

# Fisheries in EMS Habitats Regulations Assessment for **Amber** risk categories

Site and gear/features interaction(s) assessed:

<b>European Marine Site:</b>	<b>Northumbria Coast SPA</b>
<b>Qualifying feature(s):</b>	<b>Intertidal bedrock reef Intertidal boulder and cobble reef</b>
<b>Gear type(s):</b>	<b>Handwork (access from land)</b>
<b>Gear/feature interaction reference(s):</b>	<b>NCSPA – 267 NCSPA – 268</b>

<b>Revision history</b>		
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<b>Has Natural England been formally consulted on this tLSE (and do they agree)?</b>	<b>Yes</b>
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# 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 Marine Protected Areas (MPAs), 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 MPAs 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 Appendix 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.

Northumberland Inshore Fisheries and Conservation Authority (NIFCA) has implemented 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 other features for this site have been scoped out during the previous phases of the process 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<sup>1</sup> for this site (section 8) and other non-fishery related activities.

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 **hand work (access from land)** has a likely significant effect on the supporting habitat **Intertidal bedrock reef and/or intertidal boulder and cobble reef** of **Northumbria Coast SPA**, and on the basis of this assessment whether or not it can be concluded that activity of **hand work (access from land)** will not have an adverse effect on the integrity of this MPA.

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<sup>1</sup> 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.

## 1.2 Documents reviewed to inform this assessment

- Defra's risk assessment matrix of fishing activities and European habitat features and protected species<sup>2</sup>
- NIFCA intertidal sightings data
- NIFCA Periwinkle Impacts Survey 2020-22 (Harvey, 2022)
- Reference list (Appendix 1)
- Northumbria Coast SPA Site boundary map (Appendix 2)
- Northumbria Coast SPA sightings and supporting habitat map (Appendix 3)
- Northumberland IFCA Code of Conduct for periwinkle gatherers (Appendix 4)

## 2. Information about Northumbria Coast SPA

Designated in 2000, the Northumbria Coast SPA has a discrete boundary which encompasses the site's features' (Table 1) supporting habitats, covering an area of 1,107 ha between the Tweed and the Tees Estuaries. The supporting habitats of intertidal rocky shores and estuarine mud and sand flats provide important foraging grounds for overwintering birds, while the sandy beaches and adjacent shallow waters provide suitable nesting and foraging grounds for summer breeders.

The expanse of this SPA expands over two IFCA districts, Northumberland and North Eastern, for which each IFCA is responsible for assessment within its remit. Newton Links/ Long Nanny, situated in Beadnell Bay provides a shallow inlet and bay, a supporting habitat for the breeding seabird populations, for which it has been managed by the National Trust since 1977. The Trust run a monitoring programme over the summer months, where volunteer rangers live on site and work in shifts to provide 24-hour protection to the breeding tern colonies.

**Table 1** Northumbria Coast qualifying features (Natural England Departmental Brief, 2015).

Feature	Population size at classification (2000)	% of UK Population
<b>EC Birds Directive Annex I Species</b>		
Little Tern <i>Sternula albifrons</i>	40 Pairs 80 individuals	1.7% of GB population
Arctic tern <i>Sterna paradisaea</i>	1, 549 pairs 3, 098 individuals	2.92% of GB population
<b>Internationally Important Populations of Migratory Species</b>		
Purple Sandpiper <i>Calidris maritima</i>	787 individuals	1.6% of biogeographic
Turnstone <i>Arenaria interpres</i>	1, 739 individuals	2.6% of biogeographic population

The information in table 1 shows the population size in the Northumbria Coast SPA at the time of classification in 2000. Since classification, number of individuals and breeding pairs have fluctuated for each species. The latest available figures on the number of individuals or breeding pairs can be seen in table 2.

<sup>1</sup>See Fisheries in EMS matrix:

[http://www.marinemanagement.org.uk/protecting/conservation/documents/ems\\_fisheries/populated\\_matrix3.xls](http://www.marinemanagement.org.uk/protecting/conservation/documents/ems_fisheries/populated_matrix3.xls)

**Table 2** Northumbria Coast qualifying features population changes since site classification (Natural England Designated Sites System, 2021).

Feature	Population Size / No. of breeding pairs	Year recorded	Population trend
Little Tern <i>Sternula albifrons</i>	25 pairs	2017	↓
Arctic tern <i>Sterna paradisaea</i>	1,773 pairs	2013-2017 (5-year peak mean)	↑
Purple Sandpiper <i>Calidris maritima</i>	242 individuals	2018	↓
Turnstone <i>Arenaria interpres</i>	618 individuals	2018	↓

## 2.1 Overview and qualifying features relevant to this assessment

### Intertidal bedrock reef and Intertidal boulder and cobble reef<sup>3</sup>

Intertidal rock habitats comprise 'rocky reef communities on exposed bedrock, boulders and cobbles between the low and high-water marks (Connor et al., 2004). They can be extremely variable in their structure and the communities they support (Davies et al., 2001) but typically share a characteristic fauna and flora of mussels, barnacles and seaweeds. Where these communities occur on the shore is dictated by the amount of time they are exposed to air during a tidal cycle.

### Ecology

The habitat is heavily influenced by the degree of tidal inundation and wave action (Connor et al., 2004). In the highest energy environments, strong wave and tidal action removes fine sediments to expose rock walls, ledges, caves, pools and boulders. In sheltered conditions, fine sediment increases and rocky substrate is often associated with muddy foreshores. Species composition varies from a typical animal-dominated community of mussels, limpets, barnacles and robust seaweeds in the most exposed conditions of strong waves and tide-swept shores (Connor et al., 2004), to dense beds of furoid seaweeds in sheltered locations (Connor et al., 2004). Often distinct zones of dominate species are apparent down the shore, with robust lichens and barnacles at the top with more diverse seaweed communities, perhaps dominated by the wrack *Fucus serratus*, more abundant closer to the low water mark.

On sheltered coastlines, seaweeds typically dominate the foreshore and can be abundant. The composition, abundance and position on the foreshore of all these communities can also be modified by rock type, topography, salinity, freshwater input and the amount of time they are exposed to air during a tidal cycle (Connor et al., 2004, Davies et al., 2001). Seasonal changes can also be apparent; in spring and summer red, green and brown seaweeds can dominate the foreshore (Connor et al., 2004).

### UK status and distribution

Rocky shores are found throughout the coastlines of the UK and Europe (Connor et al., 2004, McLeod et al., 2008k); it is less abundant in estuaries (Maddock, 2008). In the UK, it is largely restricted to the south-west and north-east of England, and the west of Scotland and Wales.

Intertidal Bedrock Reef and Intertidal Boulder and Cobble (Stony) Reef are supporting habitat for the Purple Sandpiper and Turnstone features of the NC SPA. Purple sandpiper are characteristic of the rocky shore occurring in high numbers on wave-cut platforms where they forage on a variety of marine invertebrates, mussels, winkles and dog whelks (Royal Society for the Protection of Birds (RSPB), 2017). Purple sandpiper also occasionally forage on banks of rotting seaweed on the strandline where they feed on larvae, pupae and adult kelp flies (Royal Society for the Protection of Birds (RSPB), 2017). Purple sandpiper can be found at Bamburgh and a regular wintering flock of up to 120 birds can be seen at the

<sup>3</sup> Information taken from: Natural England General descriptions for Special Area of Conservation features and Special Protection Area supporting habitats

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/520290/SAC-feature-descriptions.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/520290/SAC-feature-descriptions.pdf)

Harkess Rocks (or Stag Rocks). This species are also commonly found on the rocks and seaweed in Craster and Seahouses Harbour as well as utilising man-made structures such as Blyth Pier (Cadwallender, 2008). Purple Sandpiper are an overwintering species, key months on the Northumberland Coast are October to April. At classification, Northumbria Coast SPA had a site total of 787 purple sandpiper, representing 1.6% of the biogeographic population (Natural England (NE), 2015). Since classification there has been a decline in their population within Northumbria Coast SPA to 242 individuals (British Trust for Ornithology (BTO), 2018).

Turnstone predominantly forage on the rocky shore as well as along seawalls and jetties (Royal Society for the Protection of Birds (RSPB), 2017). This species also forages along sandy and muddy shores and feed on banks of washed up seaweed on the strand line as their diet is mainly composed of winkles, shrimps and barnacles (Royal Society for the Protection of Birds (RSPB), 2017). They gained the name Turnstone from their habit of turning over small stones and seaweed in their search for invertebrates (Ocean Wide Expeditions, 2017). Turnstones are found in high concentrations in the area between Howick and Bulmer where the flat rocky area tends to be abundant in seaweed. The majority of the turnstone counted were located at Budle Point, Alnmouth, Seaton and the Tyne (Natural England (NE), 2015). Man-made structures such as the South Pier at the mouth of the Tyne and Seaham Harbour Pier are used as high tide roosts. Turnstones are overwintering birds, key months on the Northumberland Coast are August to May.

Intertidal Bedrock Reef and Intertidal Boulder and Cobble (Stony) Reef are not designated as potential supporting habitat features for the Little Tern or Arctic Tern features of the site, they are therefore not considered as part of this assessment.

## 2.2 Conservation Objectives

The site's conservation objectives apply to the site and the individual species and/or assemblage of species for which the site has been classified.

The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive (Directive 2009/147/EC), by maintaining or restoring:

- the extent and distribution of the habitats of the qualifying features
- the structure and function of the habitats of the qualifying features
- the supporting processes on which the habitats of the qualifying features rely
- the populations of each of the qualifying features
- the distribution of qualifying features within the site

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** in favourable condition for the following supporting marine habitats<sup>4</sup>:

- safe passage of birds moving between roosting and feeding areas.
- concentrations and deposition of air pollutants
- the structure, function and supporting processes associated with the feature and its supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised.
- the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing, feeding). For turnstone at: Intertidal rock (497.8 ha), Intertidal sand and muddy sand (217.3 ha), Intertidal coarse sediment (31.5 ha), Intertidal mixed sediments (7.2 ha) Intertidal stoney reef, Intertidal biogenic reef: mussel beds (35.9 ha) and Atlantic salt meadows (1.2 ha). For purple sandpiper at Intertidal rock (497.8 ha), Intertidal coarse sediment (31.5 ha), Intertidal mixed sediments (7.2 ha), Intertidal stony reef and Intertidal biogenic reef: mussel beds (35.9 ha).

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<sup>4</sup> Conservation objectives relating to solely terrestrial habitats have been omitted.

- the distribution, abundance and availability of key food and prey items (eg. *Balanus*, *Mytilus*, *Carcinus*, *Gammarus*, Littorina, dipertan flies, kelp-fly larvae) at preferred sizes.
- the area of open and unobstructed terrain around roosting and feeding sites.
- a vegetation structure of key roost sites dominated by bare ground or a short sparsely-vegetated sward.
- the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically  $\geq 5.7$  mg L<sup>-1</sup> (at 35 salinity) for 95 % of year), avoiding deterioration from existing levels.
- water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.
- natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.

**Restrict/restore/reduce:**

- the frequency, duration and / or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.
- the size of the non-breeding population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels.

### **3. Interest feature feature/fisheries interactions of the Northumbria Coast SPA categorised as ‘Red’ risk and overview of management measure(s)**

No interest features/ fisheries interaction in the Northumbria Coast Island SPA were categorised as a ‘Red’ risk.

### **4. Information about fishing activities surrounding the site**

This Appropriate Assessment concerns Hand Gathering with access from land targeting periwinkle (*Littorina littorea*). Other forms of hand gathering take place within the NC SPA including collection of mussel, shore crab and cleeking for lobster which have been screened out in previous assessments<sup>5</sup>.

The level of periwinkle gathering within the NC SPA has been assessed using NIFCA shore patrol sightings data (medium-high data confidence). NIFCA officers record sightings of intertidal hand work activity observed during routine patrols when a site visit coincides with low water ( $\pm 2$  hours). All intertidal activity is recorded within this time window, officers also record when no activity is seen during a visit. Using this sightings data, periwinkle collection activity has been classified as ‘high’, ‘medium’, or ‘low’ (See section 4.1 for further details).

Periwinkle collection activity in areas classified as medium or low has been screened out in a previous assessment<sup>5</sup> which concluded that hand gathering for periwinkle in areas categorised as Low or Medium activity will likely not have a significant effect on the features of the site or the supporting habitat of the features. This assessment focusses on area classified as high collection areas or ‘hotspots’.

Northumbria Coast SPA southern boundary extends further than NIFCA district and where this SPA falls outside NIFCA’s boundary, North East IFCA will be responsible for carrying out any assessment and implemented management measures if required.

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<sup>5</sup> NIFCA NCSPA – tLSE 038

## 4.1 Periwinkle collection activity

Periwinkles can be harvested from the shore when uncovered by the tide. Harvesters will hand-pick the target species from the shore, collecting them into buckets, this can involve turning rocks, cobbles or boulders. The activity occurs both recreationally and commercially on rocky intertidal areas up and down the Northumberland Coast.

France, the United Kingdom and Ireland are the countries with the most important gastropod fisheries in Europe, accounting for over 90% of catches between 1979–1996 (Leiva & Castilla, 2001). Periwinkles are one of the most harvested species and are mainly exported to Europe, predominantly France and Spain (Cummins et al., 2002). The market value of the periwinkle fishery in England is unknown (Tinlin-Mackenzie, 2018) though was estimated at £5 million in Ireland in 1994 (Pearson, 1994 as cited by Cummins et al., 2002). It is difficult to accurately assess the size of periwinkle fisheries as they are unregulated, under reported, and often black market in nature (Cummins et al., 2002; Crossthwaite et al., 2012). There is a peak in price and demand at Christmas with more intense harvesting, however periwinkles are harvested year round with summer demand from restaurants in France (Crossthwaite et al., 2012).

There are currently no regulations in place to control the quantities of periwinkles harvested. There are no requirements to be a 'picker' or harvester and as such it is an unregulated fishery. There is a difficulty in gathering information regarding the periwinkle fishery on the Northumberland Coast due to its 'black market' nature. Harvester and wholesalers are reluctant to provide information for fear of economic or regulatory consequences.

A PhD study was conducted by Tinlin-Mackenzie (2018) on intertidal collection within the Berwickshire and North Northumberland Coast (BNNC) SAC which covers a significant proportion of the NIFCA district from Alnmouth to north of the Scottish border. The study found periwinkle harvesting occurs throughout Northumberland, with Seahouses and Berwick popular collection sites probably due to the proximity of wholesalers there. In general, there was a southerly skew to collection activities due to the higher population density in the south of the district. Summer was the peak periwinkle collection season and spring tides were favoured. The average mass taken by each collector was 12.14kg, with collectors often filling several large sacks. 45% of collectors were commercial and harvest more intensively, for longer durations and at greater frequencies than recreational gatherers. Overall, Tinlin-Mackenzie estimated that over 3 million periwinkles are removed from the BNNC SAC every year and the estimated economic value of the fishery is £133,982.

NIFCA officers record sightings of intertidal hand work activity observed during routine patrols when a site visit coincides with low water ( $\pm 2$  hours). Sightings have been recorded since 2016, these sightings have been mapped to produce charts showing activity within the SPA in the areas categorised as high collection pressure. Shore patrols have recorded sightings in this way since 2016. Any sightings recorded prior to 2016 have been omitted from analysis due to changes in the way records are kept results in low confidence in any sightings prior to 2016. Since 2016 the frequency of shore patrols has fluctuated therefore it is important to factor the number of patrols into analysis of sightings.

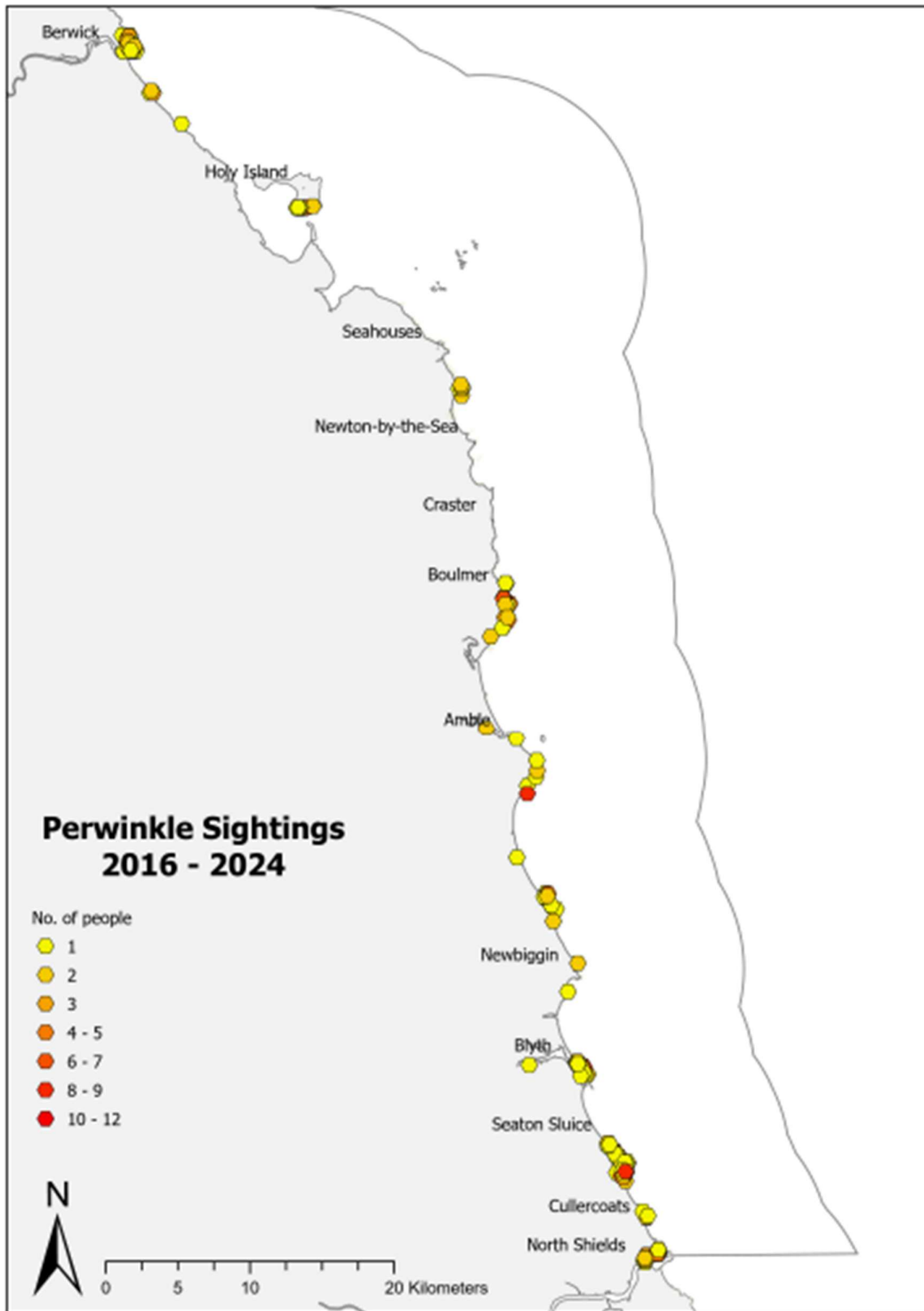


Figure 1 NIFCA sightings of periwinkle gathering from patrols in 2016-24.

Gathering information on where and when this activity is occurring has allowed NIFCA to define areas of higher collection pressure. High collection pressure has been calculated by periwinkle hotspots for the whole NIFCA district were classified as High, Medium, Low activity based on NIFCA patrol sightings data on the average number of individuals collecting periwinkle per NIFCA patrol to each area (See Appendix 3 and Table 3 for more information). Classifications were split equally but checked to see if more natural breaks were more suitable, and against officers' knowledge.

The high collection areas or 'hotspots' for the whole district Berwick, and Boulmer (Seaton Point), with Cambois, Hadston (North Druridge Bay), St Marys Island, Whitley Bay and LNNR / Holy Island classified as Medium (Figure 1).

Periwinkle collection is recorded on 36% of patrols throughout the whole district, in areas of high collection pressure this percentage increases. This is particularly noticeable at Berwick where it is recorded on 65% of patrols, significantly more than at other hotspots.

Full classification of all identified collection areas can be seen in Table 3. Appendix 3 shows sightings of collection pressure in relation to subfeatures of the site. Activity within the site is consistent with activity sighted in the NIFCA district in the it takes place on intertidal rock habitat.

**Table 3** Periwinkle gathering activity classifications for all sites within the NCSPA from NIFCA intertidal patrols between 2016 and September 2024. Showing total number of patrols, the proportion of patrols periwinkle collection was sighted on, the average number of individuals per sighting, the average number of individuals per patrol (proportion of patrols x average number per sighting) and the maximum number of collectors sighted at one time. Periwinkle activity rankings (Low – High) were based on average number of collectors per patrol to the area from NIFCA patrols, in addition to officer knowledge. Further to these sightings Seahouses and Newton have been identified as medium areas of collection intensity (Tinlin MacKenzie, 2018). There have been no sightings in these areas during NIFCA patrols, these sites will be prioritised for NIFCA patrols in the future.

NC SPA	No of patrols	Proportion patrols	Average individuals /sighting	Average individuals /patrol	Max. no individuals at one time	Collection intensity
Amble	33	0.03	1.00	0.03	1	Very Low
Beadnell	25	0.20	1.60	0.32	2	Low
Boulmer N	73	0.12	2.40	0.30	6	Low
Boulmer S (Seaton Point)	13	0.62	2.63	1.62	4	High
Cambois	51	0.53	1.93	1.02	9	Medium
Cresswell	50	0.26	1.79	0.46	4	Low
Cullercoats	31	0.13	1.50	0.19	2	Low
Druridge Bay	15	0.07	1.00	0.07	1	Very Low
Hadston (N Druridge Bay)	24	0.13	6.33	0.79	9	Medium
Hauxley	27	0.15	1.25	0.19	2	Low
LNNR/Holy Island	19	0.37	2.00	0.74	7	Medium
Lynemouth	11	0.09	2.00	0.18	2	Low
Newbiggin	26	0.08	1.50	0.12	2	Low
North Shields	60	0.25	1.82	0.46	4	Low
Seaton Sluice	88	0.20	1.52	0.31	4	Low
St Mary's	90	0.27	2.11	0.56	5	Medium
Tynemouth	28	0.18	2.00	0.36	4	Low
Whitley Bay	65	0.17	3.75	0.63	12	Medium

Periwinkles harvested on the Northumberland Coast go through wholesalers at Berwick-upon-Tweed and on to France. The price offered per kilo depends on both size of periwinkle and present market demand. Prices offered to gatherers varies but is usually around £1/kg for small, £2/kg for medium and £3/kg for large, this can increase to £5/kg for large size classes around Christmas. Commercial collectors will collect periwinkle by hand, as described above, into 'onion' sacks which hold around 25kg of periwinkle.

Wholesalers report that they return the discards to a suitable area of rocky shore through trusted collectors and fishers. Periwinkles are also sold privately through internet sales on sites such as Facebook. This makes monitoring the fishery extremely difficult.

Anecdotal evidence from officers talking to collectors out on the coast suggests that gatherers do not target the same shore every time they gather. Rather, they 'cycle' through shore. One gatherer said he starts in Berwick and goes down the coast as far as Boulmer, so there are often 3-4 weeks in between targeting the same shore.

## 4.2 Management

### National

There is national and European legislation outlining practice for the collection and sale of shellfish for human consumption. Shellfish is categorised as, 'Live Bivalve Molluscs' (LBMs) (for example cockles and mussels) and 'Live Shellfish' (periwinkle are in this category). The following applies to all Live Shellfish (and therefore periwinkles):

- Food Safety Act 1990
- Food Safety & Hygiene (England) Regulations 2013
- Food Law Code of Practice (England)
- Food Law Practice Guidance (England) - It is the statutory obligation to treat food intended for human consumption in a controlled and managed way. The key requirements of the Act are that food must comply with food safety requirements, must be "of the nature, substance and quality demanded", and must be correctly described (labelled).
- Regulation (EC) No 178/2002 - laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.
- Regulation (EC) No 854/2004, Article 6, Annex II (as amended) - laying down specific hygiene rules for food of animal origin.

To enact the legislation in place, Northumberland County Council have a registration system which requires wholesalers or collectors to document information about the catch including the location harvested from, amount collected, and date collected. This information is for the identification of each batch of live shellfish during transport from the production area to a despatch centre, purification centre, relaying area or processing plant.

Under Regulation 853/2004, each batch of LBMs / LS that are to be placed on the market (i.e. commercial volumes in excess of 5kgs) must be accompanied by a registration document (unless issued with a permanent transport authorisation) to identify each batch harvested and transported. The registration document must be completed upon landing and accompany the batch from the classified harvesting area, and between establishments, up to and including the arrival of the batch at a relay area, dispatch centre or processing establishment.

### Regional

Periwinkles are classified as 'seafish' and there is therefore a public right to collect both personally and commercially (Cummins et al., 2002). As a 'seafish', commercial collection of *L. littorea* is controlled under fisheries legislation; however, there are currently no regulations in place to control the quantities of periwinkles harvested. Byelaws can regulate the public right to fish, and some other IFCA's have periwinkle harvesting regulations in place (Table 4).

In 2020 NIFCA published a voluntary Periwinkle Gathering Code of Conduct (Appendix 1) which is posted at intertidal sites within the district, with guidelines for minimising disturbance to intertidal rocky shores and a recommendation to only collect periwinkles over the minimum market size of 12mm shell length. This has the possible advantages of securing local support and is flexible to changing conditions, however, may have limited success as not everyone may be aware (Tinlin-Mackenzie, 2018).

**Table 4.** Periwinkle collection regulations in the UK

Region/Area	Management	Regulation
Northumberland IFCA	Voluntary Code of Conduct	Guidelines to minimise disturbance, minimum harvesting size of 12mm, returning undersize individuals to area of collection.
Cornwall IFCA	Voluntary Code of Conduct	Winkle Fishing Code of Practice specifies a gatherer should use a riddle with bars spaced at least 16cm, return undersize individuals to the area they were caught, seek landowner's permission, and have regard for other legislation i.e. SSSI consents.
Devon and Severn IFCA	Byelaw	Minimum harvesting size of 16mm using a gauge with a square opening
North Western IFCA	Byelaw (Legacy – old Cumbria SFC area only)	Only hand gathering allowed, minimum harvesting size of 16mm using a gauge with a square opening
Southern IFCA	Byelaw	Only hand gathering allowed, and closed season from 15th May to 15th September
	Byelaw	Poole Harbour Shellfish Hand Gathering byelaw specifies that within defined areas from 1 <sup>st</sup> November-31 <sup>st</sup> March no shellfish of any kind may be removed by any means.
Kent and Essex IFCA	Byelaw	Specifies winkles can only be removed by hand.
Sussex IFCA	Voluntary Code of Conduct	Generic for all hand gathering/bait collection activity – nothing specific to periwinkles
Jersey	Byelaw	Recreational bag limits – 200 periwinkle per day

### 4.3 Other fishing activity within the Northumbria Coast SPA

Potting for European lobster (*Homarus gammarus*) and brown crab (*Cancer pagurus*) is the principal fishery within the Northumberland IFCA district, with 86 commercial shellfish permit holders in 2024. This fishery is a permit fishery, one of the conditions attached to a permit is to provide monthly activity returns forms including information on weight of catch and effort (number of pots in the sea, number of days fished, and average number of pots hauled per day). This enables 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 (NIFCA Byelaw: Crustacea and Molluscs permitting and Pot Limitation). There is also a recreational potting fishery in Northumberland which also requires a permit. Recreational shellfish permit holders are limited to five pots and must not take more than two lobster, five edible or velvet crabs, 20 whelks or five prawns in any one day. Permit holders are requested to record and submit catch information on a voluntary basis. Recreational potting predominantly takes place within the infralittoral or intertidal areas where pots can be accessed from the shore, although there is also a small amount of recreational potting from vessels.

Trawling for Nephrops occurs within the NIFCA district, there were approximately 38 local trawlers with 23 active vessels working from 4 ports in 2024. The local fishery takes place between 3-25 miles offshore with best catches being seen during the autumn and winter months. Fishers target Nephrops on areas of subtidal mud using otter trawl gear. An otter trawl is constructed like a cone-shaped net that is towed on the bottom. Trawling is a permit fishery but until 2021, NIFCA only required trawlers to have a permit to fish in the 0-3 nautical mile area of the District. In 2021, NIFCA updated the byelaw to include the full district and limit trawl gear type in Coquet to St Mary's MCZ. Trawling is also limited in the BNNC SAC, it is prohibited in the majority of the site with three small areas open to light otter trawl gear only (NIFCA Byelaw: Prohibition of the use of Mobile Fishing Gear within the English section of the Berwickshire and North Northumberland Coast Special Area of Conservation (SAC)). No trawling activity has been recorded in the

site since the mobile gear prohibition in 2014. Scallop dredging is prohibited throughout the whole NIFCA District by byelaw 2 Dredging (NIFCA, 2022).

Other intertidal fishing activities occur in the Northumberland Coast SPA. Angling is a popular sport from both the shore and at sea, with anglers seen on the coast year-round targeting cod and flatfish in the winter and mackerel and other finfish such as pollock in the summer. Bait collection also occurs along the coast, with digging for bait worms on intertidal soft sediments, collection of mussel from beds within estuaries, and collection of 'peeler' crab from tyres placed on mud within estuaries.

## 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 SAC.

### NCSPA – 267: Intertidal Bedrock Reef

### NCSPA – 268: Intertidal Boulder and Cobble Reef

<p><b>1. Is the activity/activities directly connected with or necessary to the management of the site for nature conservation?</b></p>	<p>No</p>
<p><b>2. What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s)?</b></p> <p>Pressures listed are all those for which the feature is deemed to be sensitive. Pressures in bold are Medium-High Risk. The sensitivities listed are based on the 2018 conservation Advice available on Natural England's Designated Site System</p>	<p><b>Abrasion/disturbance of the substrate on the surface of the seabed</b></p> <p><b>Habitat structure changes - removal of substratum (extraction)</b></p> <p><b>Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion</b></p> <p><b>Removal of non-target species</b></p> <p><b>Removal of target species</b></p> <p>Deoxygenation</p> <p>Introduction of light</p> <p>Introduction or spread of invasive non-indigenous species (INIS)</p>
<p><b>3. Is the feature potentially exposed to the pressure(s)?</b></p>	<p>Yes</p>
<p><b>4. What are the conservation objectives for the feature?</b></p> <p>*A list of key structural and influential species is at this time not available from Natural England. Species which are a viable component of the habitat are likely to include those which are hand gathered such as lobster, shore crab, periwinkle, flora (Fucus sp., Osmundia sp. etc.).</p>	<p>The conservation objectives for 'Intertidal' supporting habitat for designated bird feature(s) are set to:</p> <p><b>Maintain:</b></p> <ul style="list-style-type: none"> <li>• <u>the presence and spatial distribution of intertidal rock communities.</u></li> <li>• the total extent and spatial distribution of intertidal rock, subject to natural variation in sediment veneer.</li> <li>• <u>the abundance of listed species, to enable each of them to be a viable component of the habitat.*</u></li> <li>• the surface and structural complexity, and the stability of the rock structure.</li> <li>• <u>the species composition of component communities.</u></li> </ul>

	<ul style="list-style-type: none"> <li>• the natural physical energy resulting from waves, tides and other water flows, so that the exposure does not cause alteration to the biotopes and stability, across the habitat.</li> <li>• the natural physico-chemical properties of the water.</li> <li>• the natural rate of sediment deposition.</li> <li>• the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically <math>\geq 5.7</math> mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.</li> <li>• water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.</li> <li>• natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.</li> </ul> <p><b>Restrict:</b></p> <ul style="list-style-type: none"> <li>• the introduction and spread of non-native species and pathogens, and their impacts.</li> <li>• aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels.</li> </ul> <p>The conservation objectives that might be affected by intertidal handwork activity are underlined.</p>
<p><b>5. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level?</b></p>	<p>The NCSPA boundary stretches sporadically along the Northumberland coastline from the river Tweed to Blackhall Rocks (NEIFCA district) (Appendix 1) as the designated supporting habitat of rocky reef is not continuous. There are two known types of intertidal hand gathering for invertebrates occurring within Northumbria Coast SPA: hand gathering for periwinkle (<i>Littorina littorea</i>) and for shore/peeler crab (<i>Carcinus maenus</i>), and cleeking for European lobster (<i>Homarus gammarus</i>).</p> <p>NIFCA have also received requests to carry out collection of seaweed and are aware of a commercial operator planning to carry out collection of seaweed species on a commercial basis (more information is needed on the area and scale of this activity before assessments can be carried out). As this is a new activity it requires an assessment to be carried out, this falls outside of the original Article 6 assessment process. A separate assessment will be conducted when information on this activity is provided by the applicant. They have been told of the legal requirements and necessity of needing appropriate permissions.</p> <p>Due to the differences in the way hand gathering of periwinkle and shore/peeler crab versus cleeking is carried out they will be considered separately throughout the document. There is no national description of what is commercial and what is recreational levels of collection, therefore activity has been assessed regardless of the end point of the catch, since it is the activity linked to effort that impacts rather than whether it is commercial or recreational in nature.</p> <p>Hand gathering involves the collection of periwinkles or shore crab by hand from the intertidal rocky areas, which can involve turning rocks,</p>

cobbles or boulders. Cleeking is a traditional method of catching lobster involving using a long pole with a hook to tease lobsters from under rocks or in crevices. Lobster will use their claws to clamp onto the hook and are removed from the sea. The activity is highly seasonal concentrated during the summer months. Both activities occur on rocky intertidal areas, the habitat of the target species. These activities occur along the rocky intertidal/infralittoral habitats on the Northumberland Coast within other MPAs including the Berwickshire and North Northumberland Coast SAC and Coquet to St Mary's MCZ, hand gathering activities in these sites will be assessed in other HRA and MCZ assessments carried out by NIFCA.

### **Hand gathering targeting shore crabs**

NIFCA officers record sightings of intertidal hand work activity observed during routine patrols when a site visit coincides with low water ( $\pm 2$  hours). Between 2014 and 2018, 294 visits to handwork locations within Northumbria Coast SPA were made by officers. 92 individuals were observed hand gathering for winkles or shore crab (Appendix 2).

The collection of shore crabs from rocky intertidal areas will have similar impacts to hand gathering for periwinkles. Shore crab shelter under rocks or in crevices and so collectors will search these cryptic habitats turning rocks as they search.

On the North East coast, hand gathering for shore crab is typically seasonal with crab targeted when soft shelled just after moulting, which takes place in late Spring and Summer. Therefore, collection occurs in a 3-4 month period from late May to August. There have been reports that some collectors will target shore crab year-round and will keep them until they moult and can be used effective bait. However, anecdotal evidence suggests this practice needs a sophisticated set up and is not common in the North East.

Collection of crab comprises a small proportion of hand gathering activity with less than 10% of NIFCA sightings attributed to this activity. NIFCA have received reports that shore crab are difficult to find on the rocky intertidal, with the best places being around staithe or under shelter on muddy intertidal habitats. In fact, many shore crab collectors will travel to the North West coast as collection is more efficient due to higher abundance of shore crabs found in intertidal areas there (Les Weller, pers. comms. 2020).

A proportion of the collection of shore crab is carried out in estuaries using artificial shelters. It has been reported that 90% of the shore crab collected within the NIFCA district is collected using artificial shelters. This is thought to be a more efficient method of collection as the target species congregates within the shelter facilitating easier collection than searching and turning rocks on intertidal rocky shores. Artificial shelters, termed fisheries aggregation devices, are placed in areas of intertidal estuarine mud and are found both within Marine Protected Areas and outside of them in the Northumberland IFCA district. No fisheries aggregations devices are placed within Northumbria Coast SAC intertidal rocky reef supporting habitat. This activity therefore falls outside of the remit of this assessment, however assessments for this

	<p>activity in the AIn Estuary MCZ (AIn MCZ – SRA 016) and Northumberland Marine SPA (NCSPA – tLSE 038) will be carried out.</p> <p><b>Due to the scale of the activity, it is unlikely that the collection of shore crabs from intertidal rocky reef will adversely impact the conservation objectives of these features (moderate confidence).</b></p> <p><b>Hand gathering targeting periwinkle</b></p> <p>Hand gathering for periwinkle is carried out both commercially and recreationally on the Northumberland Coast. Commercial collectors sell periwinkle through two wholesalers in Berwick where they are exported to Europe, mainly to France where there is a large market. Wholesalers only take periwinkle above the minimum market size of 12 mm. At the wholesalers, periwinkle are put through a riddle which grades them by size into small, medium and large categories (small = 12-14mm, medium = 14-17mm, large = 17+mm). Wholesalers report that they return the discards to a suitable area of rocky shore through trusted collectors and fishers. Prices offered to gatherers varies but is usually around £1/kg for small, £2/kg for medium and £3/kg for large, this can increase to £5/kg for large size classes around Christmas. Commercial collectors will collect periwinkle by hand, as described above, into 'onion' sacks which hold around 25kg of periwinkle. Catch data is held by wholesalers, NIFCA plan to work with wholesalers who will share this information. This can be used in the Hand Gathering Monitoring and Control Plan to understand effort and the impact of the activity.</p> <p>The activity has been reported to be higher in summer, with the most activity recorded in August (Tinlin McKenzie, 2018). Collection is higher over spring tides. On average, collectors carry out 5 trips per month, spending 3 hours collecting per trip. They collect, on average, 13.9 kg per trip (Tinlin McKenzie, 2018). For removal from the areas of Northumbria Coast SPA that fall into the BNNC SAC, the average periwinkle biomass removed per year is estimated to be 13,398.2 kg (Tinlin McKenzie, 2018).</p> <p>In comparison, periwinkle harvest levels described in Ireland and Scotland are estimated to be 4000 tonnes per year (McKay et al, 1997; Cummins et al., 2002). When equated by coastline area to the parts of the Northumberland Coast (that fall within the BNNC SAC – the area we have estimates for) the exploitation rates in Ireland and Scotland are approximately double the exploitation rates on the Northumberland Coast (25 tonnes and 13.4 tonnes respectively) (Tinlin McKenzie, 2018). This represents a smaller level of collection on the Northumberland Coast compared elsewhere in the UK, although this doesn't necessarily mean a smaller impact. NIFCA currently does not have any stock assessment information to fully understand the impacts of collection at any level on the population.</p> <p>Areas where activity is known to occur in the NIFCA district has been classified as High, Moderate and Low based on comparing collection pressure from the sightings data, which has been corroborated using the findings of Tinlin-McKenzie (2018) and from reports to NIFCA on activity (Appendix 2).</p>
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	<p>Periwinkle size was compared by Tinlin-McKenzie (2018) to previous studies (Morell 1976; Quigley, 1999). On the most heavily collected shore studied (Boulmer) the largest shell height had not decreased suggesting harvesting periwinkles had not led to a reduction in maximum shell height over the last 50 years. In other areas of the UK, periwinkle size and density was found not to correlate to harvesting pressures at current exploitation levels (Tilin et al., 2010). Natural variation in density between shores is likely to have a greater impact than that of harvesting. With factors such as habitat selection likely to have a greater impact (Gendron, 1977). However, Quigley (1999) revealed differences in the size distributions and mean size of periwinkle between “collected” and “uncollected” populations within the BNNC SAC, and that the maximum size attained by <i>Littorina</i> on “collected” shores was smaller than that from “uncollected” suggesting that high levels of collection could have an impact on periwinkle size.</p> <p>Densities on shores within the Northumberland Coast SAC have been found to vary based on collection pressure but with different directions of difference. Quigley (1999) found densities of periwinkle to be higher on two out three shores with ‘high’ collection rates when compared to adjacent shores with ‘low’ collection rates. Relatively high densities may have been sustained due to dispersive larval recruitment from other shores (Jackson, 2008) or refuge areas.</p> <p>Crossthwaite (2012) found that long-term exploitation did significantly affect population abundance and age structure. However, exploitation levels are higher in these study areas, which are located in Northern Ireland. Local findings suggest that periwinkle populations are maintained at harvestable levels at highly collected shores and communities likely vary from natural variation, rather than harvesting effects (Tinlin-McKenzie, 2018).</p> <p>Direct impacts of periwinkle collection to associated flora and fauna are due to:</p> <ul style="list-style-type: none"><li>- Physical damage to flora and fauna from disturbance (Berthelon et al., 2004) from boulder turning and trampling which can cause a reduction in habitat stability and reduced biodiversity (Davenport and Davenport, 2006). This can damage under-boulder communities which require stable boulder habitats. It can also adversely impact organisms that depend on upper rock surfaces, such as seaweeds (Liddard et al., 2011). Reduction in habitat stability from boulder turning can be lethal to fauna, algae, and under-boulder communities through crushing, smothering and desiccation (Berthelon et al., 2004).</li><li>- Reduction in species composition through trampling can reduce biodiversity, abundance, and biomass (JNCC and NE, 2011). It can lead to a higher percentage of bare rock with a decrease in algal cover (Tyler-Walters, 2008; Liddard et al., 2011). These effects can be seen at low trampling with long term impacts (Povey and Keough, 1991). These impacts are variable, dependent upon intensity, duration, and frequency of the trampling (JNCC and NE, 2011).</li><li>- These disturbances can negatively alter community structure, they vary spatially and temporally (Berthelon et al., 2004) and most severely impact long lived sedentary species that are slow to reproduce (Berthelon et al., 2004).</li></ul>
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	<p>Although previous studies show direct impacts of rocky shore disturbance, the impacts can be difficult to predict locally. The local evidence available (Tinlin-McKenzie, 2018; Quigley, 1999) suggests that periwinkle collection, at current levels, does not appear to be negatively impacting rocky shore floral and faunal communities in the ways described above. Natural England commissioned a study investigating the scale, locale, and ecological impacts of harvesting intertidal species including periwinkles (Tinlin-McKenzie, 2018). Three shores were observed representing 'not collected', 'low collection' and 'high collection'. Results found that periwinkle collection does not appear to be negatively impacting rocky shore floral and faunal communities at current intensity levels. Quigley (1999) reported that between shores in Northumberland with different collection pressures ('collected' and 'uncollected') two out of three sites showed no significant difference in non-target animal mean abundance.</p> <p>Overall, periwinkle stocks appear to be relatively resilient to harvesting. As the local evidence available from peer reviewed research (Tinlin-McKenzie, 2018; Quigley, 1999) suggests the harvesting at current levels does not impact floral and faunal communities. However, literature from other areas of the UK suggest the most significant potential impacts appear to be on non-target rocky shore dwelling plants and animals which experience physical disturbance from human activities (Berthelon <i>et al.</i>, 2004; Crossthwaite, 2012). The hydrodynamics along the Northumberland Coast is variable, in more exposed areas wave and wind naturally turns some small boulders/cobbles. Thus, intertidal and infralittoral communities subject to this natural disturbance will be more resistant to disturbance pressures than communities in sheltered areas. Overall, the intertidal rocky reef feature is subject to naturally high levels of physical disturbance and recovery of rocky reef communities is predicted to be medium (Mieszowska and Sugden, 2014). However, the impacts of boulder turning are more severe when boulders are left upturned (Davenport and Davenport, 2006; AFBI, 2009).</p> <p>NIFCA can say with moderate confidence that on area of bedrock reef (i.e. not boulder/cobble reef), and on boulder/cobble reef areas where activity is medium or low this activity will not have an adverse impact on features of the site if boulders are returned to their original position. However, NIFCA have received multiple reports that activity has increased in certain areas since 2018. Further, evidence in the literature from other areas in the UK (Northern Ireland) (Crossthwaite <i>et al.</i>, 2012) suggest that the impact of removal of periwinkle at higher intensity levels of collection could have long term impacts to community composition and structure. Therefore, at areas of high collection, NIFCA are unsure whether this activity will significantly impact the conservation objectives of this feature, especially as there is no stock assessment information. Management could aim to ensure that collectors return all boulders to their original positions after use, or minimise boulder turning all together. This could be done using education, and codes of conduct (Boye <i>et al.</i>, 2006). Trampling may be too difficult to manage due to the free access of rocky shores to the public undertaking recreational activities.</p>
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	<p><b>NIFCA conclude, with moderate confidence, that this activity will not adversely impact the conservation objectives of the site, through the pressures listed above, at areas of low and medium collection.</b></p> <p>All hand gathering will continue to be monitored through routine and target patrols throughout the district. NIFCA plan to implement a Code of Conduct (Appendix 3) for hand gathering for periwinkles in the district that aims to stop any adverse impacts from the activity including avoiding the collection of small (below minimum market size – 12 mm), reducing disturbance to floral and faunal communities and to birds. NIFCA will monitor adherence to this code of conduct, and if found it is not being adhered to, plan to develop management measures.</p> <p><b>Cleeking</b></p> <p>Cleeking is a low impact activity, those engaged in the activity walk over intertidal areas to reach the sea at low tide. The activity is highly seasonal, concentrated in summer months on big spring tides.</p> <p>The main damage to the marine environment will result from individuals crossing the foreshore, however given the limited and declining levels of activity this is unlikely to cause any adverse impacts. Impacts could also occur when rocks are turned over and not replaced. The hydrodynamics along the Northumberland Coast is variable, in more exposed areas wave and wind naturally turns some small boulders/cobbles. Thus, intertidal and infralittoral communities subject to this natural disturbance will be more resistant to disturbance pressures than communities in sheltered areas. Overall, the intertidal rocky reef feature is subject to naturally high levels of physical disturbance and recovery of rocky reef communities is predicted to be medium (Mieszkowska and Sugden, 2014). Plus, given the limited and declining levels of activity this is unlikely to cause any adverse impacts.</p> <p>Activity is relatively low in areas of the Northumbria Coast SPA, with 38 sightings from 2014-2018. From these activity levels, effort is inferred to be low. The activity is labour intensive and anecdotally it is in decline as younger generations are not partaking in this traditional activity.</p> <p>Further NIFCA byelaws limit the activity: NIFCA Byelaw 4 Crustacea Conservation limits the number of lobster that can be taken using this method to one per person per day.</p> <p>At current declining levels, cleeking in the intertidal zone is unlikely to cause significant adverse impacts to the conservation objectives of this site through the pressures listed above.</p> <p><b>NIFCA conclude, with moderate confidence, that this activity will not adversely impact the conservation objectives of the site through the pressures listed above.</b></p>
<p><b>6. Condition and Conservation Objective Inferences</b></p>	<p>Conservation advice for the NCSPA gives a conservation objective of 'Maintain' for 'Intertidal rock'. To support designated bird features of the sites this should be maintained at 497.8 ha. The conservation advice also gives a 'Maintain' objective for intertidal stony reef, when combined</p>

	<p>with intertidal biogenic reef: mussel beds the area should be maintained at 35.9 ha.</p> <p>No evidence is available on the current condition of 'Intertidal bedrock reef' or 'Intertidal boulder and cobble reef' within the NCSPA.</p> <p>The activity detailed above is unlikely to impact the extent of intertidal rock or intertidal stony reef.</p>														
<p><b>7. Is the potential scale or magnitude of any effect likely to be significant?</b></p>	<p><b>Hand gathering for periwinkle and/or shore crab</b></p> <p><b>Alone:</b></p> <table border="1" data-bbox="573 470 1109 919"> <thead> <tr> <th data-bbox="573 470 727 562"></th> <th data-bbox="727 470 914 562">Bedrock Reef</th> <th data-bbox="914 470 1109 562">Intertidal boulder and cobble reef</th> </tr> </thead> <tbody> <tr> <td data-bbox="573 562 727 789">Periwinkle collection</td> <td data-bbox="727 562 914 789"> <p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p> </td> <td data-bbox="914 562 1109 789"> <p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p> </td> </tr> <tr> <td data-bbox="573 789 727 882">Shore crab collection</td> <td data-bbox="727 789 914 882"><b>No</b></td> <td data-bbox="914 789 1109 882"><b>No</b></td> </tr> <tr> <td data-bbox="573 882 727 919">Cleecking</td> <td data-bbox="727 882 914 919"><b>No</b></td> <td data-bbox="914 882 1109 919"><b>No</b></td> </tr> </tbody> </table>			Bedrock Reef	Intertidal boulder and cobble reef	Periwinkle collection	<p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p>	<p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p>	Shore crab collection	<b>No</b>	<b>No</b>	Cleecking	<b>No</b>	<b>No</b>	<p><b>OR In-combination</b></p> <p><b>Uncertain</b> these activities also occur at the site:</p> <ul style="list-style-type: none"> <li>• Potting / creeling</li> </ul> <p>An in-combination assessment will be carried out as part of the Appropriate Assessment.</p>
	Bedrock Reef	Intertidal boulder and cobble reef													
Periwinkle collection	<p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p>	<p><b>No</b> (Low/medium collection areas) <b>Yes</b> (high collection areas)</p>													
Shore crab collection	<b>No</b>	<b>No</b>													
Cleecking	<b>No</b>	<b>No</b>													
<p><b>8. Have NE been consulted on this LSE test? If yes, what was NE's advice?</b></p>															

## 6 Potential risks to features

The potential pressures, ecological impacts, levels of exposure and mitigation measures for hand gathering (access from land) activity in regards to the designated features intertidal bedrock reef and intertidal boulder/cobble reef within the Northumbria Coast SPA are summarised in Table 5.

The impacts from handwork (access from land), specifically hand gathering for periwinkle on the following features and subfeatures have been screened out at a previous stage of this assessment:

- Estuarine birds
- Intertidal biogenic reef (mussel beds)
- Surface feeding birds
- Annual vegetation of drift lines
- Saltmarsh
- Water column
- Subtidal sand and gravel
- Intertidal coarse sediment
- Intertidal mixed sediment
- Intertidal sand and muddy sand

The following conservation objectives for intertidal bedrock reef and Intertidal boulder and cobble reef are not deemed to be at risk from pressures associated with hand work (access from land) activity within the Northumbria Coast SPA, have been screened out at a previous stage of the assessment (test of likely significant effect stage) or are outside the remit of Northumberland IFCA:

**Maintain:**

- the total extent and spatial distribution of intertidal rock, subject to natural variation in sediment veneer.
- the surface and structural complexity, and the stability of the rock structure.
- the natural physical energy resulting from waves, tides and other water flows, so that the exposure does not cause alteration to the biotopes and stability, across the habitat.
- the natural physico-chemical properties of the water.
- the natural rate of sediment deposition.
- the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically  $\geq 5.7$  mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.
- water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.
- natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.

**Restrict:**

- the introduction and spread of non-native species and pathogens, and their impacts.
- aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels.

All other potential pressures, other than those listed in Table 2 have been screened out at previous a previous stage of the assessment (test of likely significant effect stage).

**Table 5:** 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
<p><b>Intertidal bedrock reef</b></p> <p><b>And</b></p> <p><b>Intertidal boulder and cobble reef</b></p>	<p>Maintain the presence and spatial distribution of intertidal rock communities.</p> <p>Maintain the abundance of listed species, to enable each of them to be a viable component of the habitat.*</p> <p>Maintain the species composition of component communities.</p>	<p>Abrasion/disturbance of the substrate on the surface of the seabed.</p> <p>Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion.</p>	<p>Physical disturbance or abrasion at the surface of the substratum in sedimentary or rocky habitats. The effects are relevant to epiflora and epifauna living on the surface of the substratum. In intertidal habitats, surface abrasion is likely to result from access and trampling, and harvesting of seaweeds (e.g. kelps) or other intertidal species. Activities associated with surface abrasion can cover relatively large spatial areas e.g. bottom trawls or bio-prospecting or be relatively localized activities e.g. seaweed harvesting, recreation, potting, and aquaculture</p>	<p>The level of exposure of the features considered here to the pressure varies. NIFCA have categorised the rocky intertidal areas of the NC SPA as High, Medium and Low collection pressure areas. Medium and Low collection pressure areas have been screened out in previous assessments.</p> <p>The activity could cause abrasion/disturbance through trampling to access to target species, or through the turning of boulders when collectors are looking for periwinkle.</p>	<p>None required, except implementation of a Monitoring and Control Plan. Cognizant of the extant research into a limited number of habitats studied throughout the SAC, NIFCA have adopted the approach of implementing a Monitoring and Control Plan for hand gathering for periwinkle, which outlines the parameters to be assessed for the fishery and the conservation status of sites' features.</p> <p>The hydrodynamics along the Northumberland Coast is variable, in more exposed areas wave and wind naturally turns some small boulders/cobbles. Thus, intertidal and infralittoral communities subject to this natural disturbance will be more resistant to disturbance pressures than communities in sheltered areas. Overall, the intertidal rocky reef feature is subject to naturally high levels of physical disturbance and recovery of rocky reef communities is predicted to be medium (Mieszkowska and Sugden, 2014).</p> <p>However, the impacts of boulder turning are more severe when boulders are left upturned (Davenport and Davenport, 2006; AFBI, 2009).</p> <p>NIFCA have a Code of Conduct in place with measures to reduce impacts of activity to intertidal rocky reef communities. This includes replacing any boulders turned (Appendix 4).</p> <p>The local evidence available (Tinlin-McKenzie, 2018; Quigley, 1999) suggests that periwinkle collection, at current levels, does not appear to be negatively impacting rocky shore floral and faunal communities. Three shores were observed representing 'not collected', 'low collection' and 'high collection'. Results found that periwinkle collection does not appear to be negatively impacting rocky shore floral and faunal communities at current intensity levels.</p>
		<p>Removal of non-target species</p>	<p>Removal of non-target species can occur through bycatch (i.e. discarded catch) is associated with</p>	<p>The activity could remove non-target species through trampling to access target species, or</p>	<p>NIFCA conduct monitoring surveys in five known collection sites (Berwick-Upon-Tweed, Boulmer Haven, Cresswell, Holy Island and</p>

			<p>almost all fishing activities and is related to factors such as the gear type and its design (i.e. its selectivity), the targeted species and effort. shore-based activities such as angling, shellfish collection by hand (e.g. undersize target species damaged or exposed to predation, desiccation or freezing) and even bait digging can result in bycatch of fish, invertebrates and birds.</p>	<p>through exposure due to leaving boulders upturned when looking for periwinkle. Accidental removal of non-target species misidentified as periwinkle is rare and so not likely to be a significant risk.</p>	<p>St Mary's Island), ranking them in terms of collection intensity from NIFCA patrol sightings of intertidal activity in 2020. Surveys aim to monitor impacts on intertidal rocky reef communities (and periwinkle density and length).</p> <p>Results from 2020-2022 surveys suggest that neither animal nor algal abundance, species richness or diversity is related to periwinkle collection intensity. There was little change in rocky shore communities at most sites from 2020-22, with faunal and algal abundance, species richness and diversity remaining similar for most metrics</p> <p>Neither faunal nor algal abundance/percentage cover, species richness or diversity were correlated with collection pressure. However, Berwick, which had the highest levels of collection, had the lowest periwinkle densities in addition to the highest macroalgal abundance and diversity which could be due to lower grazing pressure from periwinkles compared to other sites (Harvey, 2022). Berwick falls outside of the NCSPA boundary and so will be considered in the assessment for the Berwickshire and North Northumberland Coast SAC.</p> <p>Evidence on the impacts of periwinkle collection is relatively limited. NIFCA have therefore adopted the approach of continuing further periwinkle surveys and implementing a Monitoring and Control Plan for periwinkle collection, which outlines the parameters to be assessed for the fishery and includes trigger levels for a reassessment of the activity in the SPA.</p>
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		<p>Removal of target species</p>	<p>Shore-based fishing activities include bait collection, shellfish collection by hand, rod and line angling and the use of pots and nets from the shore. These activities target a range of crustacean, fish and bivalve species. Targeted species may themselves be of conservation importance, or may form part of the biotope or the wider community composition associated with designated features/sub-features.</p>	<p>The level of exposure of the features considered here to the pressure varies. NIFCA have categorised the rocky intertidal areas of the NC SPA as High, Medium and Low collection pressure areas. Medium and Low collection pressure areas have been screened out in previous assessments. For this activity, periwinkle are the only target species. Activity is carried out by hand and so is highly targeted.</p>	<p>None required, except implementation of a Monitoring and Control Plan. Cognizant of the extant research into a limited number of habitats studied throughout the SAC, NIFCA have adopted the approach of implementing a Monitoring and Control Plan for hand gathering, which outlines the parameters to be assessed for the fishery and the conservation status of sites' features.</p> <p>Local evidence suggests that periwinkle density and size are not impacted by collection (Quigley, 1999; Tinlin-McKenzie, 2018). See detailed TLSE for further details.</p> <p>From June 2020 until June 2022 NIFCA surveyed five known collection sites (Berwick-Upon-Tweed, Boulmer Haven, Cresswell, Holy Island and St Mary's Island), ranking them in terms of collection intensity from NIFCA patrol sightings of intertidal activity. Surveys were carried out every three months where possible, measuring periwinkle densities and sizes in addition to faunal and algal assemblages and substrate cover (Harvey, 2022).</p> <p>There was no correlation between collection intensity and periwinkle densities or sizes at different locations. Periwinkle size was instead negatively related to density, and slightly positively related to cover of gravel substrate probably due to competition for available food causing lower growth rates where high densities of periwinkles occur. The highest densities of periwinkle were found on boulder- and cobble-covered areas of shore which has been found in previous studies.</p> <p>Overall, environmental variables such as substrate type and other factors not measured in this study such as organic content and elevation are likely to cause the observed differences in periwinkle densities (Harvey, 2022). Neither faunal nor algal abundance/percentage cover, species richness or diversity were</p>
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					<p>correlated with collection pressure. However, Berwick, which had the highest levels of collection, had the lowest periwinkle densities in addition to the highest macroalgal abundance and diversity which could be due to lower grazing pressure from periwinkles compared to other sites (Harvey, 2021). Berwick falls outside of the NCSPA boundary and so will be considered in the assessment for the Berwickshire and North Northumberland Coast SAC.</p> <p>When comparing individual sites over time (between 2020-2022) there were no significant changes in periwinkle density except at St Mary's where periwinkle density increased slightly. Periwinkle density overall was negatively related to abundance of algae</p> <p>Periwinkles are generally resilient to localised impacts due to their ability to recolonise from larvae which disperse widely in the sea, therefore harvested populations could be maintained from uncollected populations elsewhere.</p> <p>Rocky shore communities remained consistent over the year, though periwinkle densities were higher in summer surveys which should be considered in future survey work.</p> <p>Overall periwinkle size remained similar at most sites, with slight declines in the average sizes at St Mary's, Holy Island and Boulmer S from 2020.</p> <p>Overall, there was little change in collection pressure, periwinkle density and sizes, and rocky shore communities from surveys in June 2020 and 2022.</p> <p>Periwinkle gathering and populations will continue to be monitored by NIFCA, to ensure sustainable levels of collection and populations are maintained in the future (Harvey, 2022).</p>
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## 7. Conclusion

Current levels of periwinkle collection vary throughout the rocky shore area of Northumberland Coast SPA. Areas where activity is known to occur in the NIFCA district has been classified as High, Medium and Low based on comparing collection pressure from the sightings data, which has been corroborated using the findings of Tinlin-McKenzie (2018) and from reports to NIFCA on activity. Between January 2016 and September 2024, 294 visits to handwork locations within Northumbria Coast SPA were made by officers. 244 individuals were observed hand gathering for winkles. Within NCSPA, Seaton Point (south of Boulmer), have been categorised as high pressure.

The Northumbria Coast SPA has a discrete boundary stretching 130km from the Tweed estuary to the Tees. Its supporting habitats consist of rocky, boulder and cobble beaches, artificial piers and one stretch of sandy shingle beach. Estuarine bird species (purple sandpiper and turnstones) are experiencing long-term declines nationally. The declines reported within the SPA is likely to reflect broadscale populations trends rather than any site-specific issues as population trends within the site broadly follow national trends (WeBS, 2020). Due to the limitations to the activity, the temporal difference in peak periwinkle collection and the overwintering period and the limited number of people engaged in this activity NIFCA conclude, with moderate confidence, that this activity will not have a significant adverse impact on estuarine birds.

The main pressures identified attributed to hand gathering for periwinkle are impact to periwinkle abundance and intertidal rocky reef communities which are addressed in this AA. Synthesis of local studies and knowledge suggests that locally, periwinkle collection is not having an impact on periwinkle abundance or intertidal reef communities (Quigley 1999; Tinlin McKenzie, 2018). This have been corroborated by NIFCA monitoring surveys, results from which suggest that neither animal nor algal abundance, species richness or diversity is related to periwinkle collection intensity (Harvey, 2022). Periwinkle size is also found not to correlate with collection pressure or collection over time, however at the most collected site (Berwick) periwinkle abundance is significantly lower than other areas (Harvey, 2022). Berwick falls outside of NCSPA, this will be covered in the assessment of hand gathering in the BNNC SAC. NIFCA currently does not have any stock assessment information to fully understand the impacts of collection at any level on the population.

There is a code of conduct (CoC) in place for this activity (Appendix 4), this CoC outlines measures to limit the impact of this activity on the intertidal rocky reef and sets out a recommended minimum size. NIFCA monitor adherence to the code of conduct, if this is not being adhered to statutory measures will be considered.

The conclusion of this appropriate assessment is that handwork (access from land) for periwinkle within the NCSPA at **current levels<sup>6</sup> alone** is **NOT** having an adverse effect on **intertidal bedrock reef or intertidal boulder and cobble reef (medium confidence)**. North Eastern IFCA's assessment of the SPA which falls within their boundary has resulted in no further management being implemented specific to gear/ feature interactions of this SPA.

The Monitoring and Control Plan for hand gathering for periwinkle will outline the methodology and parameters NIFCA will use to collect data for the continual monitoring of this activity and its interaction with these sub features. All data (except NE site condition monitoring) will be collated and analysed on an annual basis to assess 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. A fisheries management plan (FMP) concerning the intertidal hand gathering of shellfish is anticipated to be published by The Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland in 2027, and we will monitor its developments closely.

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<sup>6</sup> Potential activities will be monitored within the relevant NIFCA hand gathering monitoring and control plan.

## **8. In-combination assessment**

The potential risks of in combination effects of handwork (access from land) specifically hand gathering for periwinkle in areas defined as high collection pressure have been considered in Table 6 for current and possible plans and projects and other activities within the Northumbria Coast SPA.

**Table 6** In-combination assessment for handwork (access from land) specifically hand gathering for periwinkles in areas of high collection activity.

<b>Plans and Projects</b>			
<b>Activity</b>	<b>Description</b>	<b>Assessment</b>	<b>Potential Pressure</b>
Fishing - Potting	In 2016 NIFCA introduced a recreational potting permit which will enable NIFCA to monitor levels of recreational potting within the district. Each permit holders is permitted to fish up to 5 pots within the NIFCA district and can only take 2 lobster (5 brown or velvet crabs, 20 whelks or 5 prawns) per day. In 2023 there were 272 recreational permit holders	A significant proportion of recreational pots are fished within the infralittoral zone from the shore with little overlap into the intertidal. Recreational potting is often seasonal and carried out infrequently.  Activities are unlikely to co-occur on reef features.	Recreational potting occurs on rocky infralittoral areas throughout the SPA. This activity is small scale in comparison to commercial potting activity. In 2023, NIFCA had 272 registered recreational potting permit holders, as each permit holder is only allowed a maximum of 5 pots this results in a total of 1,360 pots.  Cleeking is likely to occur in a similar location to recreational potting, however activity is very low level.  The vast majority of commercial potting will not be co-located with the activities assessed here due to being a seasonal activity with pots set in the low intertidal to infralittoral zone.
Fishing - Bait digging	Bait digging occurs on areas of intertidal soft sediment throughout the NIFCA district and inside the NC SPA. Activity peaks in winter months with worms a popular bait for winter fish for anglers such as cod.	Peak hand gathering and periwinkle collection and peak bait digging season do not overlap, though these activities do co-occur.  The limited number of people engaged in hand gathering on the rocky shore, especially during the winter, mean that a significant adverse effect on estuarine birds is unlikely. Both activities occur at low tide when birds are less likely to be disturbed and have space to avoid people, so disturbance is unlikely to have a significant adverse impact even in combination.	Bait digging is highest at spring tides and therefore at the same time as hand gathering activities. Though spatially separated, this could increase disturbance pressure as a larger area of coast across different habitats is facing human pressure however these activities have different seasonal peaks with higher activity levels in the winter for bait digging and in summer for periwinkle collection. So activities are unlikely to be occurring at high levels at the same time. Further there are small numbers of people intertidal gathering at any one time. The maximum recorded hand gathering for periwinkle in one area at one time is 9.
Coastal Infrastructure	Outflow pipes Maintenance	Appropriate licence conditions/monitoring has been incorporated to mitigate any impacts.	Small scale – low number of outfall pipes on reefs along the Northumberland Coast. Any intertidal impacts will be connected

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			with maintenance and carried out infrequently.
Coastal management scheme - Northumberland and North Tyneside Shoreline Management Plan 2 (05/2009) covers the coastline from the Scottish border to the River Tyne.	Flood and erosion risk management	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 NCSPA.	Any coastal management works along the coast under the aegis of a Coastal Management Scheme.
Cable laying/infrastructure	Subsea cables with intertidal element	Appropriate licence conditions/monitoring has been incorporated to mitigate any impacts. Plans or projects must obtain a marine licence which must assess impacts to reef features within NCSPA.	Any subsea cables, with an intertidal element, along the coast relating to the relevant plan or projects under Marine and Coastal Access Act.
<b>Other activities being considered (which are not plans or projects by definition)</b>			
<b>Activity</b>	<b>Description</b>	<b>Assessment</b>	<b>Potential Pressure</b>
Intertidal Recreational Activity: Rock pooling	The rocky intertidal areas of NCSPA are popular rock pooling spots. This activity is highly seasonal occurring in the summer months over low tide.	Space for Shorebirds monitor bird disturbance events in Northumberland (Seaton Sluice to Berwick), recording species disturbed and activities causing disturbance. In 2020-21 they recorded 590 potential disturbance events (PDEs) of which almost half (47%) were caused by dog walkers while 39% were just walkers. 3% were caused by rockpooling or exploring the intertidal, while only a single disturbance event was caused by bait digging or gathering, and this was recorded on rock so was not bait digging. This highlights the relative importance of recreational activities in causing bird disturbance, compared to hand gathering.  In certain areas where rock pooling activity is high, there is a potential in combination impact from rock pooling and periwinkle gathering activities. However, based on above evidence impact is more likely to occur due to	Impacts are likely to be similar to those caused by intertidal hand gathering where rocks are turned and cryptic habitats searched.

		recreational activities rather than hand gathering.	
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## **9. Summary of consultation with Natural England**

Regular meetings have been held with Natural England 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 18/09/2025.

## **10. Integrity test**

NIFCA conclude that handwork (access from land) activities specifically periwinkle collection in areas of high collection intensity, either alone or in-combination do not adversely affect the intertidal rocky reef or intertidal boulder and cobble subfeatures of the site.

## **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 will be produced. 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 the document, which if reached will initiate action to either mitigate or modify the trigger. The plan 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 Technical and Scientific committee. Any management options decided through this process would be subject to public consultation.

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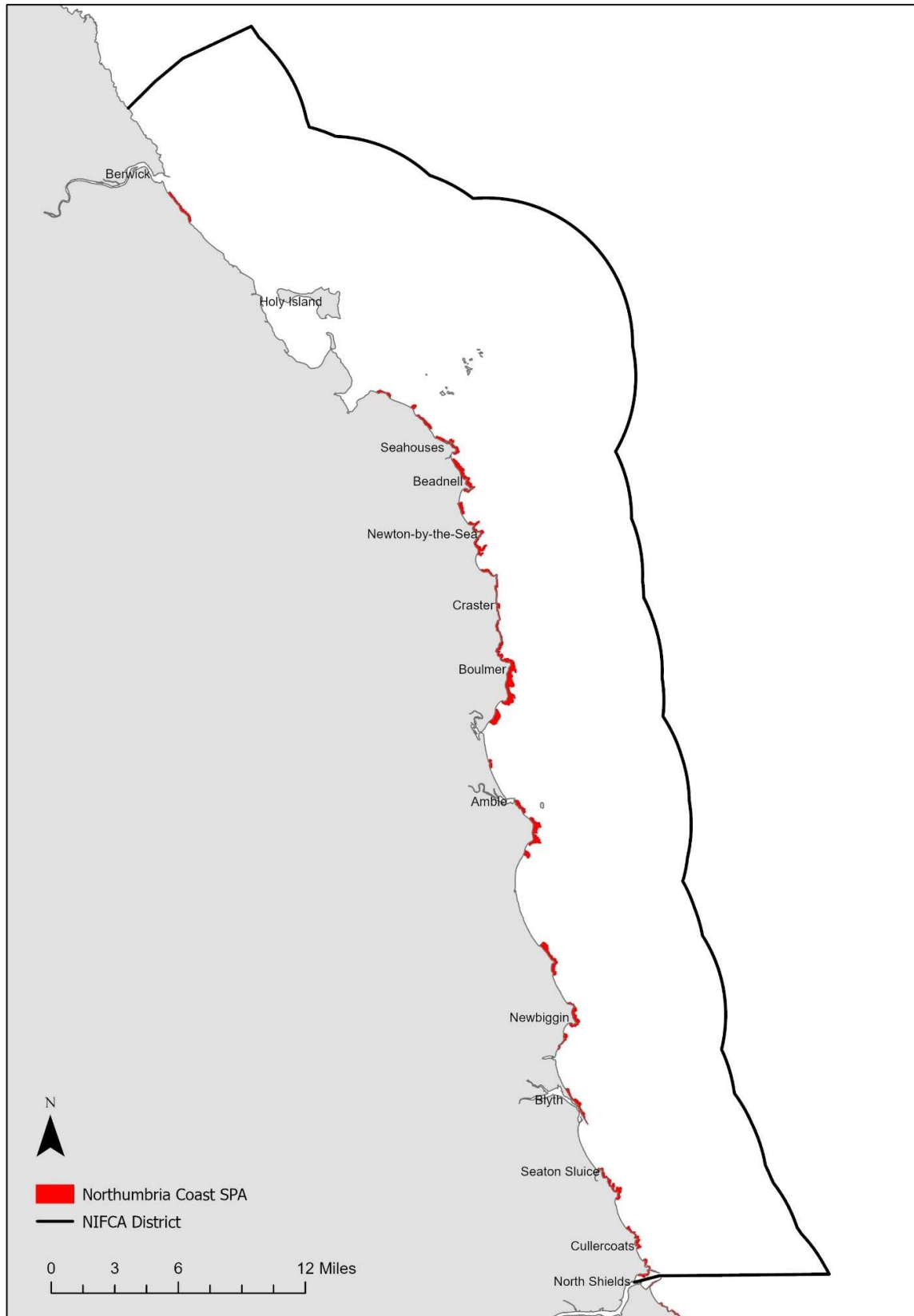
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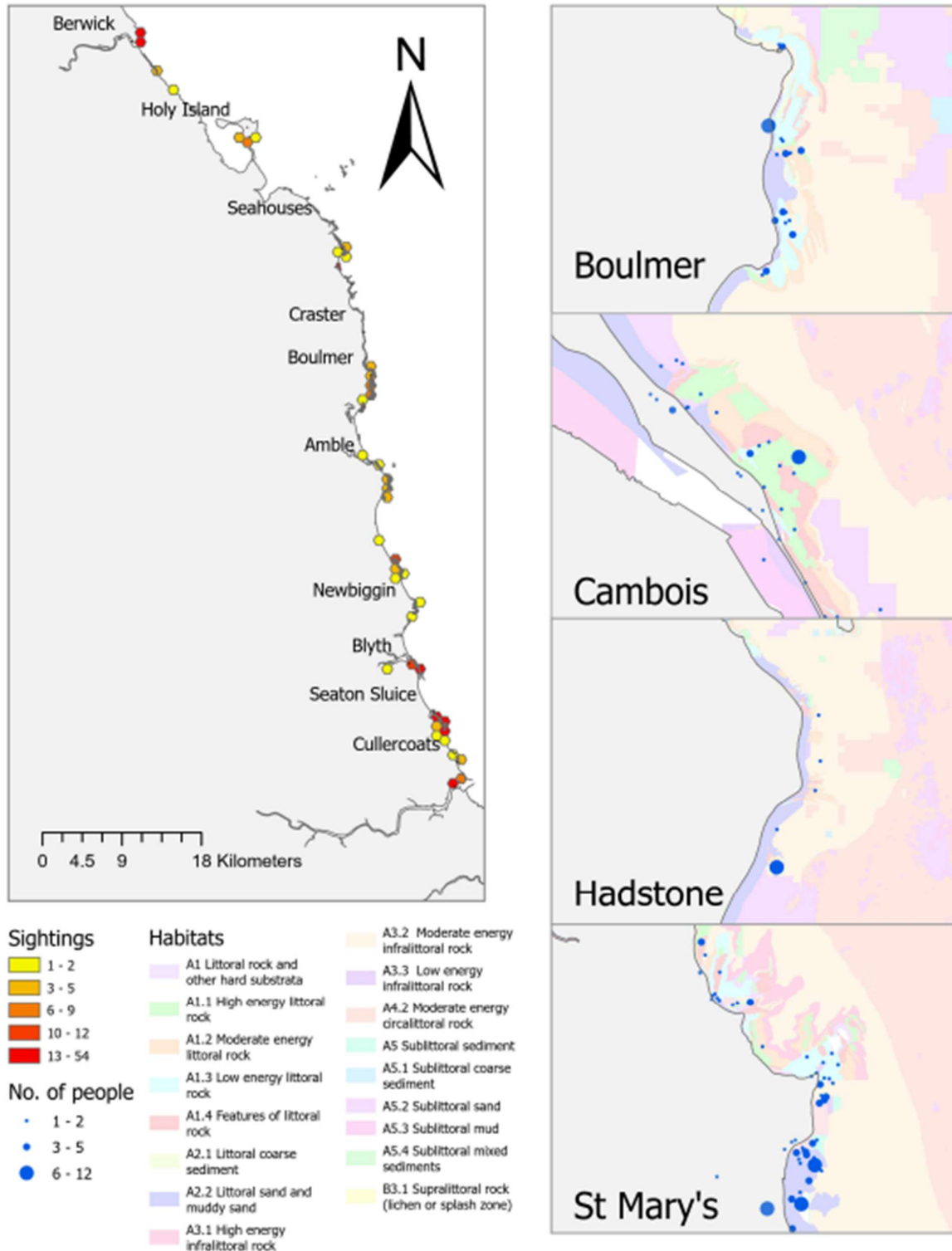
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**Appendix 2:** Northumbria Coast SPA map



**Appendix 3:** Number of periwinkle collection sightings within the NC SPA from NIFCA patrols from 2016-20 showing sighting hotspots at Boulmer (Seaton Point), Cresswell, Cambois, and St Mary's Island on rocky intertidal habitats.



## Appendix 4: Northumberland IFCA Code of Conduct for periwinkle gatherers.



### Northumberland IFCA Periwinkle Gathering Code of Conduct


**PURPOSE**

Collecting periwinkles in large numbers has the potential to damage seaweed and animals found on the rocky shore. Bird life can also be harmed by taking their food resources and causing disturbance.

To reduce these impacts **the guidelines listed below should be followed** by any person removing periwinkles. These guidelines apply to the coastline from the River Tyne to the Scottish border.

**GUIDELINES**

1. Do not create unnecessary disturbance:
  - rocks that are moved to search for or collect periwinkles should be replaced,
  - Care should be taken not to damage or displace any living organism.
  - Avoid bird disturbance in important feeding and resting areas.
2. Only collect periwinkles above 12 mm (minimum size taken by local wholesalers) to avoid taking juvenile periwinkles.
3. Sort out and return small periwinkles (under 12mm) as close as possible to area of collection. Northumberland IFCA recommends using a sieve or riddle constructed of rigid mesh or bars spaced at least 12 mm apart to separate out smaller winkles.
4. Periwinkles should be measured across the height of the shell from tip to tip (see diagram).
5. Only collect edible periwinkles and no other similar looking species (see guide below).




**EDIBLE PERIWINKLE GUIDE**

Periwinkles are usually black/ dark grey-brown in colour with a white interior around the mouth

They are usually around 2-3 cm high

They have a smooth or slightly ribbed shell which extends to a pointed tip.



**Northumberland IFCA will monitor the collection of periwinkles to check whether the points listed above are followed. If they are not, this may result in the application of statutory measures.**

For more information please visit: [www.nifca.gov.uk](http://www.nifca.gov.uk)

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