



**Cyfoeth
Naturiol
Cymru
Natural
Resources
Wales**

Proposals to extend Skokholm and Skomer Special Protection Area and rename it as

SKOMER, SKOKHOLM AND THE SEAS OFF PEMBROKESHIRE / SGOMER, SGOGWM A MOROEDD PENFRO SPECIAL PROTECTION AREA

Advice to the Welsh Government and UK Government

**NATURAL RESOURCES WALES
JOINT NATURE CONSERVATION COMMITTEE**

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Crynodeb

Mae'r ddogfen hon yn cynnwys argymhellion ar y cyd gan Cyfoeth Naturiol Cymru (CNC) a'r Cydbwyllgor Cadwraeth Natur i Lywodraeth Cymru a Llywodraeth y Deyrnas Unedig ynglŷn â chynigion i aiddosbarthu ac ymestyn Ardal Gwarchodaeth Arbennig Skokholm and Skomer ac ailenwi'r safle estynedig yn Ardal Gwarchodaeth Arbennig Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro Special Protection Area.

Mae'r argymhellion hyn wedi'u bwriadu i helpu i gyflawni rhwymedigaethau'r Deyrnas Unedig o dan Erthygl 4 o Gyfarwyddeb Adar yr UE (2009/147/EC), sy'n ei gwneud yn ofynnol i Aelod Wladwriaethau ddsbarthu fel Ardaloedd Gwarchodaeth Arbennig (AGA) y tiriogaethau mwyaf addas ar dir a môr i rywogaethau adar a restrir yn Atodiad 1 at y Gyfarwyddeb ac i rywogaethau mudol a welir yn rheolaidd. Mae'r canllawiau ar ddedhol safleoedd yn AGA yn y Deyrnas Unedig wedi'u nodi yng nghanllawiau dethol AGA y Deyrnas Unedig a gyhoeddwyd gan y Cydbwyllgor Cadwraeth Natur.

Diddordeb cymhwyso

Fel sy'n ofynnol yn ôl Erthyglau 4.1 a 4.2 o'r Gyfarwyddeb Adar, diben AGA yw ei gwneud yn bosibl rhoi mesurau cadwraeth arbennig ar waith yn ymwneud â chynefin(oedd) rhywogaethau Atodiad 1 a/neu rywogaethau mudol a welir yn rheolaidd (ar wahân i'r rhai sydd wedi'u rhestru yn Atodiad 1) i sicrhau eu bod yn goroesi ac atgenhedlu yn eu hardal ddsbarthiad.

Mae AGA bresennol 'Skokholm and Skomer' yn cymhwyso o dan **Erthygl 4.1** drwy gynnal yn rheolaidd fwy nag 1% o boblogaeth Prydain Fawr o'r: pedryn drycin *Hydrobates pelagicus*, y frân goesgoch *Pyrhocorax pyrrhocorax* a 0.6% o boblogaeth Prydain Fawr o'r dylluan glustiog *Asio flammeus* (Tabl 1). Mae AGA ddrafft Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro yn cymhwyso o dan Erthygl 4.1 ar yr un sail â'r AGA bresennol.

Mae AGA bresennol 'Skokholm and Skomer' yn cymhwyso o dan **Erthygl 4.2** drwy gynnal yn rheolaidd boblogaethau bridio o bwys rhyngwladol o'r rhywogaethau mudol hyn: aderyn drycin Manaw *Puffinus puffinus*, y pâl *Fratercula arctica*, a'r wylan gefnddu leiaf *Larus fuscus*, a thrwy gynnal yn rheolaidd gasgliad o 394,260 o adar môr sy'n bridio, a'r rheini yn bennaf yn adar drycin Manaw (301,936 o adar), pedrynnod drycin (7,000 o adar), palod (19,000 o adar), llursod *Alca torda* (5,990 o adar), gwylogod *Uria aalge* (15,262 o adar), a gwyllanod cefnddu lleiaf (40,600 o adar) (gweler Tabl 1). Mae AGA ddrafft Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro yn cymhwyso ar sail yr un nodweddion nythfa adar môr sy'n bridio, a gallai'r estyniad arfaethedig gymhwyso ar sail adar drycin Manaw a phalod sy'n chwilota am fwyd (gweler Tabl 2).

Ffiniau'r safle

Mae'r Cydbwyllgor Cadwraeth Natur wedi bod yn gweithio dros y degawd diwethaf ar ran holl Gyrrff Cadwraeth Natur Statudol y Deyrnas Unedig i gwblhau rhaglen casglu a dadansoddi data er mwyn nodi cyfres o ardaloedd pwysig i adar môr yn nyfroedd y Deyrnas Unedig. Roedd hyn yn golygu proses bedwar cam, sef: 1) dadansoddi 27 mlynedd o ddata ESAS (*European Seabirds at Sea*), 2) rhyngosod data ESAS i gynhyrchu mapiau dwysedd, 3) amlinellu 'dwysfannau' dwysedd adar môr, a 4) cymhwyso Camau 1.1-1.4 dethol AGA y

Deyrnas Unedig. Sefydlwyd y ffiniau estynedig drwy ganfod dwysfannau dwysedd adar môr o ddata dwysedd adar môr wedi'i fodelu, gan ddefnyddio ystadegyn 'Getis Ord Gi*' a dethol 1% uchaf y gwerthoedd Getis Ord i nodi ardaloedd i'w cynnwys o fewn y ffiniau arfaethedig. Profwyd yr ardaloedd hyn wedyn yn erbyn y canllawiau AGA a rhoddodd hynny ddwy ardal yn nyfroedd tiriogaethol Cymru a oedd yn cymhwyso o ran adar drycin Manaw ac un a oedd bron â chymhwyso o ran y pal ond a oedd yn annigonol ar ei phen ei hun oherwydd y niferoedd. Mae'r ardaloedd adar drycin Manaw a phalod wedi cael eu hychwanegu at yr AGA bresennol fel estyniad gan mai yn y nythfa hon y mae mwyafrif yr adar drycin Manaw a'r palod yn nythu. Mae hyn yn rhoi un safle drafft y bwriedir ei alw'n Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro. Mae ffiniau'r AGA arfaethedig yn cwmpasu arwynebedd o 152,453 ha i gyd. O'r ardal honno, mae 92,360 ha yn nyfroedd tiriogaethol Cymru a 60,093 ha yn nyfroedd alltraeth y Deyrnas Unedig.

Mae Tabl 1 yn dangos rhywogaethau a niferoedd yr adar môr y mae'r AGA bresennol wedi'i dynodi o'u herwydd, tra mae Tabl 2 yn dangos niferoedd yr adra drycin Manaw a'r palod yn yr estyniad morol arfaethedig (wedi'u seilio ar ddata ESAS, 1980-2006). Cafodd y gwaith hwn ar nodi cydgasgliadau yn yr amgylchedd morol ei gyflwyno yn adroddiadau'r Cydbwyllgor Cadwraeth Natur rhifau 431 (Kober *et al.* 2010) a 461 (Kober *et al.* 2012). Mae'r cyfrif adar yn Nhabl 1 yn cyfateb i'r wybodaeth a gyhoeddwyd yn Adolygiad AGA 2001 (Stroud *et al.* 2001), sy'n darparu'r sylfaen ar gyfer dynodiad presennol AGA Skokholm and Skomer. Mae data cyfrif adar mwy diweddar ar gael ond nid yw wedi'i ddefnyddio yma i ailasesu'r safle yn erbyn canllawiau dethol AGA y Deyrnas Unedig. Y rheswm am hynny yw bod yr ardal forol arfaethedig yn cael ei chyflwyno fel estyniad at AGA bresennol. Nid ystyrir bod y sail i gymhwyso fel AGA wedi newid ers i'r AGA gael ei hailddosbarthu gan Weinidogion Cymru ym mis Hydref 2014 er mwyn gweithredu canfyddiadau adolygiad AGA 2001, a chynnwys estyniad morol. Byddai'r rhywogaethau dan sylw yn cymhwyso pe caent eu hasesu yn erbyn data mwy diweddar.

Tabl 1. Crynodeb o'r diddordeb adaregol cymhwyso yn AGA ddrafft Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro.

Rhywogaeth	Cyfrif (cyfnod)	% o'r is-rywogaeth neu boblogaeth (parau) ¹	Math o ddiddordeb (erthygl perthnasol yn y Gyfarwyddeb Adar) ²
Pedryn drycin	3,500 pâr (1995)	4.1% o boblogaeth Prydain Fawr	Atodiad 1 (4.1)
Aderyn drycin Manaw	150,968 pâr ³	56.9% o boblogaeth y byd (cyfrif y 1990au hwyr)	Mudol (4.2)
Pâl	9,500 pâr	1.1% o boblogaeth y byd (cyfrif y 1980au hwyr)	Mudol (4.2)
Gwylan gefnddu leiaf	20,300 pâr (cymedr 1993-1997)	16.4% o'r boblogaeth fioddaearyddol	Mudol (4.2)
Brân goesgoch	4 pâr	1.2% o boblogaeth Prydain Fawr	Atodiad 1 (4.1)
Tylluan glustiog	6 pâr	0.6% o boblogaeth Prydain Fawr ⁴	Atodiad 1 (4.1)

	Cyfrif (cyfnod)	Rhywogaethau yn y casgliad ⁶
Casgliad Adar Môr	394,260 (2001) ⁵	394,260 yn cynnwys llurs, gwylog, gwylan goesddu, pâl, gwylan gefnddu leiaf, aderyn drycin Manaw, pedryn drycin.

Nodiadau

¹ Seiliwyd ar ddata a gyhoeddwyd yn Stroud *et al.* (2001)

² Rhywogaethau Erthygl 4.1 a restrir yn Atodiad 1 o'r Gyfarwyddeb Adar; Erthygl 4.2 yw rhywogaethau mudol a welir yn rheolaidd.

³ Amcangyfrifir bod Sgogwm a Sgomer yn cynnal 150,968 pâr o adar drycin Manaw sy'n bridio (Stroud *et al.* 2001) sy'n cynrychioli 68.6% o boblogaeth Prydain Fawr a hyd at 55% o boblogaeth y byd. Awgrymodd Perrins *et al.* (2012), yn defnyddio dull newydd o gyfrif, amcangyfrif poblogaeth i adar drycin Manaw o 316,070 o barau bridio. ⁴ Mae'r dylluan glustiog wedi'i rhestru'n anghywir yn adolygiad AGA 2001 fel rhywogaeth sy'n cymhwyso o dan Gam 1.1 canllawiau dethol AGA. Mae'r rhywogaeth yn cymhwyso o dan Gam 1.4 canllawiau dethol AGA gan ei bod yn bodloni'r canllawiau Cam 2 dilynol mewn unrhyw dymor: dosbarthiad y rhywogaeth; hanes meddiannaeth; ardaloedd rhywogaethau lluosog.

⁵ Y ffigur am nifer yr adar unigol o fewn y casgliad a gyhoeddwyd yn adolygiad AGA 2001 (Stroud *et al.* 2001) oedd 67,278, sydd bellach yn cael ei ystyried yn danamcangyfrif gwallus o'r niferoedd yn y casgliad. Mae'r Cydbwyllgor Cadwraeth Natur yn cadarnhau mai 394,260 o adar unigol yw'r nifer.

⁶ Mae'r rhywogaethau yn y casgliad o adar môr wedi cael eu nodi (yn dilyn Stroud *et al.* 2001). Y rhywogaethau hyn yw'r rhai lle mae un ai o leiaf 1% o boblogaeth genedlaethol yn bresennol yn y casgliad, neu fod y nifer o'r rhywogaeth unigol sy'n bresennol yn fwy na 2,000 o unigolion.

Tabl 2. Niferoedd adar drycin Manaw a phalod yn yr estyniad morol arfaethedig yn unig, wedi'u seilio ar ddata ESAS (1980-2006).

Rhywogaeth	Nifer yr unigolion yn bresennol yn ystod y tymor bridio ¹
Aderyn drycin Manaw	66,848
Pâl	3,194

Nodiadau

¹ Yn nadansoddiad ESAS, diffinnir tymor bridio aderyn drycin Manaw fel mis Mai i fis Medi, tra mae tymor bridio'r pâl yn cael ei ddiffinio fel mis Ebrill i fis Gorffennaf.

Summary

This document contains Natural Resources Wales' (NRW) and the Joint Nature Conservation Committee's (JNCC) joint recommendations to the Welsh Government and UK Government regarding proposals to re-classify and extend the Skokholm and Skomer Special Protection Area (SPA) and rename the extended site as Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro Special Protection Area.

These recommendations are intended to support the delivery of the UK's obligations under Article 4 of the EU Birds Directive (2009/147/EC), which requires Member States to classify as SPAs the most suitable territories on land and at sea for bird species listed in Annex 1 of the Directive and for regularly occurring migratory species. The guidelines for the selection of sites as SPAs in the UK are set out in the SPA selection guidelines published by the JNCC (1999).

Qualifying Interest

As required by Articles 4.1 and 4.2 of the Birds Directive, the purpose of SPAs is to enable the application of special conservation measures concerning the habitat(s) of Annex 1 species and/or regularly occurring migratory species (other than those listed in Annex 1) in order to ensure their survival and reproduction in their area of distribution.

The existing Skokholm and Skomer SPA qualifies under **Article 4.1** by regularly supporting more than 1% of the GB population of: European storm petrel *Hydrobates pelagicus* and redbilled chough *Pyrrhocorax pyrrhocorax* and 0.6% of the GB population of short-eared owl *Asio flammeus* (Table 1). The Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA qualifies under Article 4.1 on the same basis as the existing SPA.

The existing Skokholm and Skomer SPA qualifies under **Article 4.2** by regularly supporting breeding populations of international importance of the migratory species: Manx shearwater *Puffinus puffinus*, Atlantic puffin *Fratercula arctica*, and lesser black-backed gull *Larus fuscus* and by regularly supporting an assemblage of breeding seabirds of 394,260 birds, the main components of which are Manx shearwater (301,936 birds), European storm petrel (7,000 birds), Atlantic puffin (19,000 birds), razorbill *Alca torda* (5,990 birds) common guillemot *Uria aalge* (15,262 birds), and lesser black-backed gull (40,600 birds) (see Table 1). The Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA qualifies for the same breeding seabird colony features, with the proposed extension capable of qualifying on the basis of foraging Manx shearwater and Atlantic puffin (see Table 2).

Site boundary

JNCC has been working over the past decade on behalf of all the UK Statutory Nature Conservation Bodies (SNCBs) to complete a programme of data collection and analyses to identify a suite of important areas for seabirds within UK waters. This involved a four-step process of: 1) analysis of 27 years of European Seabirds at Sea (ESAS) data, 2) interpolation of the ESAS data to produce density maps, 3) the delineation of seabird density 'hotspots', and 4) the application of UK SPA selection Stages 1.1-1.4. The extended boundary was derived by identifying seabird density hotspots from modelled seabird density data, using the 'Getis Ord Gi*' statistic, and selecting the top 1% of Getis Ord values to identify areas for inclusion in the proposed boundary. These areas were then tested against SPA guidelines which gave two areas in Welsh territorial waters which qualified for Manx shearwater and one which nearly qualified for Atlantic puffin but was insufficient on its own

due to numbers. Both the areas for Manx shearwater and Atlantic puffin have been added on to the existing SPA as an extension as this colony is where the majority of Manx shearwaters and Atlantic puffins nest. This produces one draft site which is proposed to be called

Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro. The boundary of the proposed SPA covers an area of 152,453 ha in total. Of this, 92,360 ha are in Welsh territorial waters and 60,093 ha are in UK offshore waters.

Table 1 shows the species and numbers of seabirds the existing SPA is designated for, whilst Table 2 shows the numbers of Manx shearwater and Atlantic puffin in the proposed marine extension (based on the ESAS data, 1980-2006). This work on the identification of aggregations in the marine environment was presented in JNCC reports 431 (Kober *et al.* 2010) and 461 (Kober *et al.* 2012). The bird counts in Table 1 correspond to the information published in the 2001 SPA Review (Stroud *et al.* 2001), which provides the basis of the current Skokholm and Skomer SPA designation. More recent bird count data are available but have not been used here to reassess the site against the UK SPA selection guidelines. This is because the proposed marine area is being taken forward as an extension to an existing SPA. The basis for qualification as an SPA is considered unchanged since the SPA was reclassified by the Welsh Ministers in October 2014 in order to give effect to the findings of the 2001 SPA review, and to include a marine extension. The species concerned would qualify if assessed against more recent data.

Table 1. Summary of qualifying ornithological interest in Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA.

Species	Count (period)	% of subspecies or population (pairs) ¹	Interest type (relevant article of Birds Directive) ²
European storm petrel	3,500 pairs (1995)	4.1% of the GB population	Annex 1 (4.1)
Manx shearwater	150,968 pairs ³	56.9% of the global population (count late 1990s)	Migratory (4.2)
Atlantic puffin	9,500 pairs	1.1% of the global population (count late 1980s)	Migratory (4.2)
lesser black-backed gull	20,300 pairs (mean 1993-1997)	16.4% of the biogeographical population	Migratory (4.2)
red-billed chough	4 pairs	1.2% of the GB population	Annex 1 (4.1)
short-eared owl	6 pairs	0.6% of the GB population ⁴	Annex 1 (4.1)

	Count (period)	Component species ⁶
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¹ Based on data published in Stroud *et al.* (2001)

² Article 4.1 species listed in Annex 1 of the Birds directive; Article 4.2 are regularly occurring migratory species.

³ Skokholm and Skomer support an estimated 150,968 breeding pairs of Manx shearwater (Stroud *et al.* 2001) representing 68.6% of the GB population and up to 55% of the global population. Perrins *et al.* (2012) using a new census method suggested a population estimate for Manx shearwater of 316,070 breeding pairs ⁴ Short-eared owl is wrongly listed in the 2001 SPA review as qualifying under Stage 1.1 of the SPA selection guidelines. The species qualifies for inclusion under Stage 1.4 of the SPA selection guidelines as it meets the following Stage 2 guidelines in any season: species range; history of occupancy; multi-species areas.

Seabird Assemblage	394,260 (2001) ³⁴	394,260 including razorbill, common guillemot, blacklegged kittiwake, Atlantic puffin, lesser black-backed gull, Manx shearwater, European storm petrel.
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Notes

Table 2. Numbers of Manx shearwater and Atlantic puffin in the proposed marine extension only, based on the ESAS data (1980-2006).

Species	Number of individuals present during the breeding season ⁵
Manx shearwater	66,848
Atlantic puffin	3,194

Notes

³ The figure for number of individual birds comprising the assemblage published in the 2001 SPA review (Stroud *et al.* 2001) was 67,278, which is now considered to be an erroneous underestimate of the assemblage number. The latter is confirmed by JNCC to be 394,260 individual birds.

⁴ The component species' of the seabird assemblage have been identified (following Stroud *et al.* 2001). These are those where either at least 1% of a national population is present within the assemblage, or the number of the species present exceeds 2,000 individuals.

⁵ In the ESAS analysis, the breeding season period for Manx shearwater is defined as May-September, whereas for Atlantic puffin it is defined as April-July.

1 Introduction and background

The marine environment around Wales is physically and hydrographically diverse. A rich array of deep water and surface currents, and an equally complex spatial and seasonal pattern of thermal and saline frontal systems results in high primary productivity. The associated growth and concentration of zooplankton and fish offers rich feeding resources for seabirds and mammals.

The UK has the largest breeding seabird populations of any EU member state, with approximately 3.5 million pairs across 26 species (Mitchell *et al.* 2004), with significant proportions of the biogeographical populations of Manx shearwater *Puffinus puffinus* (up to 93%), northern gannet *Morus bassanus* (59%), lesser black-backed gull *Larus fuscus* (64.5%), common guillemot *Uria aalge* (31%), Atlantic puffin *Fratercula arctica* (10%) and black-legged kittiwake *Rissa tridactyla* (14%). Wales holds important populations of seabirds, for example about 57% of the global population of Manx shearwater and one of GB's largest populations of breeding lesser black-backed gull (Stroud *et al.* 2001).

As part of the UK's obligation to identify important marine areas for birds, an analysis of seabirds in UK waters was undertaken. The Joint Nature Conservation Committee (JNCC) identified important wintering concentrations and breeding aggregations of seabirds and waterbirds in the marine environment (Kober *et al.* 2010). In order to facilitate analysis across differing ecologies, four types of SPA were identified which would capture the most important seasons for the relevant Annex 1 and regularly occurring migratory species. These were, 1) marine extensions to existing seabird breeding colonies on the coast, 2) inshore aggregations of non-breeding waterbirds, 3) inshore and offshore seabird aggregations occurring at any time of year and 4) other types of marine SPA.

In 2005, JNCC started analysis using European Seabirds at Sea (ESAS) data collected from 1980 to 2005. Data on the distribution and numbers of seabirds at sea were extracted from the ESAS database using 'hotspot' analysis to identify the highest and most aggregated bird densities throughout waters within British fishery limits. The method is explained further in Section 3.7. From the seabird hotspots identified, two marine areas extending south-west of Pembrokeshire have been identified as hotspots for foraging Manx shearwater. In addition, a smaller area immediately west of Skomer Island has been identified as a hotspot for foraging Atlantic puffin. It is highly probable, given the proximity of the large seabird breeding colonies at Skokholm & Skomer SPA that the numbers of Atlantic puffin and Manx shearwater using these marine areas belong to the same breeding populations as those using the island breeding sites. The sea areas identified for Atlantic puffin and Manx shearwater are immediately adjacent to each other, and also in the case of the Atlantic puffin area, partly within the existing Skokholm & Skomer SPA. NRW and JNCC are putting forward these areas as a single proposed SPA incorporating the existing SPA together with the additional sea areas identified as UK hotspots for Atlantic puffin and Manx shearwater, which includes both Welsh territorial waters and UK waters outside the 12 mile limit of Welsh territorial waters.

1.1 The legal framework

The EU Birds Directive (2009/147/EEC⁶) provides a legislative framework for the protection, management and control of naturally occurring wild birds of EU Member States. Article 4 of the Birds Directive requires Member States to classify the 'most suitable territories in number

⁶ Formerly 79/409/EEC

and size' as special protection areas for the conservation of species listed in Annex I to the Directive, and to take similar measures for 'regularly occurring migratory species'. The classification of SPAs must take into account the species' protection requirements in the geographical sea and land area where the Directive applies. According to case law of the European Court of Justice, the selection of areas as SPAs and the determination of their boundaries should not take account of social or economic considerations, but reflect only scientific information.

SPAs in Wales (including Welsh territorial waters) are classified by the Welsh Ministers under section 2 of the European Communities Act 1972⁷. SPAs in United Kingdom waters lying outside Welsh territorial waters are classified by the UK Government Ministers, also under section 2 of the European Communities Act 1972. Decisions by the Welsh Ministers to classify SPAs in Wales must be preceded by consultation, in accordance with Regulation 12B of the Conservation of Habitats and Species Regulations 2010, as substituted. Likewise, decisions by UK Ministers to classify SPAs in UK offshore waters are subject to consultation in accordance with Regulation 13 of the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007, as amended.

Once classified, SPAs become 'European sites', 'European marine sites' or 'European Offshore Marine Sites' under the 2010 Conservation Regulations or 2007 Offshore Marine Regulations, as applicable. From that point they are subject to the provisions of the Regulations and Articles 6(2) to 6(4) of the Habitats Directive³. According to Welsh and UK Government policy, **potential SPAs** (that is proposed SPAs that are the subject of consultation prior to a decision on whether to formally classify them) should have the same degree of protection as classified SPAs.

Once sites have been formally proposed to Ministers by the statutory nature conservation bodies and until such time as proposed sites are approved by Ministers for formal consultation and become potential SPAs (pSPA), they are normally referred to as **draft SPAs**.

1.2 Offshore seabird aggregations

The Review of the UK SPA network (Stroud *et al.* 2001) did not consider marine SPAs, other than in relation to coastal and estuarine sites designated on the basis of their breeding seabird and wintering waterbird interests. Accordingly, the JNCC, on behalf of the UK conservation agencies, considered the requirements of four types of marine SPAs:

1. Marine extensions to existing seabird colony SPAs (McSorley *et al.* 2006; Wilson *et al.* 2009)
2. Inshore areas used by waterbirds (e.g. seaduck, divers and grebes) outside the breeding season.
3. Inshore and offshore areas used by seabirds for feeding and other activities at any time of year (Kober *et al.* 2010, Kober *et al.* 2012); and
4. Other types of marine SPA not covered by the above types, e.g. foraging areas for breeding terns, wintering areas for Balearic shearwater *Puffinus mauretanicus* and feeding areas for breeding red-throated diver *Gavia stellata*.

The proposals in this document are based only on outputs of work carried out under theme 3 above, noting that Skokholm and Skomer SPA was reclassified and extended in 2014 to include a marine extension to the breeding colony under theme 1 above.

⁷ This is a general provision of UK law empowering ministers to give effect to obligations arising from EU legislation 3 92/43/EEC

2 Location and Habitats

The Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA is located off the extreme south-west tip of Pembrokeshire in south-west Wales. The area overlaps with the Pembrokeshire Marine / Sir Benfro Forol Special Area of Conservation (SAC) which is designated for a number of marine habitat types and species listed in Annexes I and II of the Habitats Directive. Skomer Island down to the Mean Low Water Mark (MLWM) and the foreshore around Middleholm, is designated as a National Nature Reserve (NNR). Skomer is owned by NRW and leased to the Wildlife Trust of South and West Wales. Skomer and Middleholm are designated as a Site of Special Scientific Interest (SSSI). The waters immediately around Skomer, formerly a Marine Nature Reserve, are designated as a Marine Conservation Zone (MCZ) under Part 5 of the Marine and Coastal Access Act.

The islands of Skomer and Skokholm hold the largest concentration of breeding seabirds in England and Wales, including the largest breeding colony of Manx shearwater in the world, and one of the largest colonies of nesting lesser black-backed gulls in Britain. In addition the islands support a range of other breeding seabird populations, including herring gull *Larus argentatus*, black-legged kittiwake and common guillemot. The islands of Skomer and Skokholm are part of the national Seabird Monitoring Programme (SMP), and as a result there is considerable research, monitoring and surveillance effort, which provides demographic data on productivity and survival rates.

3 Assessment of ornithological interest

3.1 Site status and boundary

Skokholm and Skomer SPA was originally classified on 31st August 1982, with an area of 427.7 hectares. The site protects internationally important breeding populations of three Annex 1 species (red-billed chough *Pyrhocorax pyrrhocorax*, short-eared owl *Asio flammeus* and European storm petrel *Hydrobates pelagicus*); three regularly occurring migratory species (lesser black-backed gull, Manx shearwater and Atlantic puffin) and a seabird assemblage of European importance of over 20,000 seabirds, as qualifying features. During the breeding season, the assemblage is listed as comprising 67,278 individual seabirds, including black-legged kittiwake, Atlantic puffin, razorbill *Alca torda*, common guillemot, lesser black-backed gull, Manx shearwater and European storm petrel (Stroud *et al.* 2001). The figure published in the 2001 SPA Review (Stroud *et al.* 2001) of 67,278 individuals is now considered to be an erroneous underestimate of the number of seabirds comprising the assemblage. The size of the assemblage is confirmed by JNCC to be 394,260 individuals.

Article 4 of the Birds Directive (2009/147/EC) requires that Member States classify the most suitable territories for species listed in Annex I of the Directive (Article 4.1) and regularly occurring migratory species (Article 4.2) in the geographical sea and land area to which the Directive applies. To support implementation of conservation measures at sea, the Joint Nature Conservation Committee (JNCC) recommended that the boundaries of certain existing seabird colony SPAs be extended into the marine environment and produced generic guidance to implement this measure (McSorley *et al.* 2003, 2006; Reid & Webb 2005). Following a public consultation in early 2014, on 7th October 2014, Skokholm and Skomer SPA was reclassified by the Welsh Minister for Natural Resources and the boundary extended by a 4km radius around the islands, adding a marine area of 14,348 ha. The

extended boundary includes waters vital for essential ecological requirements (preening, bathing, displaying, loafing / resting at sea) for Manx shearwater and Atlantic puffin (as individually qualifying features) as well as common guillemot and razorbill (as component species of the seabird assemblage). The basis on which the site is considered to qualify was also updated to reflect the bird data in the 2001 UK SPA Review (Stroud *et al.* 2001), in line with the overall approach agreed between NRW and Welsh Government for implementing the findings of the 2001 SPA Review in Wales. The exception to this was the erroneous figure for the seabird assemblage, as described in the previous paragraph.

Data on seabird use of marine areas have been acquired and analysed by JNCC and an extension to the Skokholm and Skomer SPA is now proposed. This includes a 166,800 ha marine extension to the existing SPA. The data analysis that underpins the proposed extension is described in sections 3.6 and 3.7 below.

NRW and JNCC propose that the existing Skokholm and Skomer SPA, plus the proposed extension should be renamed as 'Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro' to better reflect the geographical extent of the proposed site, which would include, but would no longer be confined to, the islands of Skokholm and Skomer and their immediately adjacent waters.

3.2 Use of bird population estimates

The bird populations given in sections 3.3 and 3.4 below, correspond to the data published in the 2001 SPA Review (Stroud *et al.* 2001), which constitute the basis of the current Skokholm and Skomer SPA. More recent bird count data are available, but they have not been used to re-assess the site against the UK SPA selection guidelines, for the following reason.

The marine area is being taken forward as a proposed extension to the existing Skokholm and Skomer SPA, which already includes waters within a 4 km radius around the islands (see Figure 3). The basis for qualification of the existing SPA was confirmed in October 2014 when the site was reclassified by the Welsh Ministers on the basis of the 2001 SPA review data (Stroud *et al.* 2001), including the 4 km extension.

One of the main purposes of the 2001 SPA Review was to provide consistently derived and published baseline data for the UK SPA network, which could be used as the basis for SPA reclassification where there were significant differences between population figures in the Review and the populations recognised on extant SPA citations, many of which dated back to the early 1980s and/or were based on poor quality data of uncertain provenance. NRW agreed with Welsh Government that despite the passage of time since the 2001 Review was published, reclassification of existing SPAs in Wales should generally use the 2001 Review figures, which are considered to be a robust and transparently derived dataset which helps provide consistency of approach across the SPA network.

All the populations of individually qualifying species, and the seabird assemblage, would still meet the SPA selection guidelines if assessed using the most recent data available for them.

3.3 Annex 1 seabird species⁸

3.3.1 European storm petrel

⁸ Note that this section does not cover other Annex 1 species of the SPA (Red-billed chough and Short-eared owl) which do not use the marine environment.

European storm petrel breeding in Britain and Ireland belong to the subspecies *pelagicus*. The biogeographic population for the north-eastern Atlantic is estimated at 257,000 pairs (Stroud *et al.* 2001). For Britain, a total of 25,650 breeding pairs is estimated (Mitchell *et al.* 2004). Stroud *et al.* (2001) estimated nearly 3,500 pairs of European storm petrel at Skokholm and Skomer, representing 13% of the GB population. A later count than that represented in Stroud *et al.* (2001) gives an estimate of 2,540 nests in 2001 (Seabird Monitoring Programme Database).

A distribution map of breeding European storm petrels in UK waters, based on ESAS data, suggests that in the breeding season this species is found in highest densities north and west of Scotland, in particular in the continental shelf edge, and in the Celtic Sea (Kober *et al.* 2010).

3.4 Regularly occurring migratory species

3.4.1 Manx shearwater

Manx shearwater breed at high densities at just a few colonies in the North Atlantic. In the UK, there are two major SPAs supporting the majority of the global breeding population, namely Skokholm and Skomer and the island of Rum in the Inner Hebrides. Skokholm and Skomer support an estimated 150,968 breeding pairs of Manx shearwater (Stroud *et al.* 2001) representing 68.6% of the GB population and up to 57% of the global population. Perrins (2012), using a new census method, suggested an even higher population estimate for Manx shearwater of 316,070 breeding pairs. It is debatable if the new method overestimates the population, or if the old method underestimates it. In any case both population estimates vastly exceed the population thresholds for SPA selection under the UK guidelines. The figure presented in Stroud *et al.* (2001) of 150,968 breeding pairs is used here.

Breeding Manx shearwater prey on fish offshore, sometimes travelling up to 330 kilometres (Thaxter *et al.* 2012) in search of herring (clupeids). The proposed extension to Skokholm and Skomer SPA represents the only sea area in GB waters that meets the SPA selection guidelines (stage 1.2) for Manx shearwater. This species is found throughout the proposed marine extension in both Welsh territorial waters and UK waters.

3.4.2 Atlantic puffin

The Atlantic puffin is endemic to the North Atlantic and associated seas. The vast majority of the British and Irish population breeds in Scotland with the St. Kilda archipelago holding the largest colony. The principal area in Wales is Skokholm and Skomer SPA with an estimated breeding population of 9,500 pairs, representing at least 1.1% of the GB breeding population (Stroud *et al.* 2001). The Seabird Monitoring Programme data for 2014 show 5,040 individuals for Skokholm and 18,237 individuals for Skomer. This species is found within the proposed marine extension in both Welsh territorial waters and UK waters.

3.4.3. Lesser black-backed gull

The lesser black-backed gull has a global breeding range that extends from Iceland, east to the Taimyr Peninsula in northern Russia and south to Portugal. The largest coastal sites are at Skokholm and Skomer and Morecambe Bay SPAs. Skokholm and Skomer support an estimated 20,300 breeding pairs of lesser black-backed gull representing 24.5% of the GB population and up to 16.4% of the biogeographical population (Stroud *et al.* 2001). The Seabird Monitoring Programme data for 2014 show 8,432 occupied nests for Skomer and 1,565 occupied nests for Skokholm. This species is found within the proposed marine extension in both Welsh territorial waters and UK waters.

3.5 Breeding seabird assemblage

The UK is notable for the outstanding international importance of its population of breeding seabirds (Lloyd *et al.* 1991). Internationally important assemblages of breeding seabirds have been selected under SPA guidelines (Stage 1.3).

Skokholm and Skomer SPA supports 394,260 individual breeding seabirds⁹. Given that the threshold in the SPA selection guidelines is 20,000 birds, this assemblage is clearly of major European importance. In the context of SPA qualification the assemblage includes Manx shearwater, Atlantic puffin, European storm petrel, lesser black-backed gull, black-legged kittiwake, common guillemot and razorbill. It is important to mention though that species do not need to be present in numbers of European importance to be major assemblage components. Numbers equal to or exceeding 1% or more of GB population or 2,000 birds are sufficient for species to be listed as a major component of the assemblage.

3.6 Survey information

It would be logistically and financially unachievable to collect sufficient bespoke data across the whole area for all species throughout the year. Instead JNCC used existing boat based seabird counts collated to standard methods described by Tasker *et al.* (1984), Webb and Durinck (1992) and Camphuysen *et al.* (2004). The data are held in the European Seabirds at Sea (ESAS) database which is a collation of surveys of seabirds at sea in northwest European waters. The ESAS database is the most comprehensive and longest running data-set for the distribution of seabirds in north-west European waters (Pollock and Barton 2006). The ESAS data were used to identify the scale and location of seabird hotspots from the UK coastline out to the British fishery limit, between 1980 and 2006. Other data sources were considered, such as tracking data collected from breeding individuals, but these were rejected because too few studies were available at the time of analysis to provide sufficient information across the UK.

The analysis of the ESAS data determines the overall importance of the location for qualifying species. It provides the extent of the area under study, an estimate of the birds present and information on how regularly they occur.

3.7 Method for boundary setting

In the absence of obvious fixed geographic features, identification of potential SPAs at sea relies primarily on defining areas on the basis of where the birds are distributed. The basic principle is that the areas where birds occur at the highest average densities, over a number of years, are likely to be the 'most suitable territories' as required by the Birds Directive. Where the spatial distribution of a species varies across a given area, with no obvious 'cut off' defining the areas where the birds occur in large numbers, statistical techniques can be used to identify 'hotspots', which may not be readily apparent in the raw data on bird observations.

The seaward boundary of the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA, following analysis by JNCC, has been proposed based on the extent of density 'hotspots' for Manx shearwater and Atlantic puffin (the method is

⁹ The figure for number of individual birds comprising the assemblage published in the UK SPA Review (Stroud *et al.* 2001) was 67,278, which is now considered to be an erroneous underestimate of the assemblage number. The latter is confirmed by JNCC to be 394,260 individual birds.

described in Kober *et al.* 2012). The analysis by JNCC determined the extent and the limits of the seabird aggregation (see Figures 1a-d) and is summarised by the following steps.

- 1) The raw observations of Manx shearwater (Figure 1a) and Atlantic puffin (Figure 1c) from all relevant surveys were extracted from the ESAS database. Data were analysed from within the British Fishery Limits and from within a buffer of 100km surrounding it. As most transect sections were up to 6km long, no higher resolution could be achieved in the analysis and therefore the data were summarised into 6 x 6 km grid cells (Kober *et al.* 2010). When surveying seabirds along a transect line, distant birds sitting on the water are more likely to be missed compared with birds sitting closer to the survey platform. Without correcting for undetected birds, all counts are likely to be underestimates. To account for this bias, the technique of 'Distance Sampling' (Buckland *et al.* 2001) was applied to provide an estimate of the true numbers of birds within the survey area. This technique, however, needs a distance specified for each observation. As about one third of the ESAS data used did not have a distance specified for each observation, detection-correction factors were calculated for each species and applied to the raw data. The factors were derived by determining the difference between the density of birds observed between 0-100m of the survey platform and the density observed in the entire transect width (Kober *et al.* 2010).
- 2) The next stage was to produce a map showing seabird density for each 6 km x 6 km cell. The main challenge here is to derive seabird density across the whole study area from raw observation data which only provides seabird observations for discrete data points. This means that there are areas between the data points with no observations, and hence no survey data on seabird presence or absence. In order to derive predicted density of seabirds for locations where no data were collected, a statistical method called 'Poisson kriging' was applied (Kober *et al.* 2010). This is based on the principle that, when looking at spatial environmental data, areas closer together tend to have more similar characteristics than those that are further away from one another. Kriging uses this assumption to predict densities for locations with no data, based on nearby observed densities. This approach provides an estimate of seabird density for areas that have few (or no) survey data. Poisson kriging was applied to data sets for all seabirds and seasons, to produce a density map for Manx shearwater (Figure 1b) and Atlantic puffin (Figure 1d). The numbers of seabird species within the kriged seabird map are listed in Table 3.
- 3) The next stage was to identify seabird concentrations, or hotspots, from the density maps. This was done by calculating the 'Getis-Ord G_i^* statistic' for each grid cell (Getis and Ord 1992). G_i^* is a value, calculated for each individual grid cell on the density map, which scores each cell according to the number of seabirds predicted to occur there and how clustered the cell is with other high density cells. Each cell scores a higher G_i^* value if it is close to other high density cells, and lower if it is isolated from other high density cells. All grid cells on the density maps were ranked according to their G_i^* value, and the top 1% of cells were then selected, giving an initially selected set of 'hotspots' for both Atlantic puffin and Manx shearwater.
- 4) The next step was to select only the hotspots which met the UK SPA selection guidelines. The guidelines require a hotspot (1) to hold a population of birds in excess of the relevant population threshold, and (2) to do so on a regular basis. To assess if a hotspot exceeded the relevant population threshold, the total number of birds present in it was calculated from the density surface maps, and compared to the threshold number. To assess regularity of occurrence, the ESAS data was split by year. Those hotspots containing significantly higher numbers of birds than elsewhere and over multiple years were defined as meeting the 'regular occurrence'

criterion. A boundary was then drawn around all hotspots which met the UK SPA selection guidelines in terms of numbers of birds and regularity of occurrence (hatched areas in Figure 1e).

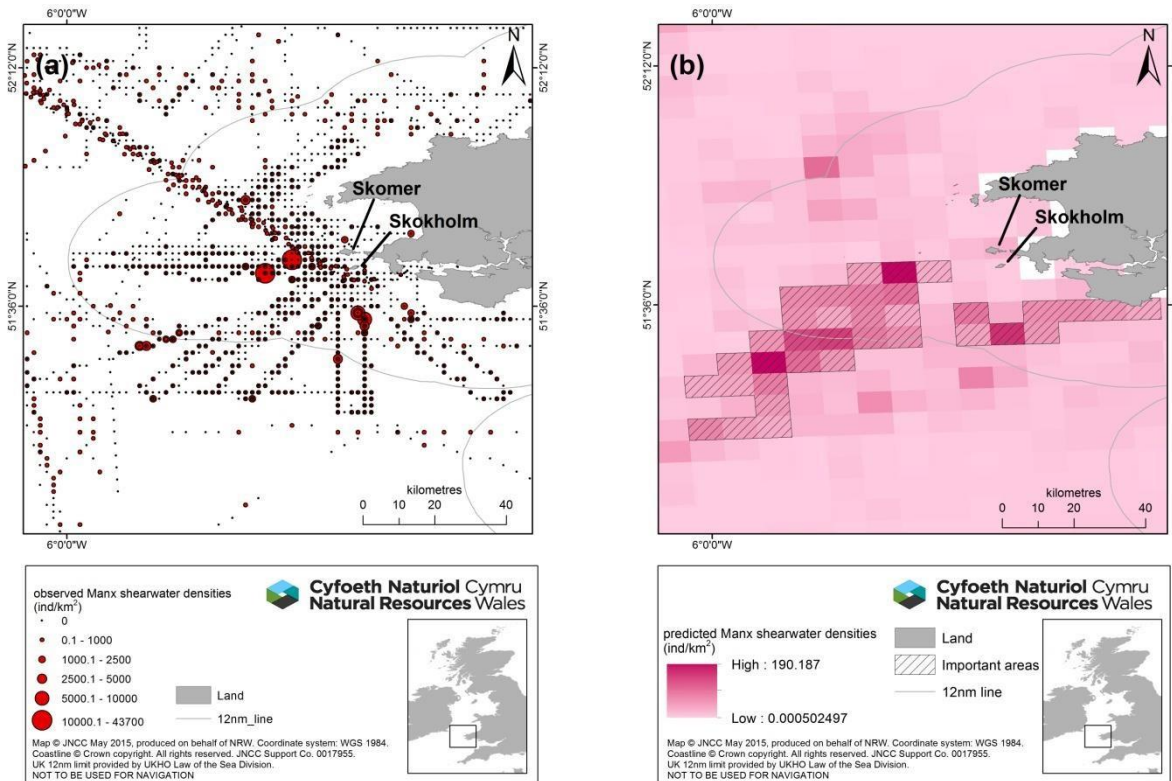


Figure 1a-b. Analytical steps to identify the most important area for Manx shearwater (a) raw ESAS observations for Manx shearwater, (b) predicted densities of Manx shearwater with important areas identified.

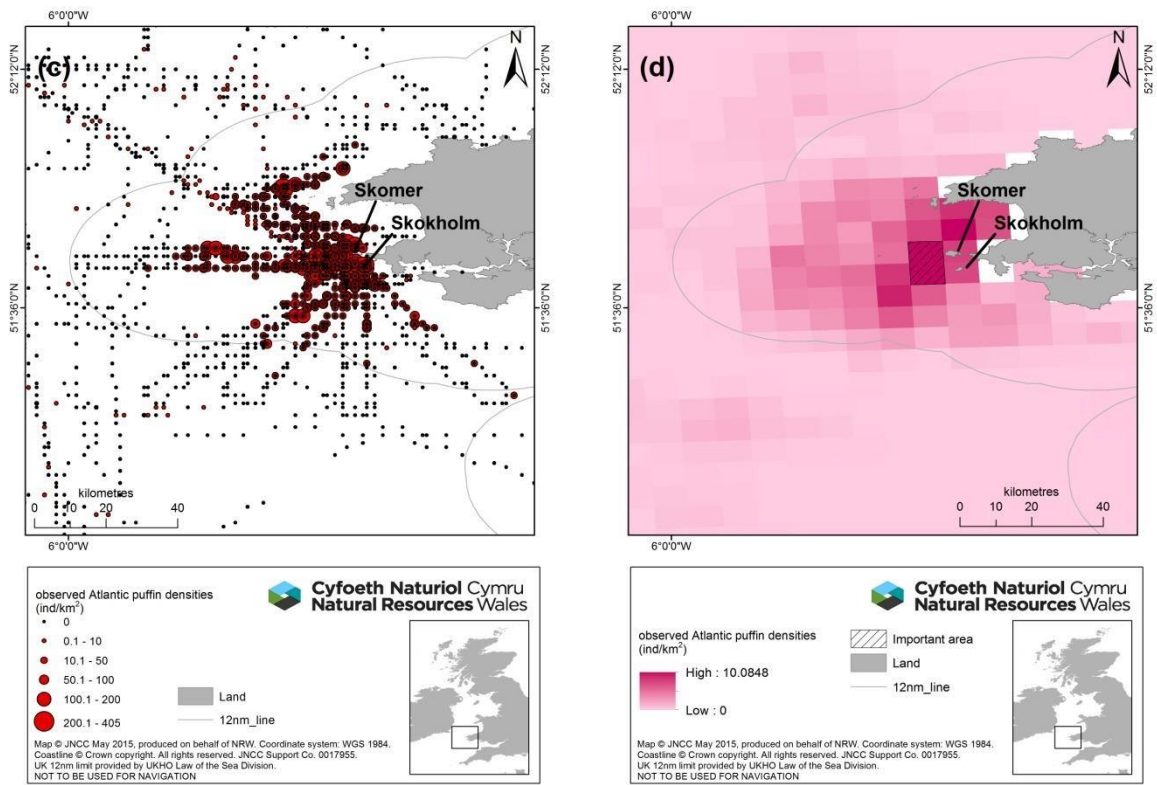


Figure 1c-d. Analytical steps to identify the most important area for Atlantic puffin, (c) raw ESAS observations for Atlantic puffin, (d) predicted densities of Atlantic puffin with important areas identified

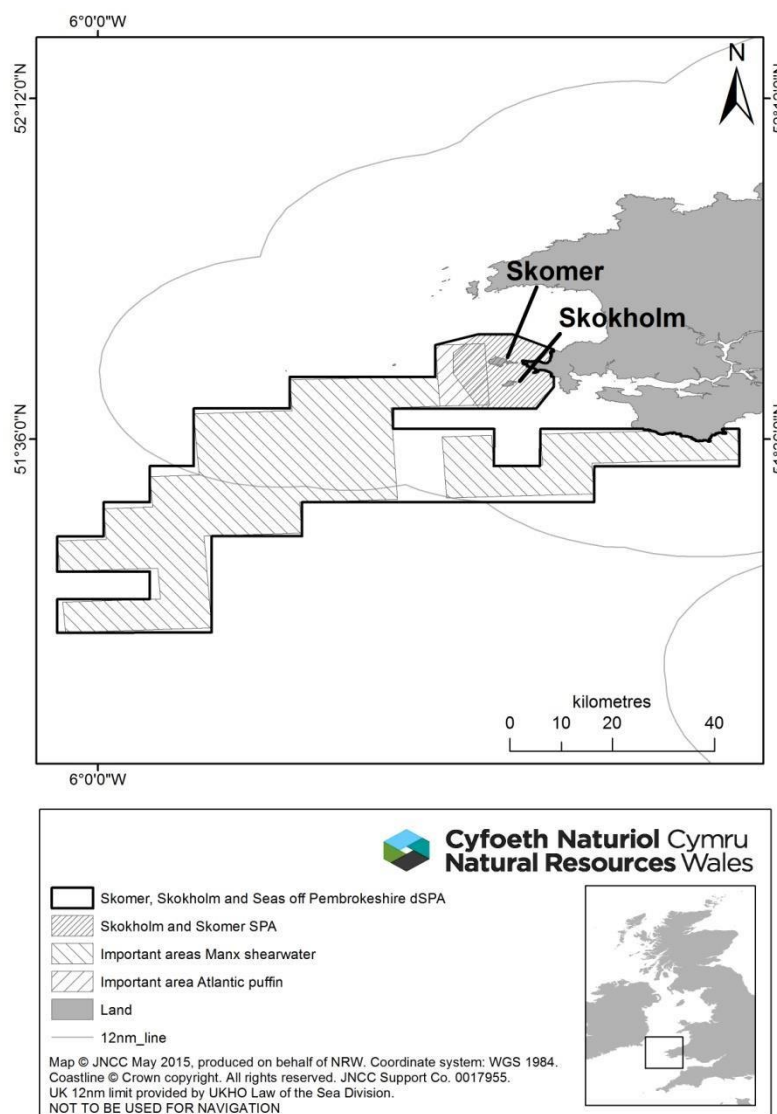


Figure 1e Important areas for Manx shearwater and Atlantic puffin identified from the hotspot analysis. Also shown are the recommended SPA boundary and the 12 mile territorial sea limit.

Table 3. Numbers of seabirds during the breeding season within the kriged density surface map.

Species	Number of birds during the breeding season	Breeding season
northern fulmar <i>Fulmarus glacialis</i>	151	March - July
Manx shearwater	66,848	May - September
European storm petrel	34	June - October
northern gannet	2,863	May - September
Great cormorant <i>Phalacrocorax carbo carbo</i>	5	April - August

European shag <i>Phalacrocorax aristotelis</i>	1	March - September
great skua <i>Catharacta skua</i>	3	May - August
black-legged kittiwake	1,602	May - September
lesser black-backed gull	3,671	May – August
herring gull	368	April – August
common guillemot	3,184	May - June
razorbill	570	May - June
Atlantic puffin	3,194	April - July
all species	82,532	

4. Assessments against the UK SPA selection guidelines

The SPA Selection Guidelines set out a two stage process for SPA identification in the UK (Stroud *et al.* 2001). **Stage 1** identifies areas that are likely to qualify for SPA status based mainly on population size and regular usage (Table 3). **Stage 2** re-assesses the areas identified under Stage 1 to select from these the most suitable territories in number and size for SPA classification, based on ecological criteria (Table 4).

4.1 Stage 1

Guidelines under Stage 1:

Stage 1.1. An area is used regularly by 1% or more of the Great Britain (GB) (or if relevant the all-Ireland) population of a species listed in Annex 1 of the Birds Directive in any season.

Stage 1.2. An area is used regularly by 1% or more of the biogeographical population of a regularly occurring migratory species (other than those listed in Annex I) in any season.

Stage 1.3. An area is used regularly by an assemblage of over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) or 20,000 seabirds in any season.

Stage 1.4. Finally, where the application of stages 1.1-1.3 does not identify an adequate suite of most suitable sites for the conservation of that species, sites may be selected if they satisfy one or more of various ecological criteria listed under the Stage 2 guidelines in any season.

The sea area to the southwest of Pembrokeshire shown in Figure 1e qualifies under:

Stage 1.2, because it regularly supports more than 1% of the biogeographical population of one regularly occurring migratory species (Manx shearwater).

When the sea area is combined with the existing SPA, which includes the islands themselves and the marine extension which was classified in 2014, the area also qualifies under:

Stage 1.1, because it regularly supports more than 1% of the GB populations of breeding European storm petrel and red-billed chough;

Stage 1.2, because it regularly supports more than 1% of the GB populations of breeding Atlantic puffin and lesser black-backed gull;

Stage 1.3, by regularly supporting more than 20,000 breeding seabirds;

Stage 1.4, by regularly supporting 0.6% of the GB population of breeding short-eared owl, and taking into account the Stage 2 guidelines.

Table 4. Assessment of the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA against Stage 1 of the UK SPA selection guidelines taken from Stroud *et al.* (2001).

Species and season	Status	Population size ¹⁰	% of relevant population ¹	Stage 1 guidelines ¹
European storm petrel	Breeding	7,000 pairs	4.1	1.1
red-billed chough	Breeding	4 pairs	1.2	1.1
Manx shearwater	Breeding	150,968 pairs ¹¹	68.6	1.2
Atlantic puffin	Breeding	9,500 pairs	2.1	1.2
lesser blackbacked gull	Breeding	20,300	24.5	1.2
Seabird Assemblage	Breeding	394,260 ¹²	N/A	1.3
Short-eared owl	Breeding	6 pairs	0.6	1.4 ¹³

NOTES

4.2 Stage 2

Guidelines under Stage 2:

Stage 2.1. Population size and density. Areas holding or supporting more birds than others and/or holding or supporting birds at higher concentrations are favoured for selection.

Stage 2.2. Species range. Areas selected for a given species provide as wide a geographic coverage across the species' range as possible.

¹⁰ Taken from Stroud *et al* 2001. For Annex 1 species the selection threshold is 1% of the GB population (European storm petrel, Red-billed chough, Short eared owl). For regularly occurring migratory species, the selection threshold is 1% of the biogeographical population (Manx shearwater, Atlantic puffin, lesser blackbacked gull).

¹¹ Perrins *et al.* (2012) estimated a Manx shearwater breeding population of 316,070 pairs, however this estimate was based on a different method and it is unclear whether this represents a genuine population increase or if the original method gave an underestimate of the breeding population.

¹² The assemblage size (expressed as the number of individuals) published in the 2001 SPA review (Stroud *et al.* 2001) is an error. In August 2013, JNCC confirmed the revised figure of 394,260 individuals.

¹³ Short-eared owl is wrongly listed in the 2001 SPA review (Stroud *et al.* 2001) as qualifying under Stage 1.1 of the SPA selection guidelines. The species qualifies for inclusion under Stage 1.4 of the SPA selection guidelines as it meets the following Stage 2 guidelines in any season: species range; history of occupancy; multi-species areas.

Stage 2.3. Breeding success. Areas of higher breeding success than others are favoured for selection.

Stage 2.4. History of occupancy. Areas known to have a longer history of occupation or use by the relevant species are favoured for selection.

Stage 2.5. Multi-species areas. Areas holding or supporting the larger number of qualifying species under Article 4 of the Directive are favoured for selection.

Stage 2.6. Naturalness. Areas comprising natural or semi-natural habitat are favoured for selection over those which do not.

Stage 2.7. Severe weather refuges. Areas used at least once a decade by significant proportions of the biogeographical population of a species in periods of severe weather in any season, and which are vital to the survival of a viable population, are favoured for selection.

Table 5 presents the assessment of the site under Stage 2 of the SPA selection guidelines. The proposed site meets most of the Stage 2 considerations indicating its high ornithological importance. For example it supports Great Britain's largest breeding population of Manx shearwater and one of Great Britain's largest breeding colonies of lesser black-backed gull. With 55% of the global breeding population of Manx shearwater, the site is the most important core of this species' geographic range.

Table 5. Assessment of the seabird interest against Stage 2 of the SPA selection guidelines

Feature	Qualification	Assessment
1. Population size & density	Yes	The sites supports the most important breeding populations of Manx shearwater and Lesser black-backed gull in the UK (Stroud <i>et al.</i> 2001).
2. Species range	Yes	With up to 57% of the global breeding population of Manx shearwater the site is the most important core of this species' geographic range (Stroud <i>et al.</i> 2001).
3. Breeding success	Yes	Manx shearwaters' mean breeding success is high (up to 0.6 chicks per breeding pair). Mean breeding success for Atlantic puffin is 0.8 chicks per breeding pair.
4. History of occupancy	Yes	There have been large seabird colonies at Skomer and Skokholm for over hundred years (Lovegrove <i>et al.</i> 1994) and they were probably well-established long before that.
5. Multispecies area	Yes	The site supports populations of three Annex 1 species, four migratory species and a breeding seabird assemblage at SPA qualifying levels
6. Naturalness	Yes	The site comprises largely natural habitat (sea cliffs and the marine environment).
7. Severe weather refuge	No	

5. Comparison with other sites in the UK

A comparison of the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro draft SPA is made against other marine SPAs in the UK that hold breeding Manx shearwater, European storm petrel, Atlantic puffin, and lesser black-backed gull (Table 6).

Table 6. Comparison with a selection of UK SPAs supporting highest numbers of the same seabird species qualifying under Stage 1.1, 1.2 or 1.3.

Species / Site	Site total (pairs) ¹	% of GB or biogeographic population, as applicable ¹
Manx shearwater		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	150,968²	68.6 (GB)
Rum	61,000	27.7 (GB)
Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island	6,930	3.2 (GB)
St Kilda	1,000	0.5 (GB)
European storm petrel		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	3,500	4.1 (GB)
Mousa	6,760	8.0 (GB)
Isles of Scilly	5,406	6.4 (GB)
Tresnish Isles	5,040	5.9 (GB)
Atlantic puffin		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	9,500	2.1 (GB)
St Kilda	155,000	34.5 (GB)
Shiant Isles	76,100	17.0 (GB)
Foula	48,000	10.7 (GB)
Sule Skerry and Sule Stack	43,380	9.7 (GB)
lesser black-backed gull		
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	20,300	24.5 (GB)
Morecambe Bay	22,000	26.5 (GB)
Alde – Ore Estuary	21,700	26.1 (GB)
seabird assemblage (individuals)		

Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	394,260	Not applicable
St Kilda	600,000	Not applicable
Flamborough Head and Bempton Cliffs	305,784	Not applicable
Shiant Isles	200,000	Not applicable
Handa	200,000	Not applicable
Fowlsheugh	170,000	Not applicable

NOTES

¹ From Stroud *et al.* 2001

² Taken from Stroud *et al.* 2001. Perrins *et al.* (2012) estimated a Manx shearwater breeding population of 316,070 pairs, however this estimate was based on a different census method and it is unclear whether this represents a genuine population increase or if the original method gave an underestimate of their breeding population.

6. Recommended boundary

To derive a final recommended SPA boundary, several additional steps were applied:

1. The two separate hotspots (the smaller one to the east and the larger one extending south-westwards) were joined to form a single 'polygon', with the 'non-hotspot' area between them included. This is purely in the interests of simplicity of depiction on charts, and to avoid creating the misleading impression among stakeholders that there are two separate SPAs. According to the data analysis as described in section 3.7, each of these two polygons supports qualifying numbers of Manx shearwater and so in principle they could be progressed as two separate SPAs. However since the vast majority of birds using these areas almost certainly belong to the same Skokholm and Skomer breeding population, progressing them as two separate SPAs would serve little or no conservation or regulatory purpose, but would increase administrative complexity and could undermine a coherent approach to site management.
2. In view of (a) the overlap between the existing Skokholm and Skomer SPA (including the marine extension classified in 2014, and (b) the high likelihood that the Atlantic puffin and Manx shearwater using the proposed marine extension belong to the Skokholm and Skomer breeding populations, it has been decided to recommend combining the existing SPA and the proposed marine extension into a single new SPA. The alternative would be to have two adjoining (or even overlapping) SPAs with the same species populations being a qualifying interest of each SPA. Again, this would greatly increase administrative complexity without serving any practical purpose.
3. Owing to the way in which the data analysis was carried out, in particular the use of standard 6km x 6km grid cells, the eastern of the two hotspots (shaded areas in Figure 1e) includes a small area of land above mean low water mark along the Castlemartin coastline. Since this is purely due to the relative coarseness of the grid cells used in the analysis, the landward boundary at this point is drawn to the mean

low water mark, as representing the landward limit of the marine ornithological interest of this SPA proposal.

4. The boundary developed from the analysis described in section 3.7 above is based on a grid of cells which are defined according to British National Grid (BNG) map projection, so that cell boundaries, and therefore the resultant hotspot boundary, generally follows BNG eastings and northings. However, owing to differences between BNG and Admiralty chart projections, eastings and northings do not exactly follow lines of latitude and longitude, so the boundary based on BNG projection would appear significantly 'tilted' to the southwest when shown on Admiralty charts. In the interests of clarity and ease of implementation, the boundary was adjusted to follow lines of latitude and longitude. Furthermore, since the boundary of the existing Skokholm & Skomer SPA is drawn to longitude and latitude it would be preferable to define the proposed extension on the same basis. Therefore the coordinates of each of the boundary points were manually adjusted so that the 'horizontals' and 'verticals' exactly followed lines of latitude and longitude. Figure 2 shows the difference between the hotspot as based on BNG projection and the boundary after adjustment to follow lines of longitude and latitude. The main 'rule' adopted in this procedure was to minimise the increase in the size of the area included within the boundary while avoiding, as far as possible, exclusion of any hotspot areas produced by the process described in section 3.7 and shown in Figure 1e.
5. The final recommended boundary for the SPA is shown in Figure 3 which also shows other nearby SPAs. The boundary covers an area of 152,453 ha in total. Of this, 92,360 ha are in Welsh territorial waters and 60,093 ha are in UK offshore waters. The coordinates of this boundary are given in Table 7.

Figure 2. Comparison between polygon derived boundary under British National Grid projection and the boundary adjusted to follow lines of longitude and latitude.

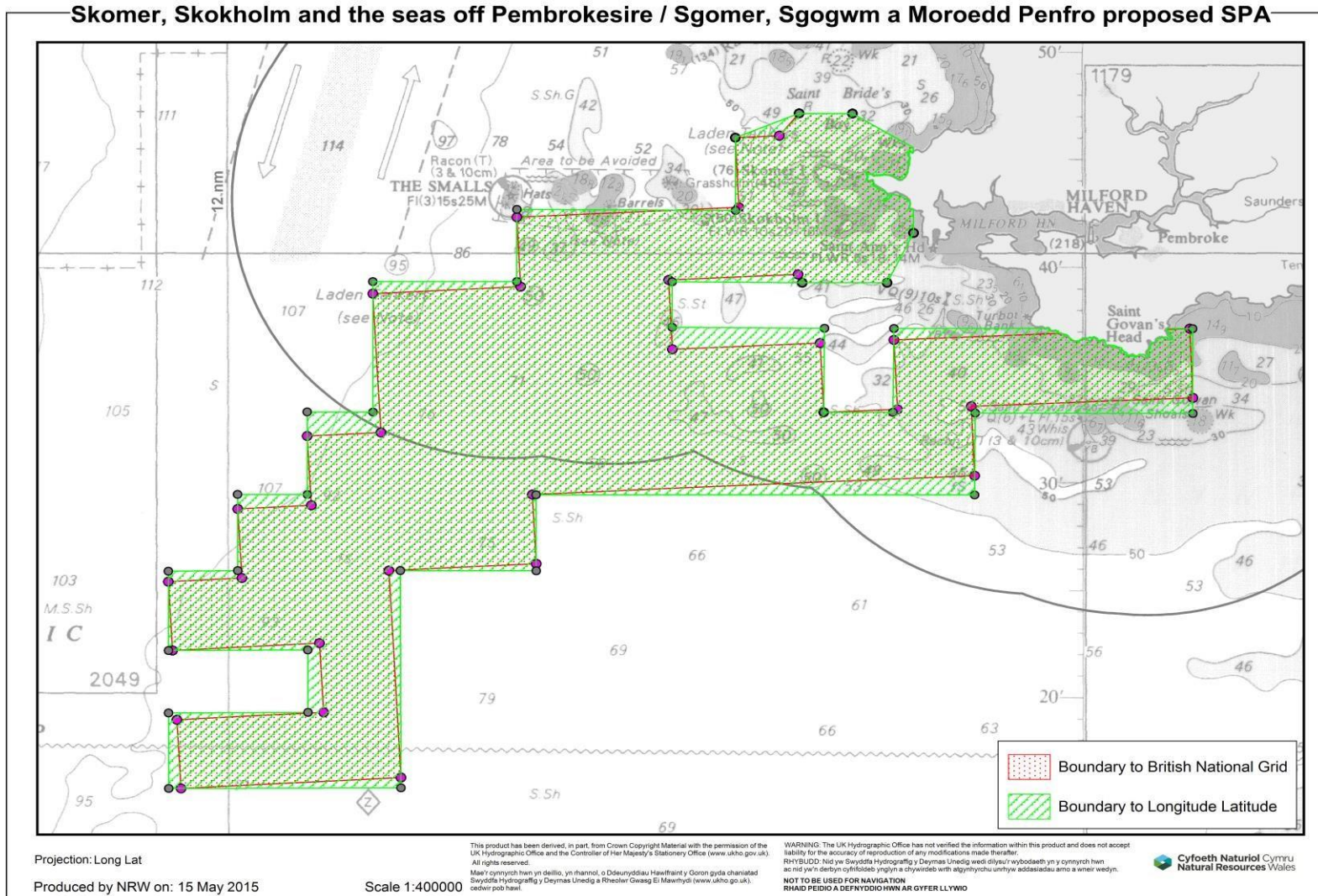
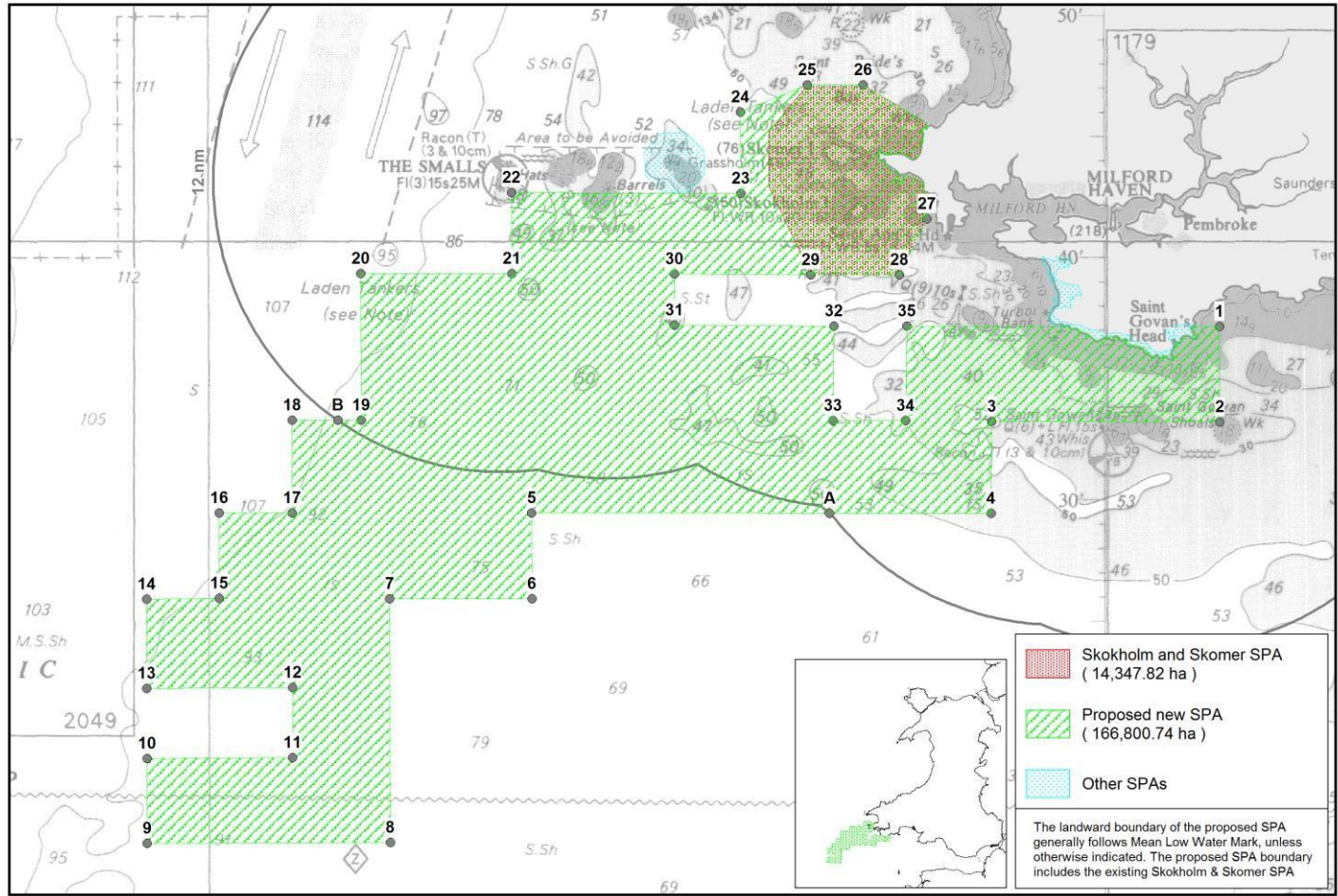


Figure 3. Recommended SPA boundary for Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro.

Skomer, Skokholm and the seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro proposed SPA



Projection: Long Lat

Produced by NRW on: 15 May 2015

Scale 1:400000

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Table 7. Coordinates of the proposed new boundary for the Skomer, Skokholm and the Seas off Pembrokeshire / Skomer, Skokholm a Moroedd Penfro draft SPA

Point number in Figure 3	Longitude	Latitude
(i) Land and inshore area (landward of 12 mile Territorial Sea limit)		
1	-4.8726	51.6186
2	-4.8726	51.5526
3	-5.1268	51.5526
4	-5.1268	51.4885
A	-5.3074	51.4885
B	-5.8565	51.5526
19	-5.8305	51.5526
20	-5.8305	51.6540
21	-5.6618	51.6540
22	-5.6618	51.7100
23	-5.4072	51.7100
24	-5.4072	51.7662
25	-5.3325	51.7850
26	-5.2700	51.7850
27	-5.1990	51.6927
28	-5.2300	51.6540
29	-5.3293	51.6540
30	-5.4802	51.6540
31	-5.4802	51.6186
32	-5.3033	51.6186
33	-5.3033	51.5526
34	-5.2221	51.5526
35	-5.2221	51.6186
(ii) Offshore area (seaward of 12 mile Territorial Sea limit)		
A	-5.3074	51.4885
5	-5.6402	51.4885
6	-5.6402	51.4292
7	-5.7991	51.4292
8	-5.7991	51.2597
9	-6.0722	51.2597
10	-6.0722	51.3187
11	-5.9078	51.3187
12	-5.9078	51.3673
13	-6.0722	51.3673
14	-6.0722	51.4292
15	-5.9894	51.4292
16	-5.9894	51.4885
17	-5.9078	51.4885
18	-5.9078	51.5526
B	-5.8565	51.5526
Coordinates are shown here in decimal degrees to 4 decimal places. Coordinates of the boundary as shown in Figure 3 were drawn to 8 decimal places		

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