK waters”



Batey, L. & Edwards, J (2014) Megafauna hotspots: The missing link in our network of Marine Protected Areas. Spatial protection for whales, dolphins, porpoises and basking sharks recommended by The Wildlife Trusts, 29pp.

Acknowledgements: Prior, J S H (2013) Marine Conservation Zones for pelagic habitats and associated wildlife. Submission to The Wildlife Trusts.

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