Fisheries in EMS Habitats Regulations Assessment for Amber risk categories

Site and gear/features interaction(s) assessed:

European Marine Site:	**Lindisfarne SPA**
Qualifying feature(s):	**Estuarine Birds / benthic feeding birds**
Gear type(s):	**Static fixed nets** **Trammel nets** **Entangling nets** **Gill nets**
Gear/feature interaction reference(s):	**LINSPA- 141** **LINSPA- 522** **LINSPA-431**

Revision history

The NIFCA HRA Audit document contains a full timeline of the approach to assess the feature/fishery interaction. Work commenced in March 2013 with the matrix assessment of all feature/fishery interactions to determine no effect, tLSE, evidence gaps requiring a full HRA. This HRA is for a feature/fishery interaction which an evidence gap was identified. The dates below are a summary of the final stages of the process, when evidence was collated and determinations carried out.

Date	***Revision***	***Editor***
07/03/2016	template created	VR
March-June	Collation of evidence which informs the HRA, i.e. the netting data for the NIFCA district's is applicable to various MPAs, relevant data, information and inferences are extracted.	VR, SSM NW (CS)
15/07/2016	Document populated with relevant information	VR
25/10/2016	Reviewed with Natural England (CS). Updated from comments provided	VR
09/12/2016	Reviewed with Natural England (CS). Document then updated based on discussions and from comments provided during the meeting.	VR
28/03/2017	final version sent to Natural England	VR

Has Natural England been formally consulted on this tLSE (and do they agree)?	**Yes**

Date of document completion:	**30th March 2017**	**Dr. C.L. Scott**

IFCA reference
LSPA - AA 001

1. Introduction

1.1 Need for an HRA assessment

In 2012, the Department for Environment, Food and Rural Affairs (Defra) announced a revised approach to the management of commercial fisheries in European Marine Sites (EMS), including all proposed sites. The objective of this revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with Article 6 of the Habitats Directive.

This approach is being implemented using an evidence based, risk-prioritised, and phased basis. Risk prioritisation is informed by using a matrix of the generic sensitivity of the sub-features of EMS to a suite of fishing activities as a decision making tool. These sub-feature-activity combinations have been categorised according to specific definitions, as red, amber, green or blue.

Activity/feature interactions identified within the matrix as red risk have the highest priority for implementation of management measures by the end of 2013 in order to avoid the deterioration of Annex I features in line with obligations under Article 6(2) of the Habitats Directive. Activity/feature interactions identified within the matrix as amber risk require a site-level assessment to determine whether management of an activity is required to conserve site features. Activity/feature interactions identified within the matrix as green also require a site level assessment if there are “in combination effects” with other plans or projects. All blue classifications within the matrix identify where activity / interactions are unfeasible and pose no risk, therefore do not require any site assessments for management to be carried out.

Site level assessments are being carried out in a manner that is consistent with the provisions of Article 6(3) of the Habitats Directive. The aim of this assessment is to determine whether management measures are required in order to ensure that fishing activity or activities will have no adverse effect on the integrity of the site. If measures are required, the revised approach requires these to be implemented by 2016.

Northumberland Inshore Fisheries and Conservation Authority (NIFCA) is implementing the site-level assessment process in four phases:

1. simple screening assessment (activity is not occurring/already managed or interaction categorised as blue in the matrix (no interaction with the feature))
2. likely significant effect (LSE) type test (scale or magnitude of effect not likely/likely to be significant)
3. detailed LSE type test
4. appropriate assessment (AA) type test (ascertaining whether the activity will cause an adverse effect on site integrity)

The purpose of this site specific assessment document is to assess whether or not in the view of **Northumberland Inshore Fisheries and Conservation Authority** the fishing activity of **static fixed nets** has a likely significant effect on

the **estuarine birds** and **benthic feeding birds** of the **Lindisfarne SPA**, and on the basis of this assessment whether or not it can be concluded that activity of **static fixed nets** will not have an adverse effect on the integrity of this EMS. The other features for this site have been classified as blue in the matrix and are therefore not included in this assessment.

An in-combination assessment will be carried out and will include gears screened out from the phase 2/3 assessment[1] for this site (section 8) and other non-fishery related activities.

1.2 Documents reviewed to inform this assessment

- Defra's risk assessment Matrix of fishing activities and European habitat features and protected species[2]
- WeBs Counts http://app.bto.org/webs-reporting/?tab=lowtide
- NIFCA monthly shellfish permit returns data provided by shellfish permit holders as a condition of their permit. Data recorded pertaining to static netting activity identifies which vessels are actively engaged in activity and their temporal and spatial extent.
- NIFCA patrol sightings, recording GPS location of vessel and activity.
- Reference list (Annex 1)
- Sector map of NIFCA district (Annex 2)
- Site boundary map (Annex 3)
- Marine Conservation Society beach litter data (Annex 4 & 5)
- Broad-scale Habitat map of supporting marine habitats for classified bird species of Lindisfarne SPA (Annex 6)

2. Information about Lindisfarne SPA

Designated an SPA in 1992, Lindisfarne is also designated a SSSI and RAMSAR (1976) site and forms part of the Northumberland Coast AONB. This site sits wholly within the BNNC SAC and consists mainly of intertidal habitats covering approximately an area of 3,500 hectares. These supporting habitats are made up of mud and sandflats, saltmarsh, eelgrass beds and rocky shores (Annex 6). An area of sandy shingle beach provides important breeding grounds during the summer months for little terns, *Sternula albinfrons* and during the winter months the other supporting habitats are essential feeding grounds, holding the largest population of migratory overwintering bird species in Britain (table 1), approximately 41, 870 individuals (JNCC 2001).

The site is a National Nature Reserve, managed by Natural England who employ a full time warden helped by volunteers to conserve and monitor the site. The NNR have their own byelaws, implemented 1998, which in reference to fishing, prohibits 'fishing or shellfishing by mechanical means' (2), restricting fishing activity within the SPA.

2.1 Overview and qualifying features

- Estuarine Birds

[1] Note: gears screened out of HRA type assessment in phase 2/3 are documented in site audit spreadsheet and are considered in-combination in section 8.
[1]See Fisheries in EMS matrix:
http://www.marinemanagement.org.uk/protecting/conservation/documents/ems_fisheries/populated_matrix3.xls

Estuarine habitats form some of the most productive ecosystems (Mclusky & Elliot 2004), with nutrient rich habitats (mud and sandflats) supporting a diversity of vegetation, mollusc, crustacean spp. and burrowing organisms. These form essential food sources to a wide range of the overwintering wading bird species. These overwintering feeding grounds are crucial in the life-cycle of these species, as birds must be able to regain and store vital fat reserves to survive the winter and be in a fit body condition to migrate to their breeding grounds and successfully breed (Evans 2002). Among the estuarine species there are two species listed under Annex I of the EC Birds Directive; the whooper swan and golden plover.

Table 1.Lindisfarne SPA qualifying features.

Feature	Type of Feeder	Time Present on Site	Population Size[3] (5yr Av)
EC Birds Directive Annex I Species			
Roseate Tern *Sterna dougallii*	Surface feeder	Breeding	0 (2)
Little Tern *Sternula albinfrons*	Surface feeder	Breeding	17 (9)
Whooper Swan *Cygnus cygnus*	Estuarine	Non- breeding, wintering	64 (43)
Golden Plover *Pluvialis apricaria*	Estuarine	Non- breeding, wintering	3, 250 (3760)
Internationally Important Populations of Migratory Species			
Greylag Goose *Anser anser*	Estuarine	Non- breeding, wintering	400 (356)
Light-Bellied Brent Goose *Branta bernicla hrota*	Estuarine	Non- breeding, wintering	2, 629 (4,393)
Wigeon *Anas penelope*	Estuarine	Non- breeding, wintering	14, 141 (10,037)
Ringed Plover *Charadruis hiaticula*	Estuarine	Non- breeding, wintering	2, 294 (1,228)
Shelduck *Tadorna tadorna*	Estuarine	Non- breeding, wintering	1, 610 (1,650)
Bar-Tailed Godwit *Limosa lapponica*	Estuarine	Non- breeding, wintering	2, 170 (1,889)
Redshank *Tringa totanus*	Estuarine	Non- breeding, wintering	1, 235 (1,097)
Internationally Important Assemblage of Waterfowl			
Eider *Somateria mollissima*	Benthic Feeder	Non- breeding, wintering	411 (946)
Long-tailed Duck *Clangula hyemalis*	Benthic Feeder	Non- breeding, wintering	16 (42)
Common Scoter *Melanitta nigra*	Benthic Feeder	Non- breeding, wintering	496 (599)
Red-Breasted Merganser *Mergus serrator*	Estuarine	Non- breeding, wintering	108 (102)

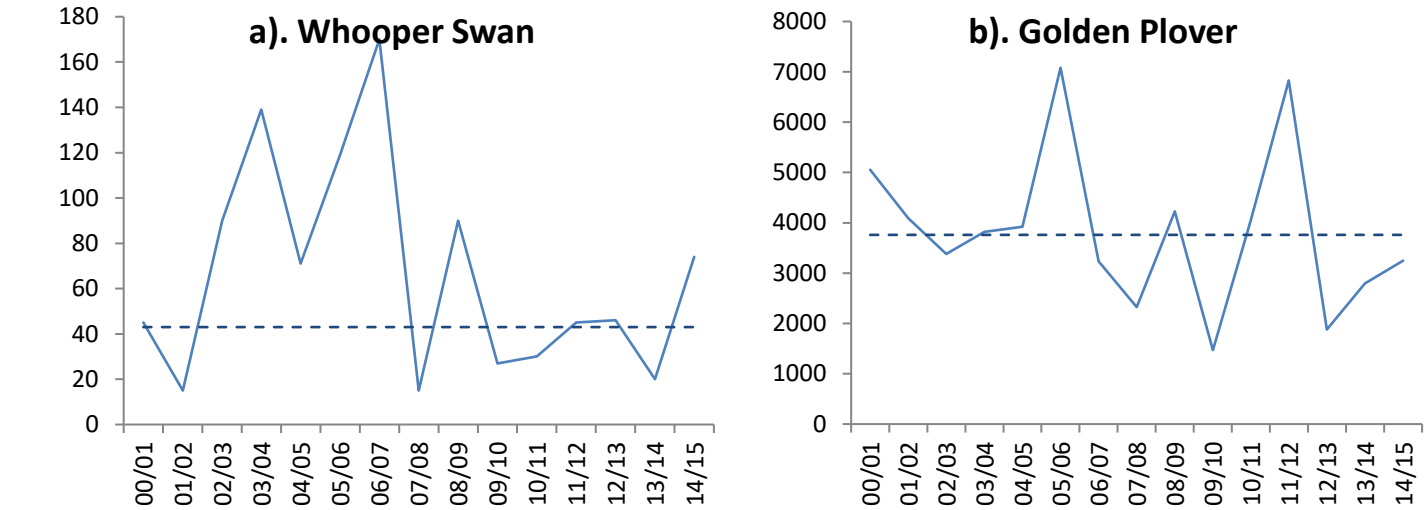
[3] Populations calculated from WeBs surveys, online data 'numbers and trends' http://app.bto.org/webs-reporting/?tab=lowtide

Grey Plover *Pluvialis squatarola*	Estuarine	Non- breeding, wintering	607 (984)
Sanderling *Calidris alba*	Estuarine	Non- breeding, wintering	530 (368)
Dunlin *Calidris alpina alpina*	Estuarine	Non- breeding, wintering	3, 062 (2,938)
Knot *Calidris canutus*	Estuarine	Non- breeding, wintering	1, 552 (2,674)

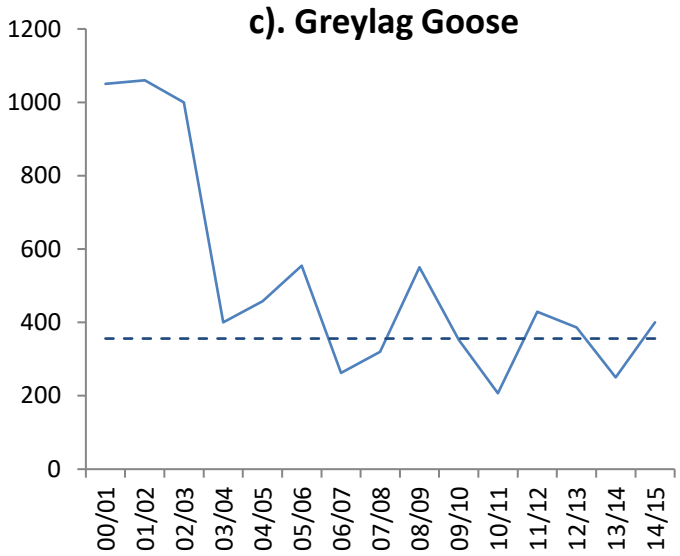
An SPA toolkit provided by Natural England states that the following classified bird species are experiencing a site specific decline: whooper swan, wigeon, ringed plover, golden plover, bar-tailed godwit and redshank, whereas, light-bellied brent goose, shelduck, grey plover, dunlin and knot have no site specific decline. Greylag Goose, red-breasted merganser and sanderling have not been assessed.

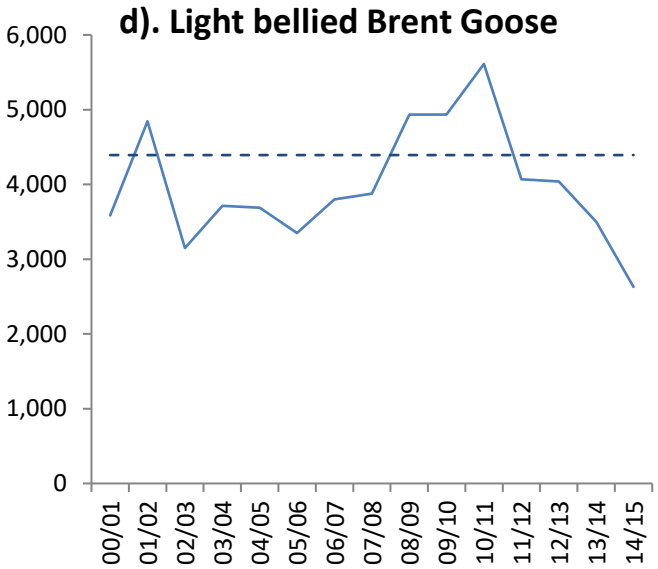
Overwinter estuarine species are present at Lindisfarne SPA from September through till March and their population trends are shown in figure (1) a- n using data from WeBs 'numbers and trends' (http://app.bto.org/webs-reporting/?tab=lowtide). The dashed line represents the current five year average of the classified species for Lindisfarne SPA.

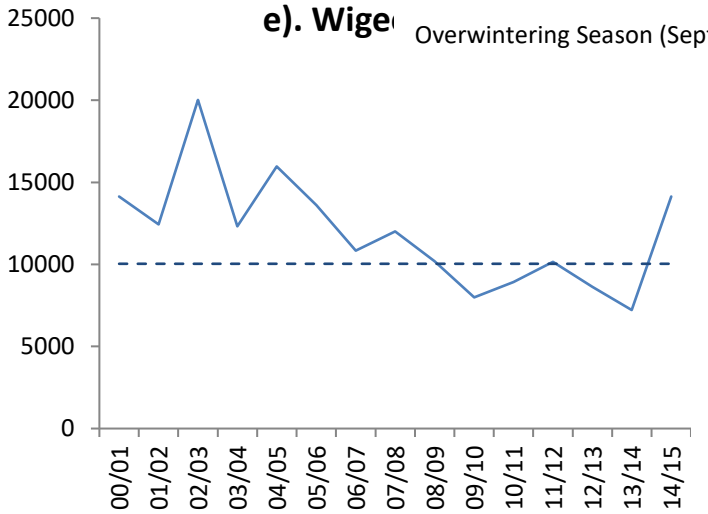
Annex I Species



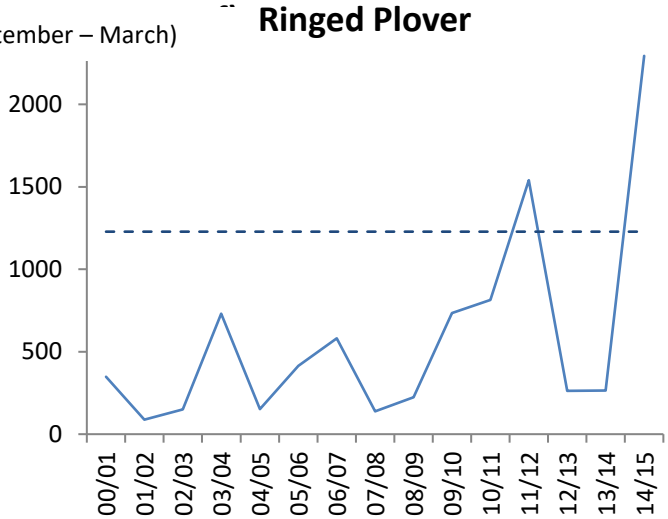
Internationally Important Populations of Migratory Species

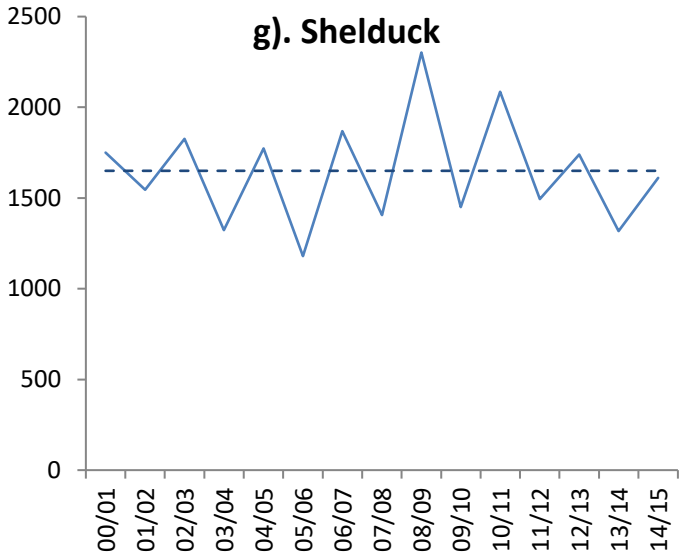


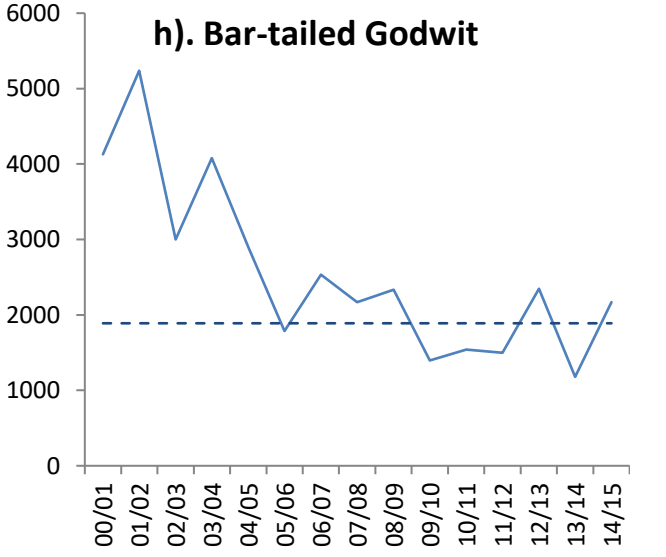




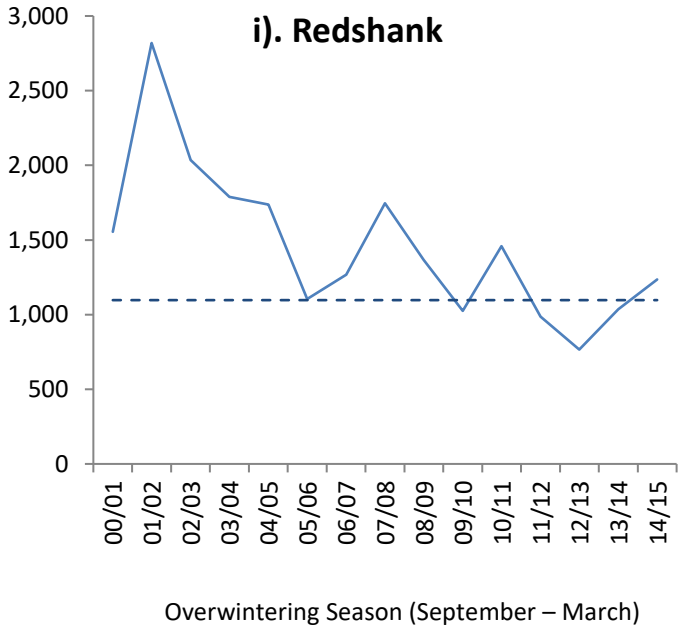
Overwintering Season (September – March)



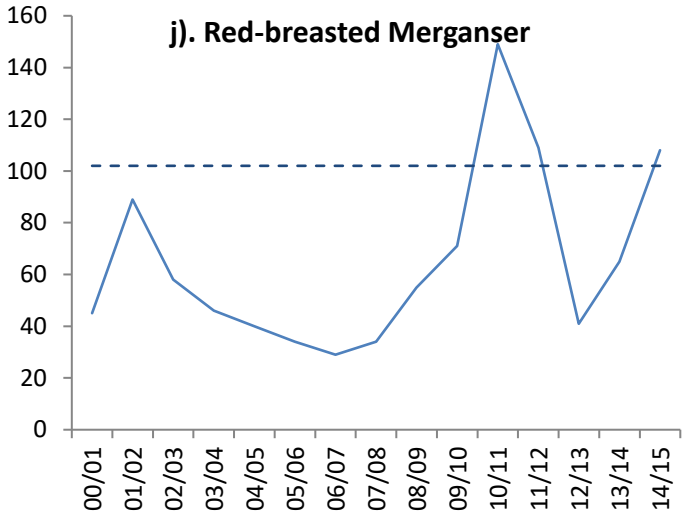


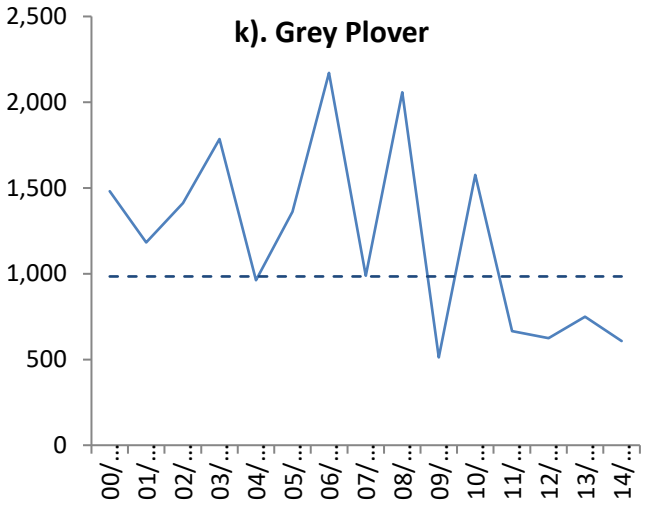


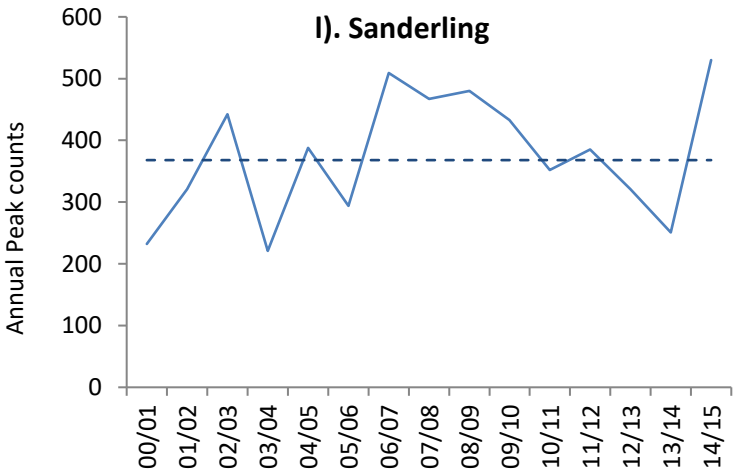
Annual Peak counts

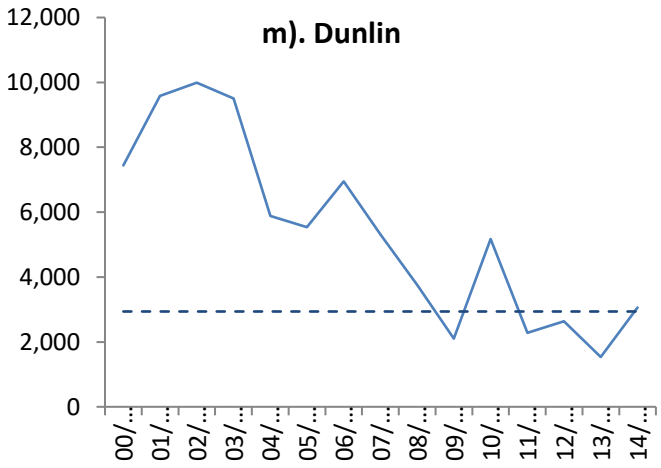


Internationally Important Assemblage of Wildfowl









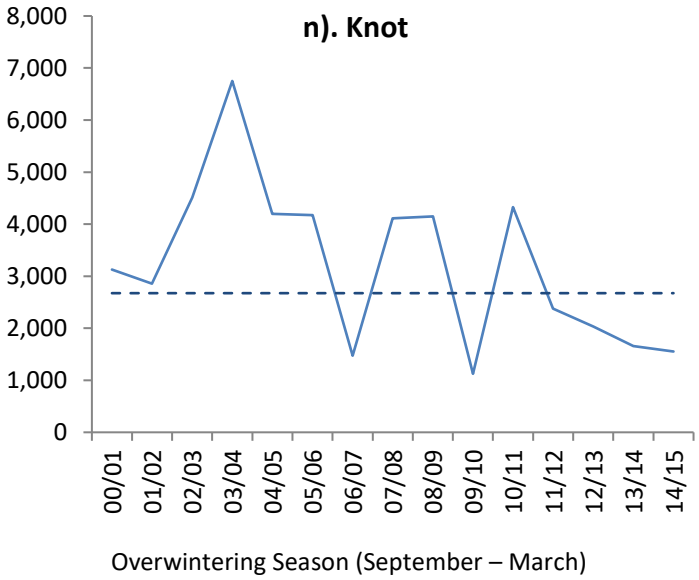
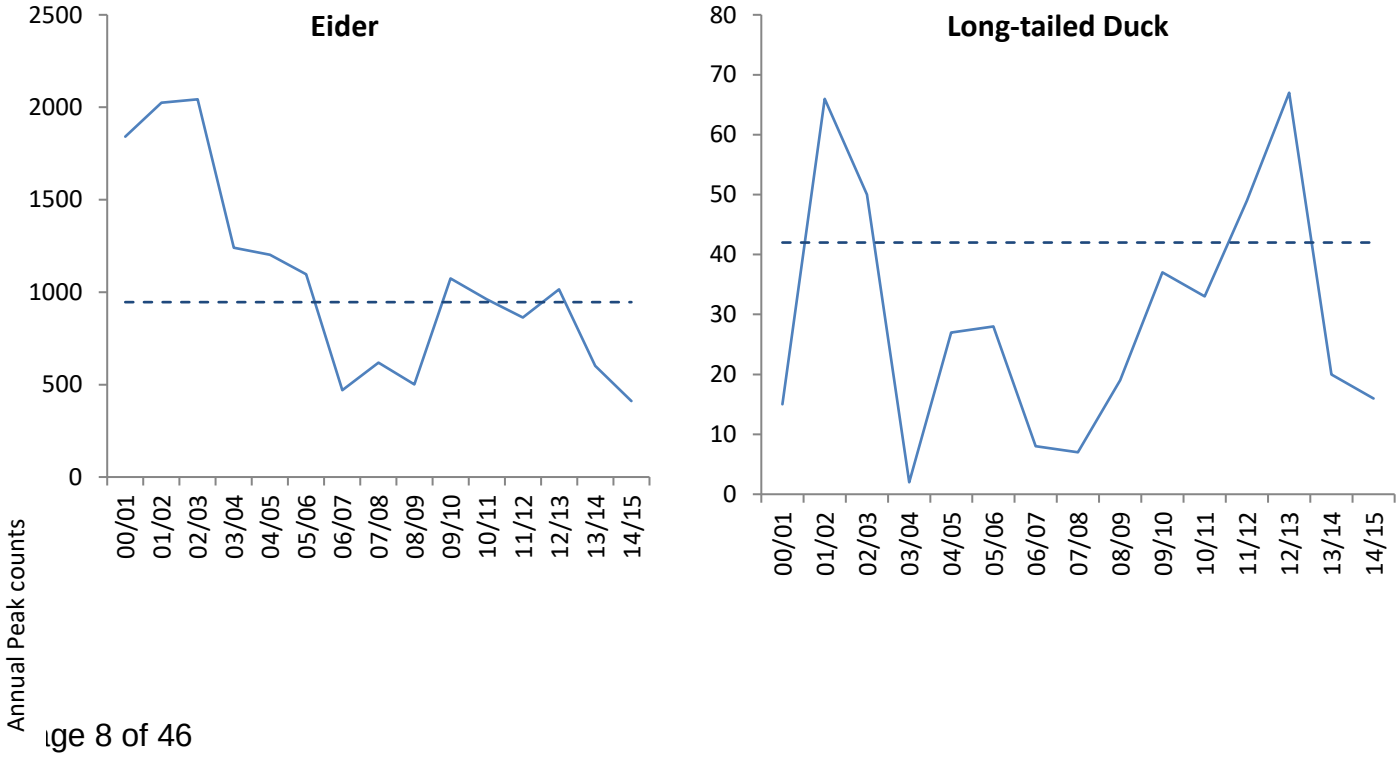


Figure 1 (a- n) I Population trends of the estuarine classified bird species forming the international important over-wintering bird assemblage of Lindisfarne SPA. Figures derived from WeBs surveys, online data http://app.bto.org/webs-reporting/?tab=lowtide.

- Benthic feeding birds

Within the designated internationally important assemblage of waterfowl feature there are species which specialise in feeding on organisms that live on the seabed, targeting small crustacean and molluscs. These are the common scoter and diving duck species, eider and long- tailed duck, which dive from a resting position on the surface of the water to the seabed.

Natural England's SPA toolkit shows that eider and common scoter are not experiencing a site specific decline and due to lack of data no assessment has been completed for the long-tailed duck. Population trends at Lindisfarne SPA and the current five year average (blue dashed line) are shown below in figure (2) a-c (data taken from http://app.bto.org/webs-reporting/?tab=lowtide)



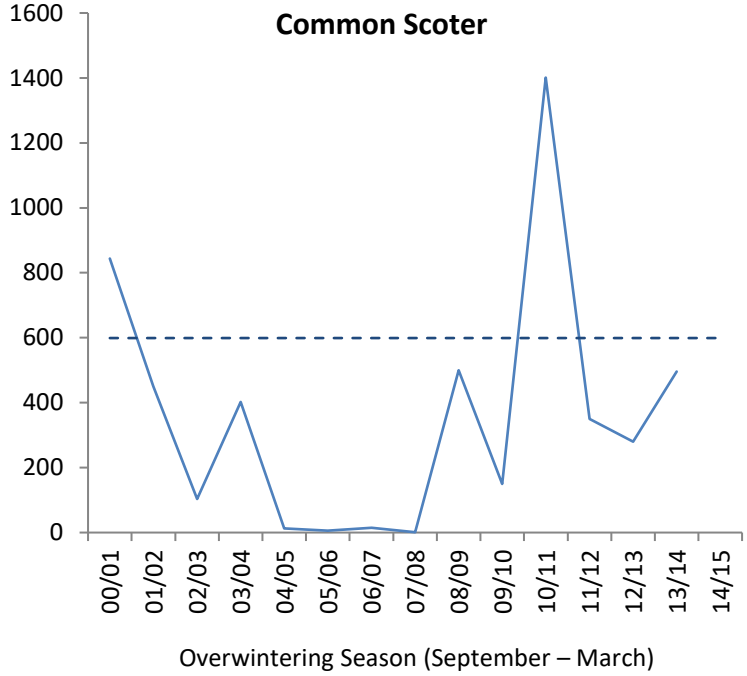


Figure 2 (a- c) I Population trends of the benthic feeding classified bird species forming the international important over-wintering bird assemblage of Lindisfarne SPA. Figures derived from WeBs surveys, online data http://app.bto.org/webs-reporting/?tab=lowtide.

2.2 Conservation Objectives

The conservation objectives provided in the Regulation 33 advice package (June 2000) are targeted at the site's supporting habitats for the EC Birds Directive qualifying features and are set, subject to natural change to 'Maintain' in favourable condition. There is no collective CO for the features 'estuarine birds', 'benthic feeding birds' or definitive advice under individual classified bird species. The SPA toolkit provided by Natural England shows that assessment of Lindisfarne SPA populations, six out of 13 species are declining (SPA Toolkit 2014) specifically at the site and the other seven have no site specific decline. The dated 'Maintain' conservation objective has been retained for this site; with a high confidence level for benthic feeding birds and low confidence level for estuarine bird species (see section 6 of Detailed tLSE).

With regard to this SPA and individual species for which the site has been classified and subject to natural change the conservation objectives relating to are to **Maintain** to favourable condition for the following supporting marine[4] habitats:

- Estuarine Birds

- The size of the population at a level which is above either the population-size included on the SPA Citation or an alternative baseline-population previously approved by Natural England Chief Scientist or that based on the current mean peak count or equivalent, whichever is the higher.

- A high density of channel networks within intertidal feeding areas

- Distribution, abundance & availability of key prey species

- Safe passage of birds between feeding and roosting areas

- Open and unobstructed terrain around nesting, roosting and feeding sites

[4] Conservation objectives relating to solely terrestrial habitats have been omitted.

- The availability of freshwater on mudflats within feeding and resting areas.
- Width of beach section
- A high cover/abundance of preferred food plants (eg. Zostera)
- Availability of water 2-20m deep
- **Restrict:** the frequency, duration and intensity of disturbance within nesting, foraging and roosting areas
    - Benthic Feeding Birds
- The overall heights of vegetation patches within nesting areas
- The overall size of the feature population
- The availability of water 2-4m deep
- The distribution, abundance and availability of key prey items
- Adult survival and body condition
- The extent and distribution of supporting habitat
- Water quality to a standard which supports the feature
- Concentrations and deposition of critical air pollutants to below the site relevant Critical Load
- The structure, function and supporting processes associated with the feature
- **Restrict:** the frequency, duration and intensity of disturbance within nesting, foraging and roosting areas.

3. Interest feature/ fisheries interactions of the LSPA categorised as 'Red' risk and overview of management measure(s)

- **A2.61 Intertidal seagrass beds**

Within Lindisfarne SPA there are extensive seagrass beds and management measures were brought in at the end of 2013 to address the red risk interaction of fishing activity on/amongst seagrass beds: NIFCA Byelaw 8: Seagrass Protection Byelaw within the English section of the Berwickshire and North Northumberland Coast SAC.

Prohibition 3. No person shall dig for, fish for or take any sea fisheries resources in or from the Specified Area where Seagrass is situated.

Figure 3 I Map produced by the Environment Agency survey 2016.

4. Information about fishing activities surrounding the site

In assessing the level of static net fishing within the NIFCA district, two sources of data have been analysed: monthly shellfish permit returns (low to moderate data confidence) and Officers' patrol sighting data (high data confidence). The monthly return forms are submitted by shellfish permit holders only and providing information on netting activity/landings is not mandatory; therefore these may not be capturing total netting activity. Data from 2006 to 2010 has been excluded from the analysis as this information was captured by the Marine and Fisheries Agency, MFA (MMO predecessor) for under 10m vessels only. During this period information for over 10m vessels was captured through European log sheets, for which NIFCA do not possess the data. Data collected during this period is less defined spatially and incomplete and therefore does not provide a descriptive representation of our fleet and is excluded.

The assessment of T, J and drift nets for the migratory salmonid fishery has been omitted from this Appropriate Assessment, as this activity is regulated by the Environment Agency and who are required to carry out its assessment. This activity is however considered in Section 8 of this document within the in-combination assessments.

4.1 Static fixed and gill nets

Levels of static netting activity (gill, trammel and entangle) within the NIFCA district have declined considerably in recent years and are currently very low, with just five boats (NIFCA permit returns 2015) known to set nets on an

infrequent basis(Jon Green, pers. comm.). This is reflected in the number of vessels setting static nets and the total number of days nets sets at sea from 2003- 2015.

The number of vessels setting static nets in the NIFCA district as a whole has dropped from 29 in 2003 to 5 in 2015, with just one vessel reporting (NIFCA permit returns 2015) setting static nets within the surrounding waters Lindisfarne SPA (Longstone to Scottish border sector) (fig 4). The annual sum of days in which vessels recorded setting static nets within the whole district has also subsequently decreased from 827 days in 2003 to 37 days in 2015 (fig 5). This decreasing trend is mirrored in the use of gill net activity within the Longstone to Scottish border sector, with two vessels logging 32 days during 2003 to current levels of one vessel for 11 days in 2015.

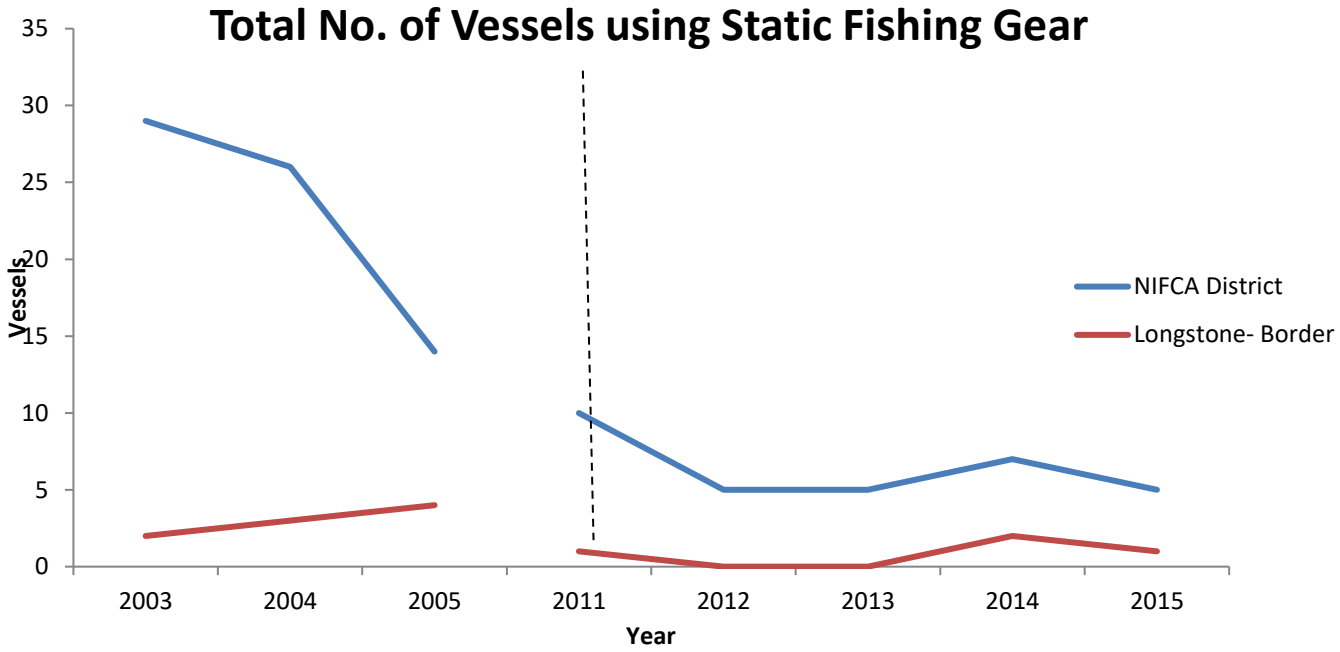


Figure 4 I *Total number of vessels reported in shellfish returns using static nets (gill, entangling and trammel nets) throughout the NIFCA district (blue) and total within the Longstone to Scottish border district (red) surrounding waters of Lindisfarne SPA from 2003 to 2015.*

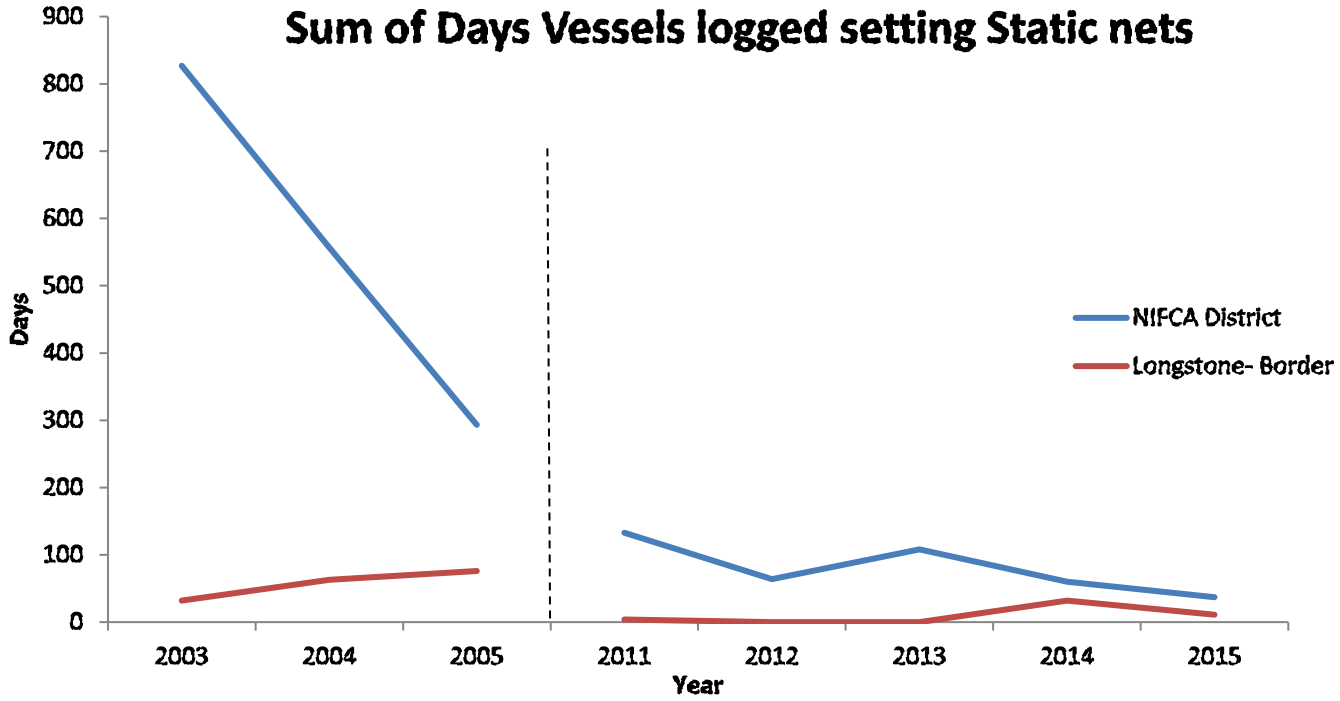


Figure 5 I *Total number of days static nets reported in shellfish returns to be set throughout the NIFCA district (blue) and those set in Longstone to Scottish border sector (surrounding waters of Lindisfarne SPA) form 2003 to 2015.*

The estuarine and benthic feeding bird species are overwintering classified species of the Lindisfarne SPA, only present on site September until March. The majority of netting activity logged over the last five years occurred during the classified bird species overwintering season, namely September for a total of 25 days (fig 6). The most recent activity recorded in 2015 occurred in August for 11 days, outside the classified birds' presence on site.

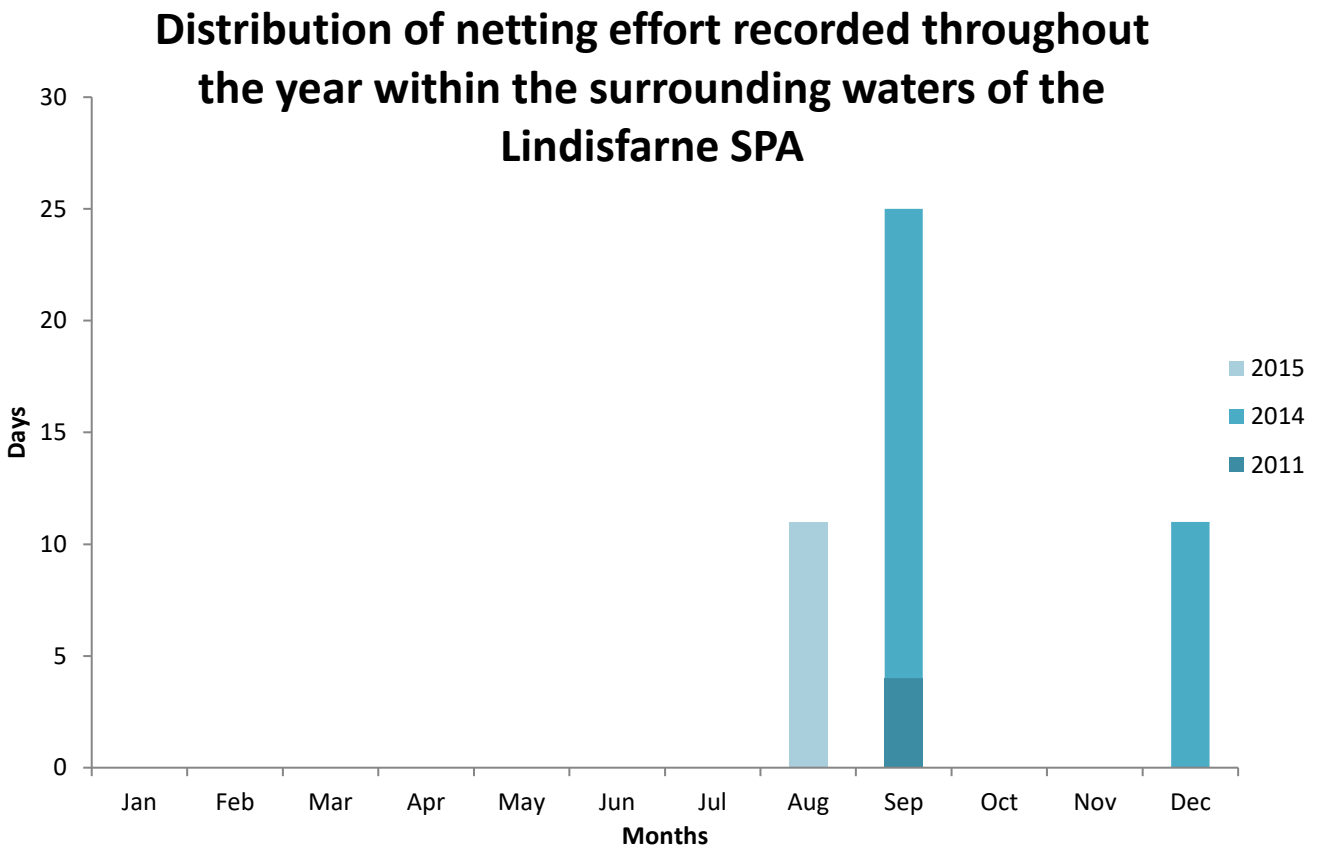


Figure 6 I *Frequency in which vessels reported setting nets in the Longstone to Scottish border sector (surrounding waters of (Lindisfarne SPA) from 2011 to 2015. No activity was recorded in permit returns during 2012 and 2013.*

No vessels without a shellfish entitlement are known to NIFCA officers to be setting static nets within the district and the declining trend in netting apparent from the monthly returns forms also correlates with sightings of netting activity from regular NIFCA patrols (Figs. 7 & 8), with only one sighting per year being recorded in 2014 and 2015. Mapping of the sightings in fig 8. also shows that no sightings of static netting activity have been made within the Longstone to Scottish border sector since 2004 and static netting activity is concentrated in the southern part of the NIFCA district, which is attributed to harsher tidal and sea conditions north of Amble (CIFCO Al Browne pers. comm. 2016). Local expert knowledge combined with permit returns with patrol sightings provides a high confidence level to the data.

Patrol effort (fig. 7) increased significantly during 2010 and 2011 with the employment to two more enforcement officers. This sharply changed from 2011 to 2012 due to diversification of the regulatory authority's role from purely enforcement as the Sea Fisheries Committee, to responsibilities towards conservation as IFCAs under the Marine Coastal Access Act 2010. This effort remained at a lower level during 2014 and 2015 with decommission of the St. Oswald and the commission of a new patrol vessel, St. Aidan.

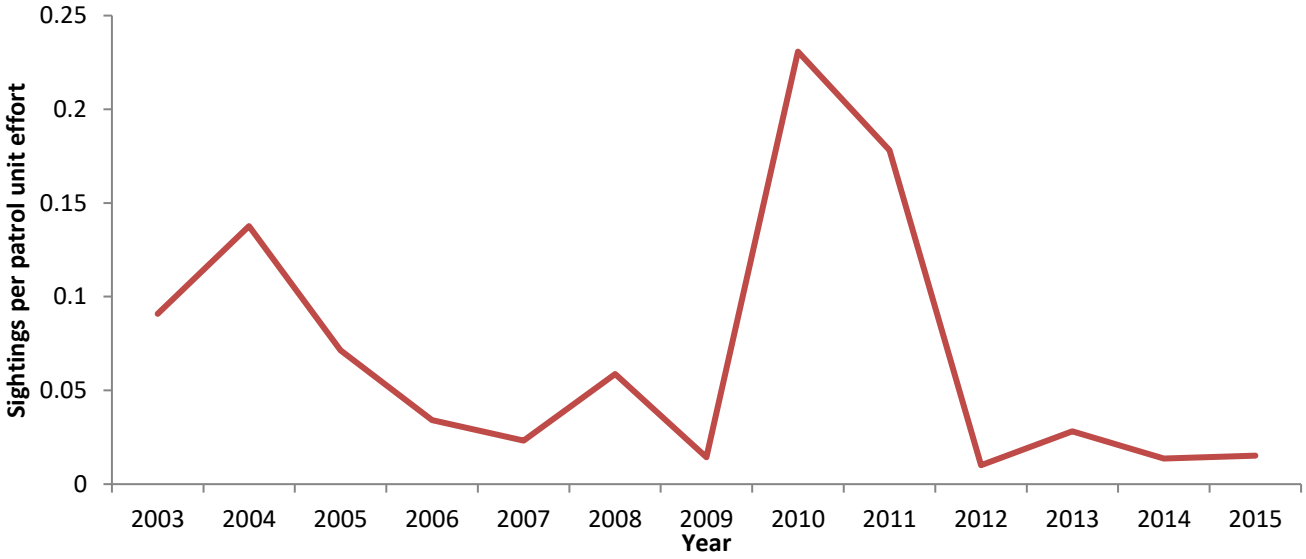


Figure 7 | *Number of sightings per sea patrol annually (per unit effort) of static netting activity within the Northumberland Inshore Fisheries and Conservation Authority district 2003 – 2015.*

15-20 years ago, static fixed netting was an important fishery off Northumberland, targeting predominantly cod in the winter and turbot in the summer. Mesh sizes of these nets are dependent on their target species, as specified under Council Regulation (EC) No 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms. Annex VI states the minimum mesh sizes for fixed gears, applicable to our district, with 140mm being used for Cod and 70mm for Turbot. Generally effort was highest during the winter (fig 6), while fishermen turned to their pots in the summer.

Anecdotal evidence indicates that the decline in the use of any type of static fixed nets (gill, trammel and entanglement) within the NIFCA district is due to a variety of factors, but predominantly the introduction of Total Allowable Catches and quotas in 1983 which drove many towards potting for shellfish. Locally, the cessation of dumping sewage sludge at sea around 15 years ago, particularly off the River Tyne and Blyth, is indirectly attributed to a decline in local cod stocks, which used the dumping grounds for feeding. Furthermore increases in the population of grey seals off the Northumberland coast, particularly the Farne Islands which is home to one of England's largest colonies with over 1000 pups born annually, has also led to a decline in fixed netting within the district as fishermen hold the seals responsible for eating/damaging fish caught within the nets. These interactions

have also been witnessed by NIFCA enforcement officers during routine inspections, as fishermen hauled their nets, evidence of predation of the caught fish was clearly visible in addition to seals observed feeding directly from the nets as they were being hauled (NIFCO Stewart-Moore pers. comm.)

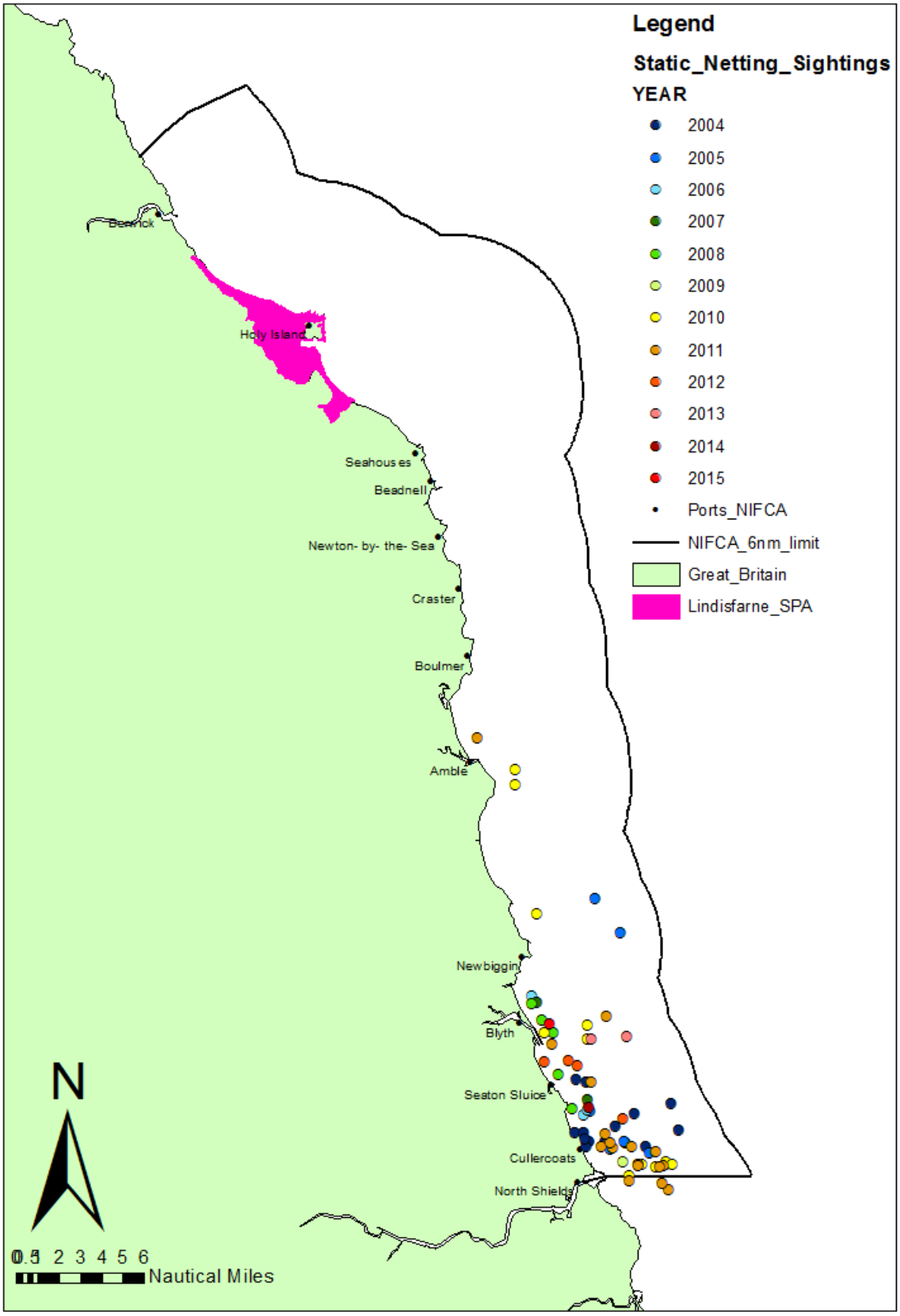


Figure 8 I *Map of sightings of fishing vessels deploying/hauling bottom-set static nets from the NIFCA Patrol Vessel St. Oswald during routine patrols from 2003 – 2015. Each point represents an individual sighting.*

4.2 Management (Static fixed nets)

There are various existing management measures in place within the NIFCA district that affect static fixed netting:

NIFCA Byelaw 6 Fixed Engines:

Prohibition 4. A person must not use a fixed engine to fish for or take sea fish at any time during the period 26th March to 31st October inclusive;

(a) in waters that are less than 7 metres in depth, unless those waters are separated from the shore by waters deeper than 7 metres at any state of the tide;
(b) where the headline of the fixed engine is less than 4 metres below the surface of the water at any state of the tide.

NIFCA Byelaw 5 Marking of Fishing Gear and Keep Boxes:

Prohibition 2. A person must not fish for or store sea fish using a pot, keep box or passive gear unless:

(a) the marker buoy or dahn is clearly visible on the surface of the water; and
(b) where a string of no more than 5 pots is used, a marker buoy or dahn is attached to one end of the string; or
(c) where subparagraph 2(b) does not apply, a marker buoy or dahn is fixed to both ends of the pot, keep box or passive gear.

Prohibition 3. A marker buoy or dahn used in accordance with paragraph 2 must display the following information:

(a) where the marker buoy or dahn is placed from a relevant fishing vessel, the name, port letters and numbers of that relevant fishing vessel;
(b) where the marker buoy or dahn is not placed from a relevant fishing vessel, the owner's name and telephone number.

4.3 Other fishing activity within the LSPA

Potting for European lobster *Homarus gammarus* and brown crab *Cancer pagurus* is the principle fishery within the Northumberland IFCA district, with 115 commercial shellfish permit holders in 2015 and approximately 38,000 [commercial] pots fished within the district (2015). Fishers record which district they have set pots on their monthly returns forms which enable NIFCA to monitor fishing activity within the site. Commercial shellfish permit holders are limited to 800 pots and permitted vessels must not exceed 12 metres in length (Byelaw 4 Crustacea and Molluscs permitting and Pot Limitation). Recreational shellfish permit holders are limited to five pots and must not take more than one lobster, five edible or velvet crabs, 20 whelks or five prawns in any one day. Under NIFCA's new permitting scheme (January 2016), recreational fishing must pay £10 for a permit which when received permit holders were requested on a voluntary basis to record catch information.

Lindisfarne SPA boundary sits entirely within the Berwickshire and North Northumberland Coast SAC for which mobile fishing gear is prohibited within its English section (NIFCA Byelaw 7 Prohibition of the use of Mobile gear within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation).

5. Test for Likely Significant Effect (tLSE)

The Habitats Regulations assessment (HRA) is a step-wise process and is first subject to a coarse test of whether a plan or project will cause a likely significant effect on an EMS.

LINSPA-141: Estuarine Birds

1. Is the activity/activities directly connected with or necessary to the management of the site for nature conservation?	No
2. What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s)? *Sensitivities as listed are based on DRAFT Interim conservation advice. Reference to Regulation 33 advice for the Lindisfarne SPA and best judgement has been used to determine which of these pressures are truly exerted by the gear type(s).	Above and below water noise (Sensitive)[1] Barrier to species movement (Sensitive)[2] Collision above water (Sensitive)[3] Collision below water (Sensitive)[3] Introduction of light (Sensitive)[4] Introduction or spread of non-native species (Sensitive)[5] Removal of non-target species i.e. bycatch (Sensitive)[6] Litter i.e. Ghost fishing (Sensitive)[7] Visual disturbance (Sensitive)[8]
3. Is the feature potentially exposed to the pressure(s)?	Yes

4. What are the conservation objectives for the feature? *DRAFT interim conservation advice does not give definitive conservation objectives. However, completing an HRA without COs is difficult. The CO as listed in this document is based on current knowledge of the status, and the pressures, affecting designated features (see sections 4 &5). Expert judgement has been used to determine which features may be exposed to the pressure(s) resulting in inferred COs. These COs are assigned a degree of uncertainty i.e. a subjective confidence level based on evidence 'High', 'Medium,' 'Low', and 'Unknown'.	Generic conservation objectives for Estuarine seabirds in the Lindisfarne SPA are to **Maintain***: - The size of the population at a level which is above either the population-size included on the SPA Citation or an alternative baseline-population previously approved by Natural England Chief Scientist or that based on the current mean peak count or equivalent, whichever is the higher. - A high density of channel networks within intertidal feeding areas - Distribution, abundance & availability of key prey species - Safe passage of birds between feeding and roosting areas - Open and unobstructed terrain around nesting, roosting and feeding sites - The availability of freshwater on mudflats within feeding and resting areas. - Width of beach section - A high cover/abundance of preferred food plants (eg. Zostera) - Availability of water 2-20m deep - **Restrict:** the frequency, duration and intensity of disturbance within nesting, foraging and roosting areas Those conservation objectives that might be affected by gill netting are underlined. *Confidence level for interim, inferred Conservation Objective: **LOW** (see section 6 for detail).

5. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level? ***(reference to conservation objectives)***	There is currently no commercial gill netting activity occurring within the Lindisfarne SPA. Gill netting off the Northumberland coast in general has declined considerably in recent years, with only one or two boats known at the present time to occasionally set static nets in the northern sectors of the NIFCA district (Jon Green pers. comm.). Nevertheless, despite the low levels of activity designated estuarine bird species from the Lindisfarne SPA may overlap with infrequent netting activity creating potential for a gear/feature interaction between static nets and birds with the greatest risk coming from accidental bycatch of birds in nets. NIFCA Byelaw 6 (Fixed Engines) includes a number of technical, spatial and temporal restrictions designed to minimise the potential of accidental bycatch of birds within the district. For instance, between 26th March – 31st October it is prohibited to set a fixed engine in waters less than 7m depth and the headline of the fixed engine must be at least 4m below the surface of the water. Given the low levels of gill netting activity, it is not deemed to have a significant adverse effect on the bird population from Lindisfarne SPA, however more information is needed to confirm this.
6. Condition and Conservation Objective Inferences	No definitive conservation objective for estuarine birds in the Lindisfarne SPA is given in the draft interim Regulation 35 advice (July 2015). The CO for this feature is set to 'Maintain' in the Regulation 33 advice for the site (June 2000), however this is outdated and conflicting with the information provided in the site-specific SPA toolkit on the population status of classified bird species. 6 out of the 14 designated estuarine bird species at the Lindisfarne SPA are listed as 'Assessed – site specific decline' while 5 species are 'Assessed – No site-specific decline' and the remaining species are not assessed (Natural England SPA toolkit, 2014). Therefore a low confidence level is assigned to the CO of Maintain.

7. Is the potential scale or magnitude of any effect likely to be significant?	**Alone:** **No** *However a full Appropriate Assessment is required to confirm this.	**OR In-combination** **No**
8. Have NE been consulted on this LSE test? If yes, what was NE's advice?	**Yes** Synthesis of evidence and local knowledge informing this decision occurred between January 2014 and the date of this document's creation with stakeholders (where appropriate) and other statutory authorities. Natural England (CS) was involved with this formal process.	

LINSPA-522: Benthic feeding birds

1. Is the activity/activities directly connected with or necessary to the management of the site for nature conservation?	No
2. What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s)? *Sensitivities as listed are based on DRAFT Interim conservation advice. Reference to Regulation 33 advice for the Lindisfarne SPA and best judgement has been used to determine which of these pressures are truly exerted by the gear type(s).	Above and below water noise (Sensitive)[1] Barrier to species movement (Sensitive)[2] Collision above water (Sensitive)[3] Collision below water (Sensitive)[3] Introduction of light (Sensitive)[4] Introduction or spread of non-native species (Sensitive)[5] Removal of non-target species i.e. bycatch/ prey availability (Sensitive)[6] Litter i.e. Ghost fishing (Sensitive)[7] Visual disturbance (Sensitive)[8]

3. Is the feature potentially exposed to the pressure(s)?	Yes
4. What are the conservation objectives for the feature? *DRAFT interim conservation advice does not give definitive conservation objectives. However, completing an HRA without COs is difficult. The CO as listed in this document is based on current knowledge of the status, and the pressures, affecting designated features (see sections 4 &5). Expert judgement has been used to determine which features may be exposed to the pressure(s) resulting in inferred COs. These COs are assigned a degree of uncertainty i.e. a subjective confidence level based on evidence 'High', 'Medium,' 'Low', and 'Unknown'.	Generic conservation objectives for Benthic feeding seabirds in the Lindisfarne SPA are to **Maintain*:** - The overall heights of vegetation patches within nesting areas - <u>The overall size of the feature population</u> - The availability of water 2-4m deep - <u>The distribution, abundance and availability of key prey items</u> - <u>Adult survival and body condition</u> - <u>The extent and distribution of supporting habitat</u> - Water quality to a standard which supports the feature - Concentrations and deposition of critical air pollutants to below the site relevant Critical Load - The structure, function and supporting processes associated with the feature - **Restrict:** <u>the frequency, duration and intensity of disturbance within nesting, foraging and roosting areas</u>. Those conservation objectives that might be affected by gill netting are underlined. *Confidence level for interim, inferred Conservation Objective: **HIGH** (see section 6 for detail).

5. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level? ***(reference to conservation objectives)***	There is currently no commercial gill netting activity occurring within the Lindisfarne SPA. Gill netting off the Northumberland coast in general has declined considerably in recent years, with only one or two boats known at the present time to occasionally set static nets in the northern sectors of the NIFCA district. Nevertheless, despite the low levels of activity, designated benthic feeding bird species from the Lindisfarne SPA may overlap with infrequent netting activity creating potential for a gear/feature interaction between static nets and birds, with the greatest risk coming from accidental bycatch of birds in nets. NIFCA Byelaw 6 (Fixed Engines) includes a number of technical, spatial and temporal restrictions designed to minimise the potential of accidental bycatch of birds within the district. For instance, between 26th March – 31st October it is prohibited to set a fixed engine in waters less than 7m depth and the headline of the fixed engine must be at least 4m below the surface of the water. Given the low levels of gill netting activity, it is not deemed to have a significant adverse effect on the bird population from Lindisfarne SPA, however more information is needed to confirm this.
6. Condition and Conservation Objective Inferences	No definitive conservation objective for benthic feeding bird species in the Lindisfarne SPA is given in the draft interim Regulation 35 advice (July 2015). The CO for this feature is set to 'Maintain' in the Regulation 33 advice for the site (June 2000), which correlates with the site-specific information provided in the SPA toolkit. Both benthic feeding bird species designated for the Lindisfarne SPA, Eider duck and Common Scoter, are listed as 'Assessed – no site specific decline' (Natural England SPA toolkit, 2014). Therefore the CO of Maintain for this feature is given a high confidence level.

7. Is the potential scale or magnitude of any effect likely to be significant?	**Alone:** **No** *However a full Appropriate Assessment is required to confirm this.	**OR In-combination** **No**
8. Have NE been consulted on this LSE test? If yes, what was NE's advice?	**Yes** Synthesis of evidence and local knowledge informing this decision occurred between January 2014 and the date of this document's creation with stakeholders (where appropriate) and other statutory authorities. Natural England (CS) was involved with this formal process.	

6. Appropriate Assessment

If a 'Test of Likely Significant Effect (Section 5) identified the potential for a significant effect on the EMS feature/sub-feature as a result of the gear-type under consideration, or if there is a lack of information regarding the impact of the gear type on the feature, it has been carried forward for a full Appropriate Assessment to assess whether or not the potential LSE is likely to have an adverse effect on the conservation objectives given for the designated features of the site in question. The full appropriate assessment for the gear/feature interaction of static fixed nets/ estuarine birds within the Lindisfarne SPA is given below.

6.1 Potential risks to features

The potential pressures, ecological impacts, levels of exposure and mitigation measures for static fixed netting activity in regards to the designated features estuarine and benthic feeding birds within the Lindisfarne SPA are summarised in Table 2.

Table 2: Summary of Impacts

Feature/ Sub feature(s)	Conservation Objective	Potential pressure (such as abrasion, disturbance) exerted by gear type(s)	Potential ecological impacts of pressure exerted by the activity/activities on the feature	Level of exposure of feature to pressure	Mitigation measures
Estuarine Birds	**The size of the population at a level which is above either the population-size included on the SPA Citation or an alternative baseline-population previously approved by Natural England Chief Scientist or that based on the current mean peak count or equivalent, whichever is the higher.**	Collision ABOVE & BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	'Collision can occur as a result of this activity in instances where a vessel in used.'[9]	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside the over-wintering period. This vessel is small belonging to the under 10m inshore fleet. The absence of operating static netting vessels within the over-wintering season of the SPA classified species means current levels of risk for collision are extremely low.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of the number of vessels operating within NIFCA sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Removal of non- target species (bycatch)	'Pressure may be exerted by by-catch associated with fixed nets and lines. However, vulnerability of feature to pressure will need to be considered on a case-by-case basis.'[12]	In 2015 static nets were set for a total of 37 days (NIFCA permit forms) with one vessel reporting netting activity within the NIFCA sector containing Lindisfarne SPA. This activity was reported for 11 days in August, outside the overwintering species presence at this site. Incidences of dead birds are recorded during Marine Conservation Society Beach litter	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of fishing

			Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	surveys and from 217 surveys conducted throughout the NIFCA district over 10years, 34 of these recorded dead birds. From these, potentially one bird identified was that of a classified bird species representative of the estuarine species of overwintering bird assemblage of the SPA, a swan in 2010; cause of death was not stated. Low levels of static netting activity and lack of bycatch reports pose a low exposure risk to the feature's population status.	effort within sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Litter i.e. Ghostfishing	'Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity generally not considered to occur at level that would cause concern.'[11] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	The Marine Conservation Society conduct marine litter surveys along the UK coastline, recording fishing net found in the surveys. The frequency of netting found from 2005 to 2012 has generally decreased from one piece collected every 54m to every 201m, retrospectively (Annex 4). The highest frequency was recorded in 2013, every 36m, which has since declined to every 107m in 2015. Per survey carried out over the last 10 years the most netting litter collected within the SPA was 33 pieces on Sandham Bay (Annex 5).	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of gear losses reported in NIFCA permit returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'. NIFCA to continue to collect data for NEBBS[5]
		Visual disturbance	'May result from the presence/movement of the vessel and potentially also the	Historically, vessel activity within the vicinity of Lindisfarne SPA, NIFCA sector 7 (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the

[5] North East Beached Bird Survey at Druridge and Beadnell

			presence/movement of the gear. Magnitude of pressure would depend on nature and scale/intensity of activity.'[13] Potential for displacement from foraging grounds with boat traffic of vessels gillnetting in vicinity.	in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. Only one vessel reported working static nets throughout sector 7 (Longstone to Scottish border) during 2015, operating for 11 days in August. The vessel is a small boat belonging to the under 10m inshore fleet operating within an area of approximately 420km^2 (NIFCA sector 7). This extremely low level of activity within the vicinity of Lindisfarne SPA and its occurrence outside the overwintering season means currently, no visual disturbance to the features due to vessels operating static nets is occurring.	parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of fishing effort within NIFCA sector 7 and communications with NE warden from will ensure any management requirements are met and remain 'fit for purpose'.
	Safe passage of birds between feeding and roosting areas	ABOVE and BELOW water noise	'Whilst activity would cause pressure, impact considered better captured by 'visual disturbance'[8]	**N/a**	**N/a**
		Collision ABOVE & BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	'Collision can occur as a result of this activity in instances where a vessel in used.'[9]	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside the over-wintering period. This vessel belongs to the under 10m inshore	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of the number of vessels operating within NIFCA sector 7 from permit returns and

				fleet. The absence of operating static netting vessels within the over-wintering season of the SPA features means there is currently no adverse impact from these vessels, restricting the movements of the classified speceis within the site.	communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Removal of non- target species (bycatch)	'Pressure may be exerted by by-catch associated with fixed nets and lines. However, vulnerability of feature to pressure will need to be considered on a case-by-case basis.'[12] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	In 2015 static nets were set for a total of 37 days (NIFCA permit forms) with one vessel reporting netting activity within the NIFCA permit sector containing Lindisfarne SPA. This activity was reported for 11 days in August, outside the overwintering species presence at this site. Incidences of dead birds are recorded during Marine Conservation Society Beach litter surveys and from 217 surveys conducted throughout the NIFCA district over 10years, 34 of these recorded dead birds. From these, potentially one bird identified was that of a classified bird species representative of the estuarine overwintering bird assemblage of the SPA, a swan in 2010; cause of death was not stated. Low levels of static netting activity and lack of bycatch reports pose a low risk as classified species move from feeding to roosting sites.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of fishing effort within sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Litter i.e. Ghostfishing	'Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity	The Marine Conservation Society conduct marine litter surveys along the UK coastline, recording fishing net in the surveys. The frequency of netting found from 2005 to 2012 has generally decreased from one piece collected every 54m to every 201m,	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation

			generally not considered to occur at level that would cause concern.'[11] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	retrospectively (Annex 4). The highest frequency was recorded in 2013, every 36m, which has since declined to every 107m in 2015. Per survey carried out over the last 10 years the most netting litter collected within the SPA was 33 pieces on Sandham Bay, the highest frequency collected was south of the SPA between Craster and Boulmer (Annex 5).	status of site's features. Annual assessments of gear losses reported in NIFCA permit returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'. NIFCA to continue to collect data for NEBBS
		Visual disturbance	'May result from the presence/movement of the vessel and potentially also the presence/movement of the gear. Magnitude of pressure would depend on nature and scale/intensity of activity.'[13] Potential for displacement from foraging grounds with boat traffic of vessels gillnetting in vicinity.	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside of the overwintering season. This vessel belongs to the under 10m inshore fleet. The absence of operating static netting vessels within the over-wintering season means that this gear type is not causing an adverse effect to restrict the distribution of the SPA classified species within the site.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of fishing effort within NIFCA sector 7 and communications with NE warden from will ensure any management requirements are met and remain 'fit for purpose'.
Benthic Feeding Birds	**The overall size of the population**	Collision ABOVE & BELOW water with static or moving objects not naturally found in the marine environment	'Collision can occur as a result of this activity in instances where a vessel in used.'[9]	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the

		(e.g., boats, machinery, and structures)		factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, which would have been operating outside the over-wintering period. This vessel belongs to the under 10m inshore. The absence of operating static netting vessels within the over-wintering season of the SPA classified species therefore poses minimal risk to its overall population.	fixed net fishery and the conservation status of site's features. Annual assessments of the number of vessels operating within NIFCA sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Litter i.e. Ghostfishing	'Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity generally not considered to occur at level that would cause concern.'[11] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	The Marine Conservation Society conduct marine litter surveys along the UK coastline, recording fishing net in the surveys. The frequency of netting found from 2005 to 2012 has generally decreased from one piece collected every 54m to every 201m, retrospectively (Annex 4). The highest frequency was recorded in 2013, every 36m, which has since declined to every 107m in 2015. Per survey carried out over the last 10 years the most netting litter collected within the SPA was 33 pieces on Sandham Bay (Annex 5).	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of gear losses reported in NIFCA permit returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'. NIFCA to continue to collect data for NEBBS
		Visual disturbance	'May result from the presence/movement of the vessel and potentially also the presence/movement of	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the

			the gear. Magnitude of pressure would depend on nature and scale/intensity of activity.'[13] Potential for displacement from foraging grounds with boat traffic of vessels gillnetting in vicinity.	factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside of the overwintering season. This vessel belongs to the under 10m inshore fleet. The absence of operating static netting vessels within the over-wintering season therefore poses no visual disturbance to the SPA classified species.	fixed net fishery and the conservation status of site's features. Annual assessments of level of fishing effort within sector 7 and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Removal of non- target species (bycatch)	'Pressure may be exerted by by-catch associated with fixed nets and lines. However, vulnerability of feature to pressure will need to be considered on a case-by-case basis.'[12] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	In 2015 static nets were set for a total of 37 days (NIFCA permit forms) with one vessel reporting netting activity within NIFCA permit sector 7 containing Lindisfarne SPA. This activity was reported for 11 days in August, outside the overwintering species presence at this site. Incidences of dead birds are recorded during Marine Conservation Society Beach litter surveys and from 217 surveys conducted throughout the NIFCA district over 10years, 34 of these recorded dead birds. From these, potentially one bird identified was that of a classified bird species representative of the overwintering bird assemblage of the SPA, a swan in 2010; cause of death was not stated. Extremely low levels of static netting occurring outside of over-wintering season and lack of bycatch reports poses a low level risk to population size at this site.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of fishing effort within sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
	Adult survival and body	Removal of non- target species (bycatch)	'Pressure may be exerted by by-catch	In 2015 static nets were set for a total of 37 days (NIFCA permit forms) with one vessel	None required, except implementation of Monitoring

	condition		associated with fixed nets and lines. However, vulnerability of feature to pressure will need to be considered on a case-by-case basis.'[12] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	reporting netting activity within the NIFCA permit sector containing Lindisfarne SPA. This activity was reported for 11 days in August, outside the overwintering species presence at this site. Incidences of dead birds are recorded during Marine Conservation Society Beach litter surveys and from 217 surveys conducted throughout the NIFCA district over 10years, 34 of these recorded dead birds. From these, potentially two birds identified were that of the classified bird species representative of the benthic feeding overwintering bird assemblage of the SPA; an eider in 2007 and 2010. Cause of death was not stated. Extremely low levels of static netting occurring outside of over-wintering season and lack of bycatch reports poses a low level risk to adult survival.	and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of fishing effort within sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Litter i.e. Ghostfishing	'Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity generally not considered to occur at level that would cause concern.'[11] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or	The Marine Conservation Society conduct marine litter surveys along the UK coastline, recording fishing net in the surveys. The frequency of netting found from 2005 to 2012 has generally decreased from one piece collected every 54m to every 201m, retrospectively (Annex 4). The highest frequency was recorded in 2013, every 36m, which has since declined to every 107m in 2015. Per survey carried out over the last 10 years the most netting litter collected within the SPA was 33 pieces on Sandham Bay (Annex 5).	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of gear losses reported in NIFCA permit returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'.

			mortality.		NIFCA to continue to collect data for NEBBS
	Maintain the extent and distribution of supporting habitat	Collision ABOVE & BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	'Collision can occur as a result of this activity in instances where a vessel in used.'[9]	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside the over-wintering period. This vessel belongs to the under 12m inshore fleet, measuring approximately 9.69m in length. The absence of operating static netting vessels within the over-wintering season of the SPA features means there is currently no adverse impact from these vessels restricting the available supporting habitat to the classified species.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of the number of vessels operating within NIFCA sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management requirements are met and remain 'fit for purpose'.
		Visual disturbance	'May result from the presence/movement of the vessel and potentially also the presence/movement of the gear. Magnitude of pressure would depend on nature and scale/intensity of activity.'[13] Potential for displacement from	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside of the overwintering season. This vessel belongs to the under 10m	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of fishing effort within NIFCA sector 7 and communications with NE warden from will ensure any management requirements are

			foraging grounds with boat traffic of vessels gillnetting in vicinity.	inshore fleet. The absence of operating static netting vessels within the over-wintering season means that this gear type is not causing an adverse effect restricting the distribution of the SPA features supporting habitats.	met and remain 'fit for purpose'.
Estuarine birds/ Benthic feeding birds	**The distribution, abundance and availability of key prey items**	Removal of non- target species (prey availability).	The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. Removal of target and non-target prey species has the potential to impact bird populations.	Over-wintering food sources for estuarine birds consists primarily of small organisms and vegetation within the intertidal zone. Benthic feeding birds dive down to the seabed targeting small molluscs and crustaceans. EU legislation regulates mesh sizes of static nets, which are determined by the target species. This fishery targets large finfish and flatfish species e.g. Cod (140mm) and turbot (70mm) and consequently meshes sizes are too large to catch the classified species preferred prey sizes. NNR Byelaws 2 (1c) and 2 (2) prohibit the use of setting a net by mechanical means within the SPA, restricting the direct extraction of this feature's food source through netting activity. Therefore static netting is highly unlikely to cause an adverse effect on the classified species available prey.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of gear losses reported in NIFCA permit returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'.
		Litter i.e. Ghostfishing	'Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity generally not considered to occur at level that would cause	The Marine Conservation Society conduct marine litter surveys along the UK coastline, recording fishing net in the surveys. The frequency of netting found from 2005 to 2012 has generally decreased from one piece collected every 54m to every 201m, retrospectively (Annex 4). The highest frequency was recorded in 2013, every 36m, which has since declined to every 107m in	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of gear losses reported in NIFCA permit

			concern.'[11] Activity of SPA feature foraging behaviour places risk of interaction (entanglement) resulting in injury or mortality.	2015. Per survey carried out over the last 10 years the most netting litter collected within the SPA was 33 pieces on Sandham Bay (Annex 5). The mesh sizes of the static fishery for the target species is 140mm and 70mm for cod and turbot retrospectively. The SPA features predominantly target small burrowing organisms, vegetation within the intertidal zone or small molluscs and crustaceans, which are too small to be retained in these nets and hence unlikely to adversely affect the availability of prey.	returns, marine litter surveys from MCS, NWT and entanglement stranding from the BDMLR will ensure any management requirements are met and remain 'fit for purpose'. NIFCA to continue to collect data for NEBBS.
	Restrict: the frequency, duration and intensity of disturbance within nesting, foraging and roosting areas.	ABOVE and BELOW water noise	'Whilst activity would cause pressure, impact considered better captured by 'visual disturbance'[8]	**N/a**	**N/a**
		Collision ABOVE & BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	'Collision can occur as a result of this activity in instances where a vessel in used.'[9]	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottiosh border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, which would have been operating outside the over-wintering period. This vessel belongs to the under 10m inshore fleet. The absence of operating static netting vessels within the over-wintering season of the SPA	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fixed net fishery and the conservation status of site's features. Annual assessments of the number of vessels operating within NIFCA sector 7 from permit returns and communications with NE warden will monitor this pressure and ensure any management

				features means incidences of collision are highly improbable.	requirements are met and remain 'fit for purpose'.
		Visual disturbance	'May result from the presence/movement of the vessel and potentially also the presence/movement of the gear. Magnitude of pressure would depend on nature and scale/intensity of activity.'[13] Potential for displacement from foraging grounds with boat traffic of vessels gillnetting in vicinity.	Historically, vessel activity within the vicinity of Lindisfarne SPA (Longstone to Scottish border) has been extremely low, with the highest number of vessels operating in 2005 as four (NIFCA permit returns). Influencing factors such as, low TAC, increasing seal population continue to maintain low levels of this activity. During 2015 only one vessel recorded using static nets for a total of 11 days in August, operating outside of the overwintering season. This vessel belongs to the under 10m inshore fleet. The absence of operating static netting vessels within the over-wintering season means that this gear type is not causing an adverse effect of disturbance to restrict the population size of the SPA features.	None required, except implementation of Monitoring and Control Plan for Static Netting, which outlines the parameters to be assessed for the fishery and the conservation status of site's features. Annual assessments of fishing effort within NIFCA sector 7 and communications with NE warden from will ensure any management requirements are met and remain 'fit for purpose'.

The following conservation objectives for the features are not deemed to be at risk from pressures associated with static netting activity within the Lindisfarne SPA or they are outside the remit of Northumberland IFCA :

- Estuarine Birds

- A high density of channel networks within intertidal feeding areas
- Open and unobstructed terrain around nesting, roosting and feeding sites
- The availability of freshwater on mudflats within feeding and resting areas.
- Width of beach section
- A high cover/abundance of preferred food plants (eg. Zostera)
- Availability of water 2-20m deep

- Benthic Feeding birds

- The overall heights of vegetation patches within nesting areas
- The availability of water 2-4m deep
- Water quality to a standard which supports the feature
- Concentrations and deposition of critical air pollutants to below the site relevant Critical Load
- The structure, function and supporting processes associated with the feature.

7. Conclusion

The supporting features of Lindisfarne SPA provide important foraging and roosting grounds for the largest population of migratory overwintering birds in Britain, 41, 870 individuals. Two species are listed in the EC Birds Directive Annex I form part of this assemblage, the whooper swan and golden plover. The overwintering assemblage is present on site from September through to the end of March. During this part of their lifecycle it is crucial for the species survival that they replenish and restore fat reserves to endure the winter and maintain a good body condition to be able to successfully breed during the summer months. The estuarine bird species forages within the intertidal area of the SPA, feeding on vegetation, burrowing organisms, whereas benthic feeding birds target molluscs and crustaceans on the seabed.

The main pressures identified attributed to static netting are accidental bycatch of individuals in the static nets and disturbance cause to the features during fishing activity, which this Appropriate Assessment addresses.

This site is a National Nature Reserve (NNR) managed by Natural England, who employ a full time warden and have a suite of byelaws to help protect the site. Pertaining to fishing activity NNR byelaw 2(1c) and 2(2) prohibit 'fishing and shellfishing by mechanical means' on site, restricting commercial static net activity.

Current levels of static netting are infrequent and low within the NIFCA district, predominantly occurring in the most southerly sectors (fig 8). Within NIFCA sector seven (Longstone to the Scottish border), the surrounding waters of Lindisfarne SPA, netting activity has always been extremely low, with the maximum number of vessels reporting the use of static set in 2005 for a sum of 76 days. Only one vessel reported setting nets within NIFCA sector seven throughout 2015 for 11 days during August (NIFCA permit returns). This was an under 10m vessel operating within an area approximately 420km^2. The decline of this fishery is due to various factors, namely low quotas and seal predation from an increasing population at a local breeding colony (Jon Green pers. comm.). These factors continue to exert influence on maintaining an extremely low activity level which is concentrated at the southern part of the NIFCA district.

Bycatch of classified bird species attributed to ghostfishing is largely unknown. Data collected by the Marine Conservation Society Beach Litter surveys along the coastline of Northumberland over the last 10 years showed a decreasing frequency of netting recorded during surveys, but this sharply increases in 2013 to an average piece of netting recorded every 36m surveyed. The highest density of netting found was at surveys conducted south of Lindisfarne SPA, between Craster and Boulmer (Annex 5). In addition to collecting data on litter, records are made of any dead birds found, of which there are 34 recordings during this period. Two of which were positively identified and one possible which could have formed part of the seabird assemblage of the SPA, eider ducks in 2007 and 2010 and a swan in 2010, but no cause of death was stated.

The conclusion of this appropriate assessment is that static netting within the NIFCA district at **current levels** is **NOT** deemed to have a significant adverse impact on the 'Estuarine birds' and 'Benthic feeding birds', for the overwintering populations of Lindisfarne SPA.

The Monitoring and Control Plan for static netting outlines the methodology and parameters NIFCA will use to collect data for the continual monitoring of static netting activity and its interaction with the classified bird species. All data (except NE site condition monitoring) will be collated and analysed on an annual basis to access if further management is required, unless a trigger is initiated to prompt an automatic assessment. This will ensure any risks to the site features will be addressed and management measures will remain appropriate and adaptive. Monitoring and Control Plans for Static Netting can be found on NIFCA's website (www.nifca.gov.uk) at the beginning of 2017.

8. In-combination assessment

Although only one vessel reported operating static nets within NIFCA sector 7, the surrounding waters of Lindisfarne SPA, potential risks of in combination effects have been considered in Table 3 for current and possible plans and projects and other activities within the vicinity of Lindisfarne SPA.

As only one vessel is operating static netting gear within the vicinity of Lindisfarne SPA, there are no adverse effects at this level of this fishing activity in combination with other plans, projects or activities on the feature estuarine birds and benthic feeding birds.

Table 3 | In- combination assessments of Static netting with other plans and projects within the vicinity of Lindisfarne SPA.

Plans and Projects		
Activity	**Description**	**Potential Pressure**
Fishing X fishing	Shellfish potting Trawling Dredging	No adverse effect at current levels, but potential for increase vessel activity and disturbance levels within vicinity of SPA. Fishing effort to be continually monitored and assessment with implementation of Monitoring and Control Plans for Static Netting and Potting, because mobile gear is prohibited at this part of the site, under the BNNC SAC, NIFCA byelaw 7.. Furthermore assessments will be completed for Northumberland Marine pSPA for which Lindisfarne SPA sits wholly within. Fisheries permitted by NIFCA. Potting is the main fishery throughout the district with 115 commercial permit holders 2015, of which 32 operate within sector 7. All vessels known to use static nets are shellfish permit holders and are therefore part of the same potting fleet. The site is managed by Natural England who employ a full time manager and have implemented their own byelaws to restrict fishing activity.
	Bait collection	NIFCA byelaw 8 prohibits the collection of any sea fisheries resource by digging on the seagrass, therefore protecting the habitat. NNR byelaw (1)p. prohibits bait collection by any means within the SPA. However there is a voluntary zone where bait collection is permitted. Some illegal activity is known to occur outside of this zone and steps are being taken by both organisations to address this. At these levels risk is still considered low.
	T & J Nets	This fishery operates from March through to the end of August and targets migratory species, primarily Salmon. All fishermen must gain a license to fish from the Environment Agency, who are responsible for regulating this fishery. Currently there are 21 T/J nets and 8 drift net licensees whom operate across our district and the EA are in the process of rolling out a phasing out scheme. Anecdotally, there are

		some reports of bycatch of birds from this fishery but no data is available. This information is captured above in the Table 2. Low risk to pressure at current levels.
Coastal Infrastructure	Harbour maintenance	Small scale Appropriate licence conditions/monitoring has been incorporated to mitigate any impacts
Anchorage and Mooring	Anchorage and Mooring	Holy Island harbour is situated at the southern end of the island, which is on the border outside the SPA boundary. NNR byelaws (2)q & qq restrict access of vessels within the SPA.
Coastal management scheme	Flood and erosion risk management	Northumberland and North Tyneside Shoreline Management Plan 2 (05/2009) covers the coastline from the Scottish border to the river Tyne. As stated in Section (2) of the document projects and plans within the SMP are subjected to its own Appropriate Assessment for proposed work, which assesses any impacts to Lindisfarne SPA.
Other activities with potential to occur within vicinity		
Activity	**Description**	**Potential Pressure**
Aggregate dredging	Aggregates dredge	No dredging in vicinity
Windfarm (MCZ)	Platform build/infrastructure, Cables laying /infrastructure Cable repair	Appropriate licence conditions/monitoring has been incorporated to mitigate any impacts. Low risk of physical loss, damage or biological disturbance.
Other activities being considered (which are not plans or projects by definition)		
Activity	**Description**	**Potential Pressure**
Recreational angling	Activity levels unknown. NIFCA participating in MMO MCSS MPA activity monitoring trial begin 09/16.	Potential low risk of bycatch and disturbance levels within vicinity of SPA.
Yachting, sailing, motor cruises, watersports and wildlife cruises.	Currently activity levels unknown. NIFCA participating in MMO MCSS MPA activity monitoring trial begin 09/16.	NNR byelaws (2)q and (2)qq places restrictions on the movement of all vessels within the reserve and has a designated 'watersports area', see NNR Byelaw Map http://www.nifca.gov.uk/wp-content/uploads/2013/07/DOC030913-006.pdf
Wildfowling	Permitted seasonal activity managed within the NNR by Natural England.	Sustainable exploitation of some species of birds on the NNR. The activity is monitored and permitted with conditions so that all permit holders must submit a 'bag form' for each shooting trip and include negative returns.

9. Summary of consultation with Natural England

Monthly meetings have been held with Natural England's Lead Advisor for the Northumberland East region from the outset of this process. The creation of this document was supported by ongoing consultation with Natural England and they agree with the conclusions of this assessment. Formal advice was received on 30th March 2017.

10. Integrity test

It can be concluded that gill netting activities, alone or in-combination in the surrounding waters of the Lindisfarne SPA do not adversely affect the estuarine birds and benthic feeding birds populations of the site at existing low levels.

11. Adaptive risk management

Assessments will be periodically reviewed should activity levels change above existing levels or if new evidence relating to this gear/feature interaction emerges. To monitor activity levels and gear /feature interactions Monitoring and Control Plan documents have been produced; one of which outlines the continual assessment of static netting activity which incorporates the monitoring of the feature condition of SPA bird species, within the NIFCA district.one. These documents describe the parameters which are to be monitored and the mechanisms in which the data is to be collected. Clear triggers/ thresholds are defined within section 3 of the document, which if reached will initiate action to either mitigate or modify the trigger. Section 4 outlines all possible management tools, which are to be assessed on their ecological and socio-economic outcomes for both the fishery and the feature. These options will be subject to scrutiny through NIFCA's byelaw working group and committee. Any management options decided through this process would be subject to public consultation.

Annex 1: Reference list

Evans P.R. (2002) 'Energy balance and optimal foraging strategies in shorebirds: Some Implications for their distributions and movements in the non- breeding season' http://www.bioone.org/doi/pdf/10.5253/arde.v64.p117

JNCC (2001) http://jncc.defra.gov.uk/page-1989).

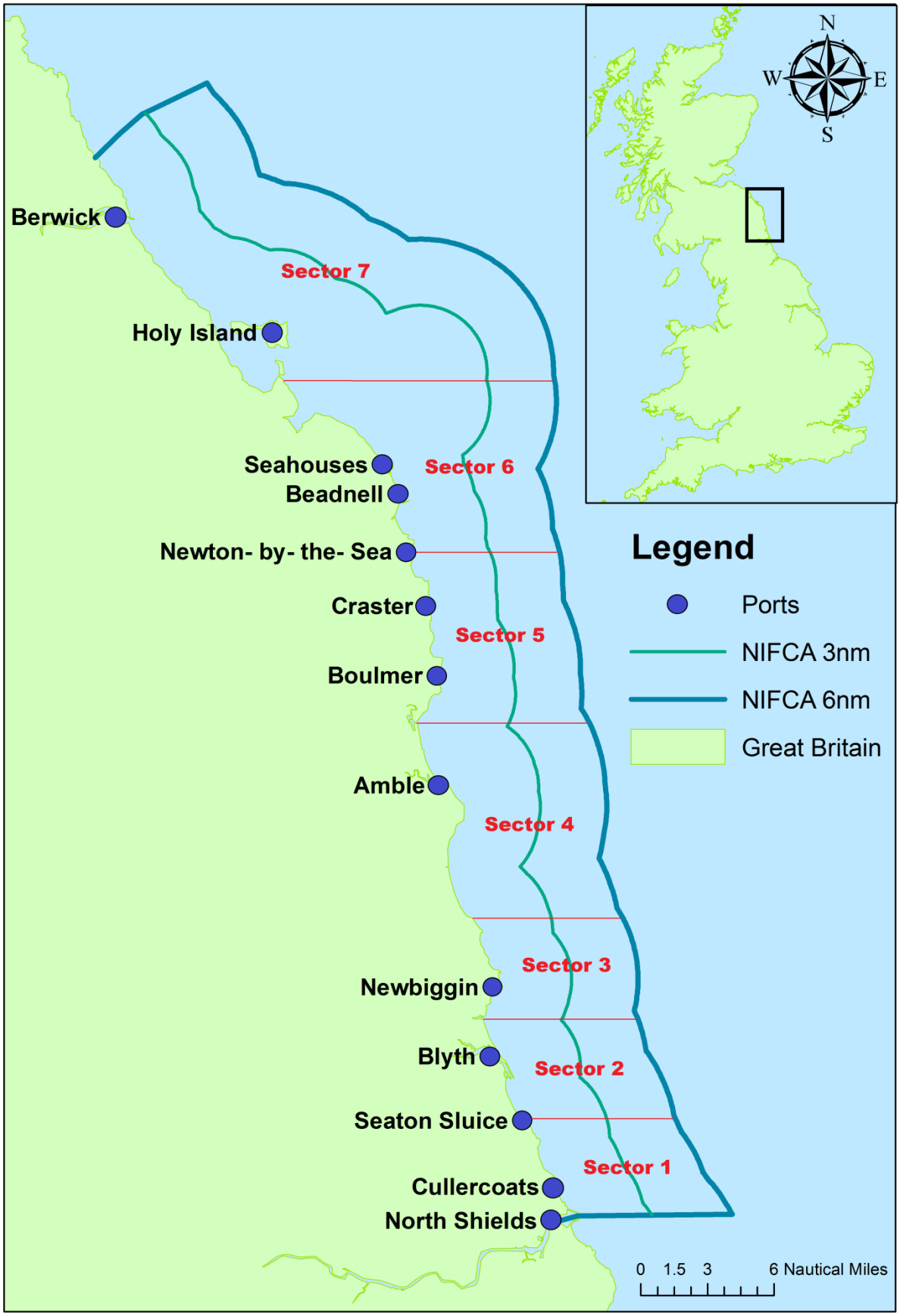
Mclusky D.S. & Elliot M. (2004) 'The Estuarine Ecosystem; ecology, threats and management' Oxford Press 3rd ed. P1

Natural England National Nature Reserve 1998 Byelaws http://www.nifca.gov.uk/wp-content/uploads/2013/07/DOC030913-006.pdf

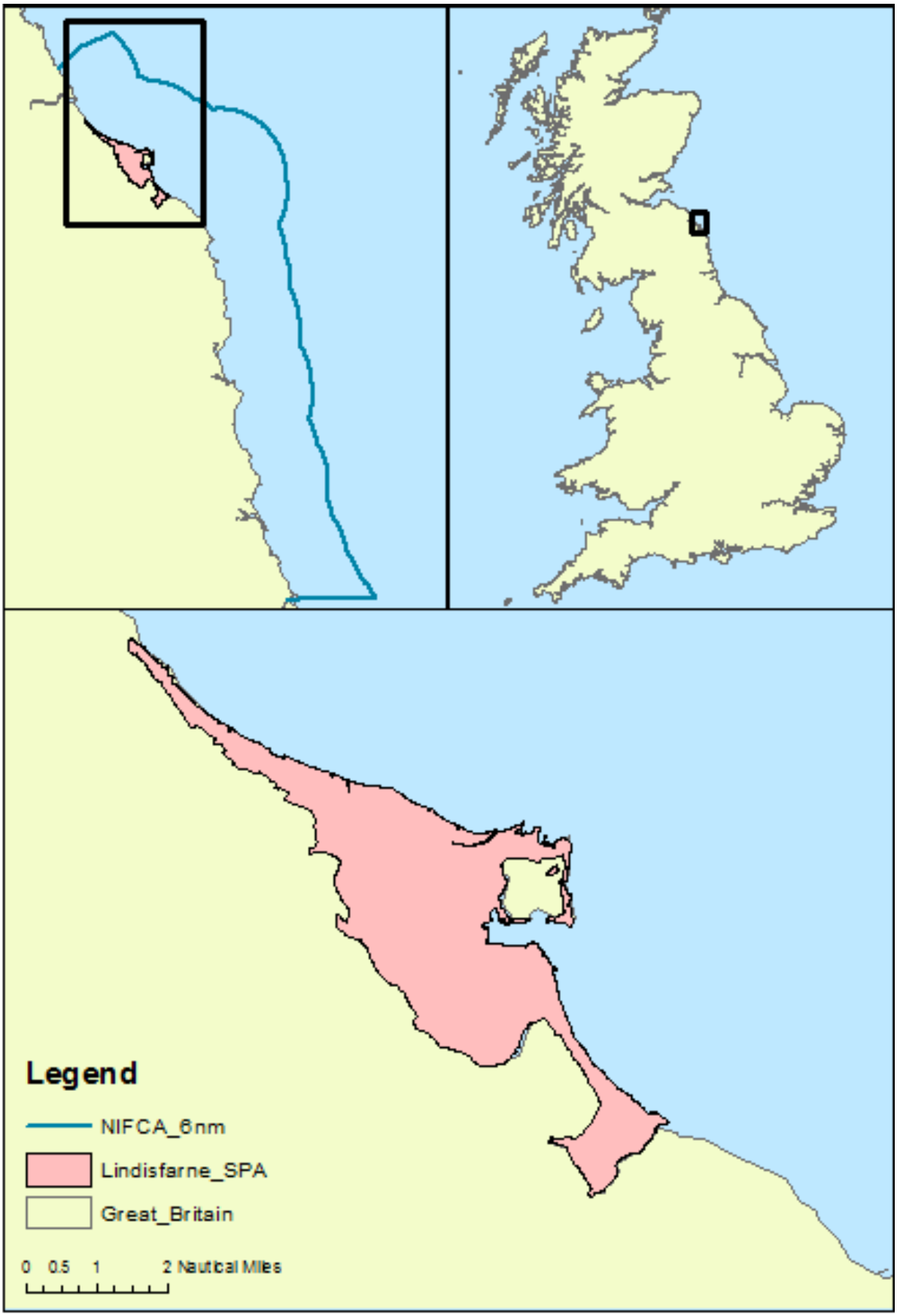
For Detailed tLSE

1. ICES (International Council for Exploration of the Sea), 2013; Stillman et al., 2007; Wildfowl and Wetlands Trust (WWT) Consulting, 2012. "Whilst activity would cause pressure, impact considered better captured by 'visual disturbance". **706 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
2. No reference. "While unlikely this could occur as a result of setting nets in confined water bodies/estuaries, or behavioural effects from the use of 'pingers' on nets – the impacts from the latter may be better covered under 'under water noise' pressures." **704. (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
3. Davenport and Davenport, 2006. "Collision can occur as a result of this activity in instances where a vessel in used". **150 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
4. Birdlife International, 2012b. "Lighted vessels pose a collision risk to many species of birds. Birds drawn to light often become disoriented and collide with these structures, resulting in injury and death.". **323 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
5. ICES (International Council for Exploration of the Sea), 2009. "The introduction and movement of invasive non-indigenous species may occur as a result of vessel movements, hull fouling and fishing activities." **619 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
6. Gubbay and Knapman, 1999; ICES (International Council for Exploration of the Sea), 2013; Kaiser et al., 2001; Sewell and Hiscock, 2005; Wildfowl and Wetlands Trust (WWT) Consulting, 2012. "Pressure may be exerted by by-catch associated with fixed nets and lines. However, vulnerability of feature to pressure will need to be considered on a case-by-case basis." **543 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
7. Wildfowl and Wetlands Trust (WWT) Consulting, 2012. "Discarded/lost lines, hooks and nets which could be problematic for mobile species. Other types of litter generated by activity generally not considered to occur at level that would cause concern.". **190 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**
8. Stillman et al., 2007; Wildfowl and Wetlands Trust (WWT) Consulting, 2012. "May result from the presence/movement of the vessel and potentially also the presence/movement of the gear. Magnitude of pressure would depend on nature and scale/intensity of activity." **362 (UK9006011_Lindisfarne_SPA_Advice_on_Operations)**

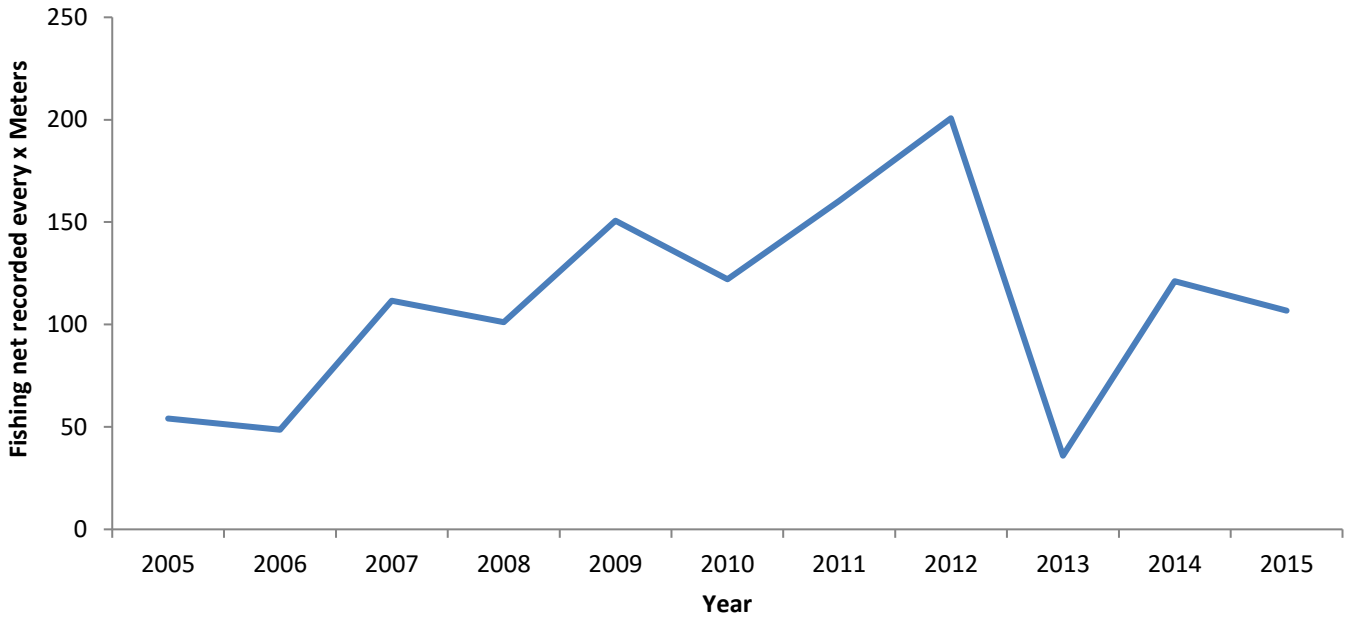
Annex 2: NIFCA District Sections



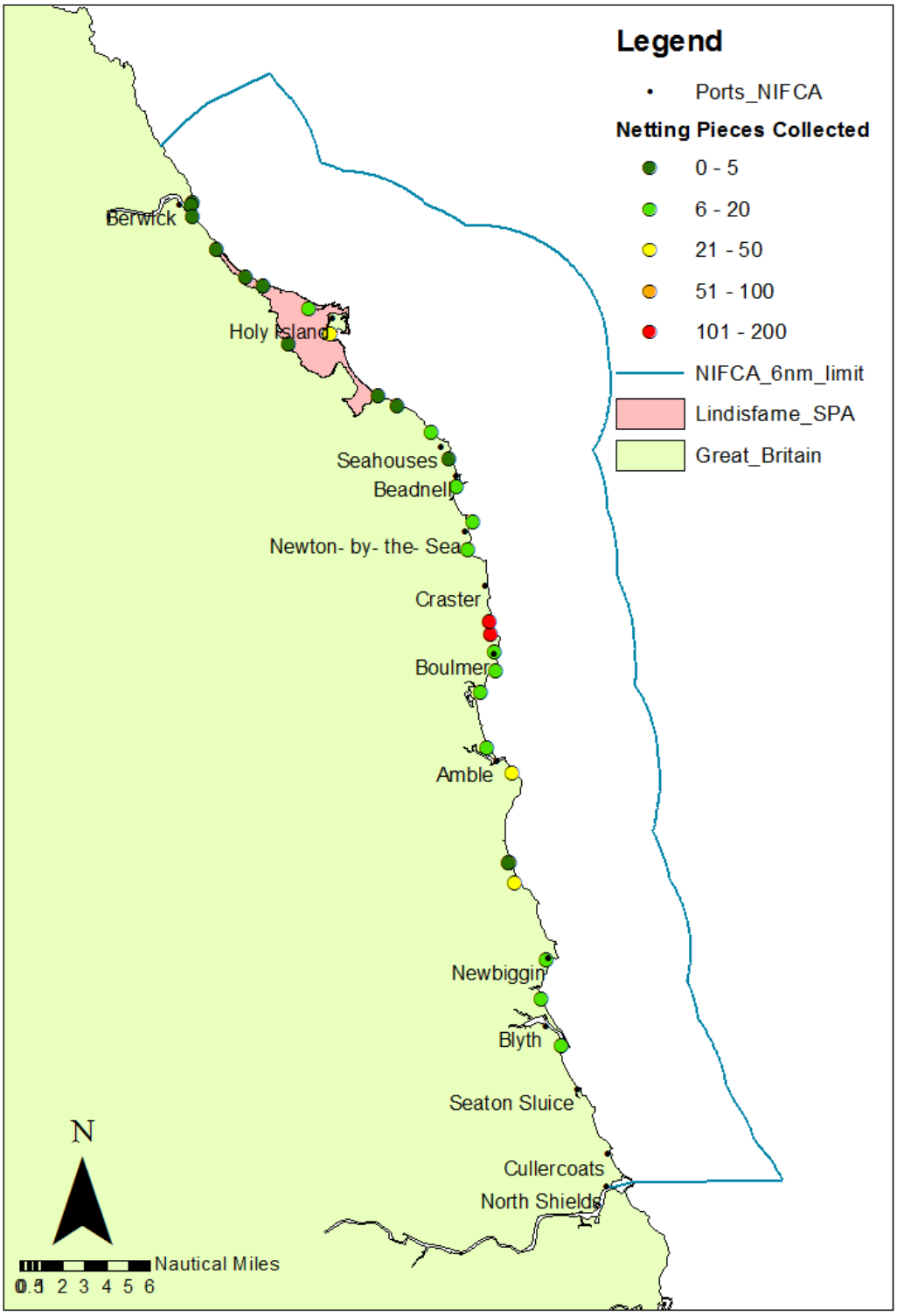
Annex 3: Site boundary map



Annex 4: Graph showing the frequency a piece of fish netting (per meter) was collected during beach litter surveys conducted by the Marine Conservation Society across the NIFCA district. Surveying effort was standardised in the analysis of this data to account for varying number of surveys conducted and length of beach.



Annex 5: Map displaying levels of fishing net recorded in Marine Conservation Society beach litter surveys along NIFCA district coastline over 10 year period. Size of pieces of netting found is classed as small (<50cm) or large (>50cm) and have been grouped together for the purposes of this map.



Annex 6: Broad scale habitat map of supporting habitats for classified bird species of the Lindisfarne SPA. Arc GIS data was provided by Natural England (December 2016 update).