Habitats Regulations Assessment document: NMSPA – tLSE 036

European Marine Site:	**Northumberland Marine SPA**
Generic sub-feature(s):	**Benthic feeding birds, Water column.**
Gear type(s):	**Crab tiling**
NIFCA tLSE type:	**Detailed**
Gear/feature interaction reference(s):	**NMSPA – 155** **NMSPA - 156**

Revision history		
Date	***Revision***	***Editor***
13/08/2018	Document created	AA
11/12/2023	Document revised	KO
10/01/2024	Document QA	AA
15/01/2024	Changes made and figures from NIFCA intertidal data updated to reflect 'patrols' rather than just observations.	KO
31/12/2024	Final QA	AA
21/02/2024	Checked through and ready for QA from NE	KO
08/08/2024	Added monitoring and control comments as requested by NE.	SR
11/11/2024	Reviewed by NE	PW/SR
12/11/2024	Document finalised	SR

Circulation		
Date	***Sent to***	***Comments received***
08/03/2024	Natural England	
04/11/2024	Natural England	11/11/2024

Test for Likely Significant Effect (LSE)

NMSPA-022 – 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 have been categorised as medium-high risk for this feature in draft conservation advice There is no specific mention of 'benthic feeding birds in the Advice on Operations. Therefore these sensitivities have been taken from the benthic feeding seabirds in Lindisfarne SPA to 'shore-based activities'.	Removal of non-target species (Sensitive)* Visual disturbance (Sensitive)* Above water noise (Sensitive) Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures) (Sensitive) Collision BELOW water with static or moving objects not naturally found in the marine environment (Sensitive) Hydrocarbon and PAH contamination (Not-assessed) Introduction of light (Sensitive) Litter (Sensitive) Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (Not-assessed) Transition elements & organo-metal (e.g. TBT) contamination (Not-assessed)
3. Is the feature potentially exposed to the pressure(s)?	Yes

4. What are the conservation objectives for the feature? There are no specific Conservation Objectives for 'benthic feeding birds' in the Conservation Advice. Therefore these Conservation Objectives have been taken from the listed seabird features of Northumberland Marine SPA.	**Conservation objectives for benthic feeding birds:** **Maintain:** - the size of the breeding population - safe passage of birds moving between nesting and feeding areas - concentrations and deposition of air pollutants to below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk) - 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 its breeding cycle (courtship, nesting, feeding): baseline is not known at present - the distribution, abundance and availability of key food and prey items at preferred prey sizes - the dissolved oxygen (DO) concentration to levels equating to High Ecological Status - 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 frequency, duration and / or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed - **Reduce:** aqueous contaminants to levels equating to High Status

5. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level? ***(reference to conservation objectives)***	Crab tiling involved placing structures in the intertidal (tiles, tyres, plastic pipes) which crabs will use for shelter. At low tide these objects will be checked by hand and any wanted crabs collected. The main species targeted in the NIFCA District are green shore crabs. Northumberland Marine SPA (NMSPA) extends from the high water mark out to sea with two areas extending outside of the NIFCA District beyond 6nm, where intertidal fishing activity cannot occur. Crab tiling occurs along the Northumberland coast, mainly in estuaries, on intertidal sediment habitats. The coastline throughout this site falls completely within other MPAs including the Berwickshire and North Northumberland Coast SAC and Coquet to St Mary's MCZ (Appendix 1). Crab tiling in these two sites will be assessed in other HRA and MCZ assessments carried out by NIFCA. This assessment therefore will just consider impacts to the birds features themselves and the water column. NIFCA officers record any intertidal fishing activity observed during routine patrols whenever a site visit coincides with low water (± 2 hours), as well as 'no activity.' There are also a small number of patrols in the SPA from partner organisations during the same tidal periods (n=13). Within Northumberland Marine SPA 657 patrols have been made between October 2016 and September 2023. Crab tiling has been observed on 5% of these patrols) (33/657), 'no activity' was observed on 36.2% of patrols (238/657). Crab tiling has been recorded in three estuaries within NMSPA; Blyth, Alnmouth and the Wansbeck estuary. Of these sites the activity has been recorded 30 times at Blyth, twice in the Wansbeck and once at Alnmouth. The number of individuals crab tiling per observation ranges from 1-3, with an average of 1.3 individuals (N.B. On some patrols more than one observation of bait digging may be recorded). The NIFCA Office is in Blyth and therefore patrols from Blyth significantly outweigh patrols from other locations. However, Blyth estuary is known to be a hotspot for intertidal collecting, with estimates of tyres from NIFCA officers in the thousands which has resulted in NIFCA publishing a Blyth Estuary Code of Conduct for best practice (Appendix 3).

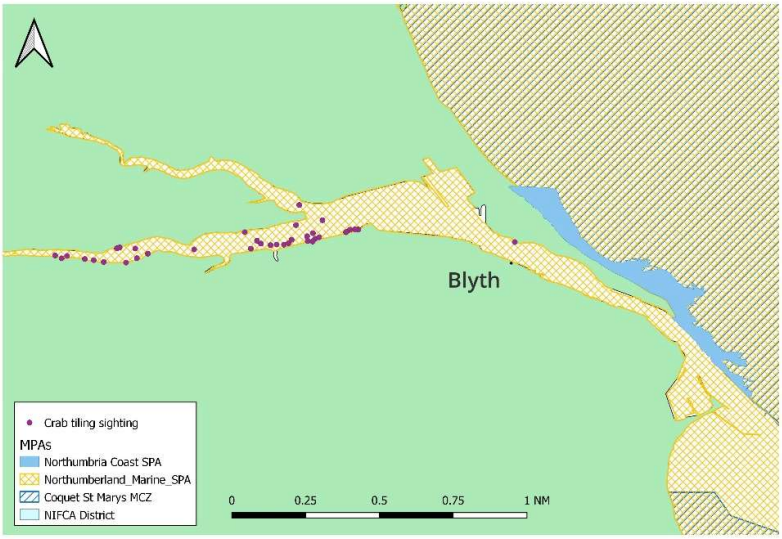


Figure 1 Observations of crab tiling in the Blyth estuary (NIFCA officers)

Crab tiling activity is seasonal, as collectors target soft-shelled green crabs, which moult in the spring/summer months in north-east England. NIFCA records of crab tiling are from April to October.

In addition to the intertidal activity data, NIFCA have information from targeted crab tiling surveys in 2020 in a number of estuaries in the District. During these surveys Alnmouth, Amble, Blyth and the Wansbeck were targeted, as these are known areas for crab tiling. Rather than people engaging in the activity itself, the equipment present for crab tiling was recorded:

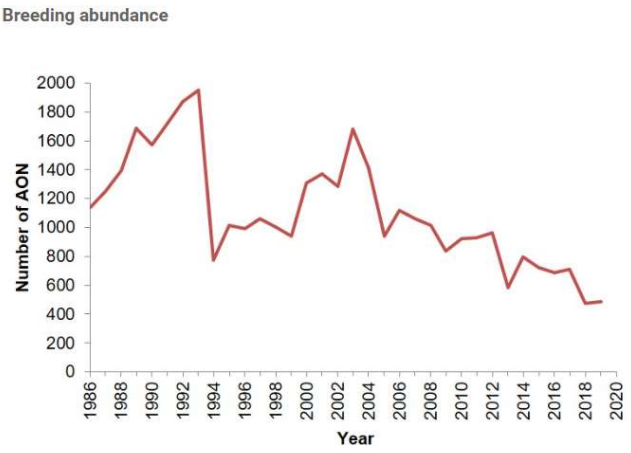
- Aln estuary - 50 tyres
- Amble - 106 tyres
- Blyth estuary - 557 tyres, 82 rooftiles and 3 drainpipes
- Wansbeck estuary - 114 tyres and 5 drainpipes

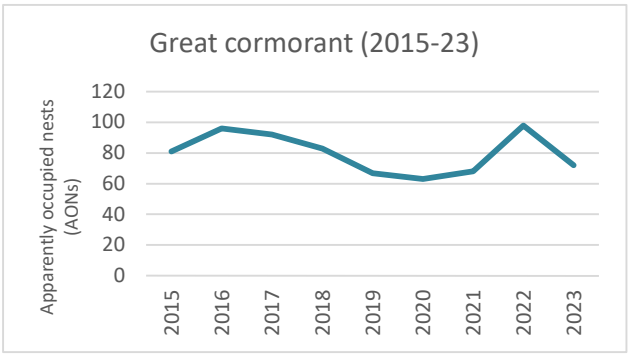
Whilst this equipment may not all be active, the data confirms these estuaries as hotspots for crab tiling.

NIFCA is also investigating the potential to survey bait collection devices using a UAV (drone). In 2022 surveying was conducted in the Aln estuary and 129 tyres were counted from the aerial images (compared to 50 by the 2020 ground count). Two new areas of tyres were counted, in addition to the two areas ground counted in 2020. It's unclear if these tyres have been placed in situ since 2020, or if they were harder to spot at ground level (Harvey, June 2022). Going forward NIFCA is planning to survey more estuaries by UAV, which will help to inform this assessment.

	Crab tiling has the potential to alter the **availability of key prey species** of the seabird features. The effects of crab tiling on crab populations themselves and other estuarine fauna are complicated. Sheehan et al. (2008) found there to be a significantly greater abundance of green shore crabs in tiled estuaries versus non-tiled in the south-west, although the mean size was smaller and the proportion of reproductively active crabs smaller. This increase in abundance is likely due to the habitat provided by artificial structures counteracting the removal of species (Sheehan, Thompson, Coleman, & Atrill, 2008). The same authors found crab tiling to have a negative effect on other estuarine species, particularly through the associated trampling of ground, increasing the penetrability of the substrate. Crab tiling reduced the diversity of south-west estuarine communities and altered assemblage structures in the study, with muddier estuaries taking longer to recover (Sheehan, Coleman, Thompson, & Atrill, 2010). The long-term effects of crab removal are not well understood in estuaries in the north-east. Shags and cormorants both have a varied diet. Shags are considered to feed primarily on benthic, schooling and demersal fish (Natural England, 2012). Long term studies of breeding shags at Canna (west coast of Scotland) show sandeels and Gadoid fish such as cod to make up the majority of the birds diet, with crab only found in one out of 134 samples (Swann, Harris, & Aiton, 2008). Studies on the Isle of May again found sandeels to dominate adult and chick diet, with a range of finfish and fragmented remains of crustaceans (prawns and hermit crabs) also present (Harris & Wanless, 2009). Cormorants primarily feed on benthic fish species, but do also take fish from the water column and some crustaceans (Natural England, 2012). European shags and great cormorants are able to exploit a wide variety of prey, primarily benthic fish. The removal of intertidal crabs in parts of the Northumberland Marine SPA and potentially changes to the estuarine infauna is therefore very unlikely to present a significant risk to them. **Disturbance (both visual and noise**) is a potential risk from collectors who will be walking around in the intertidal zone at low tide. However, collectors will generally only be present in a window around two hours either side of low tide, when the area available to them and to the seabirds is greatest. Collectors are often single individuals, with group sizes observed of maximum 3 collectors together. 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 caused just walkers. 3% were caused by rockpooling or exploring the intertidal, while only a single disturbance event was caused by bait gathering on the rocks. These results highlight the relative importance of recreational activities in causing bird disturbance, compared to shore-based bait collection and fishing activities. The small group sizes and limited windows for collection make significant disturbance to the birds unlikely. Crab tiling does involve placing unnatural objects in the intertidal, however, these are either tyres or plastic pipes, which will not present any significant collision risk with seabirds. The objects do have the potential to cause litter if they are lost, although this is very unlikely to pose a risk to seabirds. Tyres are often used for crab tiling and will degrade 'in situ' in the estuary, causing **contamination**. In addition, few collectors are likely to remove tyres when they have finished. In recent years concern has mounted over the use of tyres in the marine environment to form artificial reefs and sea defences. The main concern is the leaching of chemicals and microplastics into the marine environment. Crab tiling is likely to be a very small source of contamination from tyres, when compared to the run-off from UK roads and the industrial use of tyres in coastal defences. The relatively small scale of crab tiling in Northumberland is considered unlikely to significantly affect the seabird features in NMSPA, a highly dynamic marine environment. However, a move towards more natural substances in the future will be better for the marine environment and this is something NIFCA recommends in the Blyth estuary (voluntary) code of conduct for bait collectors. NIFCA are currently planning more UAV surveys to look at crab tiling which will give a better understanding of the scale of the activity across a number of estuaries in the District. Crab tiling will not introduce significant light pollution. Even if collectors use torches these will be small lights in a coastal environment, with light pollution from local towns already present. Due to the varied diet of benthic feeding birds in the SPA and relatively small areas of the SPA targeted by crab tilers NIFCA does not consider that crab tiling will pose a significant risk to the seabird features.

6. Condition and Conservation Objective Inferences	Benthic feeding birds are not specifically designated in the SPA, they make up part of the 'breeding seabird assemblage.' The following species are listed as 'main components' in the Conservation Advice: Arctic tern, common tern, roseate tern, Sandwich tern, little tern, Atlantic puffin, common guillemot, great cormorant, European shag, black-headed gull and black-legged kittiwake. Of these species European shags and great cormorants are considered benthic feeding birds.' These species are designated as breeding features in the SPA, which means birds will be present in high numbers during the breeding season (February to August) before dispersing more widely. Population numbers are from 2015 (Natural England, 2015). ▪ **European shag – 1,677** ▪ **Great cormorant – 230** The Farne Islands and the Isles of Scilly are the two largest shag breeding colonies in England (Natural England, 2012). The Conservation Advice package does not give feature condition for these species, but data on the number of active/apparently occupied nests on the Farne Islands is available from the Seabird Monitoring Program (British Trust for Ornithology and Joint Nature Conservation Committee). European shag nest numbers on the Farne Islands since 1986 are shown in Figure 2. The sharp declines between 1993/94, 2004/05 and 2017/18 correlate with severe bad weather events causing mass mortality.  **Figure 22** Number of European shag AONs on the Farne Islands, 1986–2019 **(JNCC, Accessed 15/01/24)** . Great cormorant numbers for the Farne Islands are not available back to 1986, but number show fluctuations over the last 8 years (British Trust for Ornithology, 2023). The UK

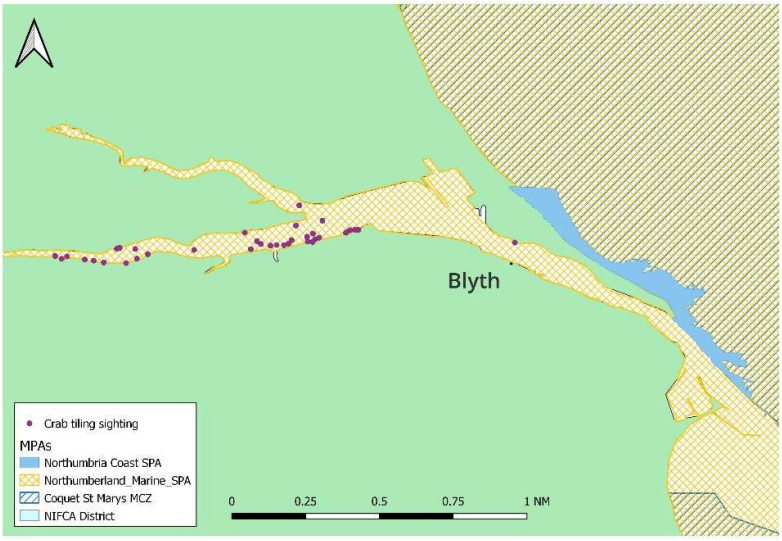
	population as a whole has shown a relatively steady trend in nest numbers since 1986, again with fluctuations (JNCC, Accessed 15/01/2024).  **Figure 3** Number of 'apparently occupied nests' for great cormorants on the Farne Islands 2015-23 (British Trust for ornithology, 2023) Seabird species have also been badly affected by Avian Influenza during the last two breeding seasons (2022 and 2023). The Farne Islands are home to approximately 200,000 seabirds. In the most recent breeding season (2023) the National Trust have collected 3,647 dead birds, but estimate this may only be 10% of the birds that have died. In 2022 National Trust rangers on the island collected over 6,000 dead birds. Cliff nesting birds were hit particularly badly on the Farne Islands in 2022 and kittiwakes and large gulls in 2023 (National Trust, 2023). Bird flu will have had impacted both population number and breeding success of multiple species in the SPA, as there has been a relatively high mortality of adult birds.

7. Is the potential scale or magnitude of any effect likely to be significant?	**Alone:** **No.** Due to the varied diet of benthic feeding birds in the SPA, suggesting a very low dependence on crabs, NIFCA does not consider that this activity will have a significant impact on the protected bird features. This will be monitored through the monitoring and control plan process which is currently under development for this activity and any significant increase in activity levels will trigger a reassessment in the SPA.	**OR In-combination** **No.** See below for 'in-combination' assessment.
8. Have NE been consulted on this LSE test? If yes, what was NE's advice?	Yes, collaborative discussions have occurred with NE and NIFCA since 2018.	

NMSPA-023 – Water column

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 have been categorised as medium-high risk for this feature.	Habitat structure changes – removal of substratum (extraction) (Sensitive)* Removal of non-target species (Sensitive)* Removal of target species (Sensitive)* Visual disturbance (Sensitive)* Deoxygenation (Sensitive) Hydrocarbon and PAH contamination (Not-assessed) Introduction of light (Sensitive) Introduction or spread of invasive non-indigenous species (INIS) (Sensitive) Litter (Sensitive) Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (Sensitive) Transition elements & organo-metal (e.g. TBT) contamination (Sensitive) Underwater noise changes (Sensitive)
3. Is the feature potentially exposed to the pressure(s)?	Yes
4. What are the conservation objectives for the feature?	**Conservation objectives for water column:** Water column is not mentioned in the supplementary advice section of the Conservation Advice, therefore cannot determine the Conservation Objectives of this feature

5. What are the potential effects/impacts of the pressure(s) on the feature, taking into account the exposure level? ***(reference to conservation objectives)***	Crab tiling involved placing structures in the intertidal (tiles, tyres, plastic pipes) which crabs will use for shelter. At low tide these objects will be checked by hand and any wanted crabs collected. The main species targeted in the NIFCA District are green shore crabs. NIFCA officers record any intertidal fishing activity observed during routine patrols whenever a site visit coincides with low water (± 2 hours), as well as 'no activity.' There are also a small number of patrols in the SPA from partner organisations during the same tidal periods (n=13). Within Northumberland Marine SPA 657 patrols have been made between October 2016 and September 2023. Crab tiling has been observed on 5% of these patrols (33/657), 'no activity' was observed on 36.2% of patrols (238/657). Crab tiling has been recorded in three estuaries within NM SPA; Blyth, Alnmouth and the Wansbeck estuary. Of these sites the activity has been recorded 30 times at Blyth, twice in the Wansbeck and once at Alnmouth. The number of individuals crab tiling per observation ranges from 1-3, with an average of 1.3 individuals (N.B. On some patrols more than one observation of bait digging may be recorded). The NIFCA Office is in Blyth and therefore patrols from Blyth significantly outweigh patrols from other locations. However, Blyth estuary is known to be a hotspot for intertidal collecting, with estimates of tyres from NIFCA officers in the thousands which has resulted in NIFCA publishing a Blyth Estuary Code of Conduct for best practice (Appendix 3).  **Figure 3** Observations of crab tiling in the Blyth estuary (NIFCA officers) Crab tiling activity is seasonal, as collectors target soft-shelled green crabs, which moult in the spring/summer

	months in north-east England. NIFCA records of crab tiling are from April to October. In addition to the intertidal activity data, NIFCA have information from targeted crab tiling surveys in 2020 in a number of estuaries in the District. During these surveys Alnmouth, Amble, Blyth and the Wansbeck were targeted, as these are known areas for crab tiling. Rather than people engaging in the activity itself, the equipment present for crab tiling was recorded: ▪ Aln estuary - 50 tyres ▪ Amble - 106 tyres ▪ Blyth estuary - 557 tyres, 82 rooftiles and 3 drainpipes ▪ Wansbeck estuary - 114 tyres and 5 drainpipes Whilst this equipment may not all be active, the data confirms these estuaries as hotspots for crab tiling. NIFCA is also investigating the potential to survey bait collection devices using a UAV (drone). In 2022 surveying was conducted in the Aln estuary and 129 tyres were counted from the aerial images (compared to 50 by the 2020 ground count). Two new areas of tyres were counted, in addition to the two areas ground counted in 2020. It's unclear if these tyres have been placed in situ since 2020, or if they were harder to spot at ground level (Harvey, June 2022). Going forward NIFCA is looking to survey more estuaries by UAV, which will help to inform this assessment. The areas of the SPA which extend outside of the NIFCA District are at sea beyond 6nm, so intertidal fishing activity cannot occur. Crab tiling has the potential to alter the **availability of key prey species** (through the removal of target species) available in the water column at high tide**.** The effects of crab tiling on crab populations themselves and other estuarine fauna are complicated. Sheehan et al. (2008) found there to be a significantly greater abundance of green shore crabs in tiled estuaries versus non-tiled in the south-west, although the mean size was smaller and the proportion of reproductively active crabs smaller. This increase in abundance is likely due to the habitat provided by artificial structures (Sheehan, Thompson, Coleman, & Atrill, 2008). The same authors found crab tiling to have a negative effect on other estuarine species, both through the removal activity, but particularly through the associated trampling of ground, increasing the penetrability of the substrate. Crab tiling reduced the diversity of south-west estuarine communities and altered assemblage structures in the study, with muddier estuaries taking longer to recover

	(Sheehan, Coleman, Thompson, & Atrill, 2010). The long term effects of crab removal are not well understood in estuaries in the north-east. All of the seabird features in the SPA feed primarily in the water column (surface feeders, pursuit and plunge feeders and benthic feeding seabirds). The benthic feeding seabirds (shags and cormorants) primarily feed on demersal fish and are unlikely to take shore crabs when other prey is available. The removal of intertidal crabs in parts of the Northumberland Marine SPA is therefore very unlikely to present a significant risk to the seabird features of the SPA. Disturbance (**both visual and noise**) is a potential risk from collectors who will be walking around in the intertidal zone at low tide. However, this activity will not affect seabirds in the water column. Collectors are generally local, therefore the risk of introducing non-native species into the intertidal is extremely unlikely. The tyres and collection devices themselves remain in the estuary and will not be transferred any great distance along the shoreline. Crab tiling does involve placing unnatural objects in the intertidal, however, these are either tyres or plastic pipes, which will not present any significant collision risk with seabirds. The objects do have the potential to cause litter if they are lost. However, even if lost these objects are unlikely to pose a risk to seabirds. Tyres are often used for crab tiling and will degrade 'in situ' in the estuary, causing contamination. In addition, few collectors are likely to remove tyres when they have finished. In recent years concern has mounted over the use of tyres in the marine environment to form artificial reefs and sea defences. The main concern is the leaching of chemicals and microplastics into the marine environment. Crab tiling is likely to be a very small source of contamination from tyres, when compared to the run-off from UK roads and the industrial use of tyres in coastal defences. The relatively small scale of crab tiling in Northumberland is considered unlikely to significantly affect the seabird features in Northumberland Marine, a highly dynamic marine environment. However, a move towards more natural substances in the future will be better for the marine environment and this is something NIFCA recommends in the Blyth estuary (voluntary) code of conduct for bait collectors. NIFCA are currently planning more UAV surveys to look at crab tiling which will give a better understanding of

	the scale of the activity across a number of estuaries in the District. Crab tiling will not cause deoxygenation, remove substratum or introduce significant light pollution. Even if collectors use torches these will be small lights in a coastal environment, with light pollution from local towns already present.	
6. Condition and Conservation Objective Inferences	No evidence is available for the current condition of the water column feature within the Northumberland Marine SPA. In lieu of adequate evidence or conservation objectives, a CO of 'Maintain' has been inferred with a 'low' level of confidence.	
7. Is the potential scale or magnitude of any effect likely to be significant?	**Alone:** **No.** Due to the varied diet of seabirds in the SPA, NIFCA does not consider that this activity will have a significant impact on the protected bird features. This will be monitored through the monitoring and control plan process which is currently under development for this activity and any significant increase in activity levels will trigger a reassessment in the SPA.	**OR In-combination** **No.** See below for 'in-combination' assessment.
8. Have NE been consulted on this LSE test? If yes, what was NE's advice?	Yes, collaborative discussions have occurred with NE and NIFCA since 2018.	

In-Combination Assessment

Potential risks of in-combination effects have been considered in Table 1 listing other fisheries, current and possible plans/projects and other activities within the site.

In summary, crab tiling within Northumberland Marine SPA is not deemed to have a likely significant effect on the protected bird features in combination with other activities.

Table 1 *In-combination assessment of crab tiling with other activities within Northumberland Marine SPA.*

Fishing Activity			
Activity	**Description**	**Potential Pressure**	**Assessment**
Fixed nets on subtidal ground	Fixed nets (gill nets and trammel nets) are anchored to the seabed, with a floating headline and used to target white fish (cod) and flatfish in the NIFCA District. These nets will be set on firm sediment ground, likely near wrecks for cod, but on sandy ground for flatfish. Only one vessel is thought to set tangle nets for crustaceans. Fixed nets will not generally be set on rocky ground as there is a high risk of damage to the nets. Fixed netting is managed by the Fixed Engines Byelaw which NIFCA is in the process of updating (January 2024). Fixed netting in the District for migratory fish (salmon, sea trout) is managed and assessed by the Environment Agency.	This activity occurs at a very low level for sea fish across the NIFCA District, largely due to the lack of white fish and grey seal predation from nets. NIFCA are currently aware of one vessel from Amble which may set fixed nets in the SPA area. From NIFCA shellfish permit returns data only 4-5 vessels have reported setting nets in the District each year (2020-22). Fixed netting has the potential to impact the bird features through bycatch, or by removing their preferred prey species.	There will be no spatial overlap between crab tiling and fixed netting, nor are these activities targeting the same species. NIFCA can therefore conclude with high confidence that fixed netting and crab tiling will not 'in-combination' increase pressures on the bird features of the SPA
Bottom trawling on subtidal sediment	Trawling within the NIFCA District is subject to conditions in the byelaw 'Trawling,' which was updated in 2021. Only single trawls are permitted, vessel size is restricted to 12m (0-3nm) or 18.3m (3-6nm) in the District and permit holders must also submit monthly catch returns to NIFCA. Boats are mainly targeting prawns (*Nephrop*s), cod and whiting.	NIFCA issued 45 permits to trawl in the District in 2023. However, many of these vessels fish further offshore, beyond the District boundary and the SPA. Trawling is banned in the BNNC SAC (except in three small areas) and requires an exemption in CSM MCZ. Trawling has the potential to impact the bird features through bycatch, or by removing their preferred prey species.	There will be no spatial overlap between crab tiling and trawling, nor are these activities targeting the same species. NIFCA can therefore conclude with high confidence that trawling and crab tiling will not 'in-combination' increase pressures on the bird features of the SPA.

	Trawling will primarily be targeted on subtidal muddy ground for *Nephrop*s in the District. As only 'light' otter gear is permitted in the District, subtidal trawling does not occur on rock.	There are two areas of the SPA that extend outside of the NIFCA District and the Marine Management Organisation (MMO) has provided activity data related to demersal trawling in these areas. Estimated landings data from the UK under 12m fleet from these areas was 3.21 tonnes in 2021 and 2.24 tonnes in 2020. Average annual landing from these areas from UK under 12m vessels (2012-21) is 3.62 tonnes (MMO data, pers comms). These catches suggest activity in the two areas is very low.	
Potting on subtidal rocky ground, with low levels on subtidal sediment ground and intertidal rocky ground	Potting for European lobster (*Homarus gammarus)* and brown crab (*Cancer pagurus)* is the principal fishery within the NIFCA district. Most fishers in the district use parlour pots of various sizes and pots are typically worked in fleets of 10-40, dependant on the size of the vessel. Potting occurs predominantly in and around rocky habitat for lobster and brown crab, with some potting on subtidal mud for *Nephrops* and brown crab.	In 2023 NIFCA issued 85 Commercial Shellfish Permits to fishers, compared to 93 in 2022, 108 in 2021 and 98 in 2020. The total number of pot hauls in the District was 2,464,412 in 2022, compared to 2,766, 681 in 2021 and 2,750,768 in 2020. Pots are limited to 800 per shellfish permit and the fishery is governed by multiple IFCA byelaws. In the NIFCA district recreational potting also occurs and numbers are monitored through a permit system. A permit allows fishers to use 5 pots, which must be fitted with escape gaps. In 2023 273 recreational permits were issued. There are two areas of the SPA that stretch outside of the NIFCA District and the Marine Management Organisation (MMO) has provided activity data related to potting in these areas. In 2021, 5.56 tonnes was landed from pots by UK under 12m vessels, in 2020 5.9 tonnes was landed. Species are not listed so this likely includes lobster, crabs and N*ephrops*. Average annual	There will be no spatial overlap between crab tiling and potting, nor are these activities targeting the same species. NIFCA can therefore conclude with high confidence that fixed netting and crab tiling will not 'in-combination' increase pressures on the bird features of the SPA.

		landings from UK vessels in these areas (2012-21) is 6.78 tonnes (MMO landings data, pers comm).	
Hand work (access from land) in the intertidal	Hand work encompasses a wide variety of fishing methods, including; angling, periwinkle collection, 'cleeking' for lobster and hand gathering of mussels/crabs. These activities occur across the NIFCA district and since 2016 NIFCA officers have been collecting information on shore-based activity two hours either side of low tide, including 'no activity'. There are also a small number of patrols in the SPA from partner organisations during the same tidal periods (n=13).	Within Northumberland Marine SPA 657 patrols have been made between October 2016 and September 2024. Some areas of the District are visited more frequently by Officers, therefore sightings per unit effort (SPUE) has been calculated for each location. Sites listed are where the activity has been seen on at least 10% of patrols and there have been at least 10 patrols to the site. ▪ **Angling**; Amble, Blyth, Beadnell, Druridge Bay, Lynemouth, Newbiggin, Cresswell, Cambois and Hauxley. ▪ **Periwinkle collection**; Boulmer south, Cambois, Holy Island, Cresswell, Beadnell, Boulmer north, Hauxley, Hadston, Lynemouth ▪ **Bait collection** has been recorded on 44 patrols in the SPA. Forty-one of these patrols were at Blyth. ▪ **Cleeking**; Boulmer south, Creswell and Newbiggin. Shore-based activity has the potential to impact the bird features through visual/noise disturbance and the removal of prey species.	Whilst shore-based activity and crab tiling both occur in the intertidal, these activities are not targeting the same species. There is a possibility that any disturbance to the bird features could be increased if both activities are occurring at the same time in the same location, however, this is still likely to be at a low level during the bird breeding season. NIFCA can therefore conclude with high confidence that crab tiling and shore-based activity will not 'in-combination' increase pressures on the bird features of the SPA.
Digging with forks in the intertidal	Digging with forks entails collecting worms from the intertidal at low tide, primarily lugworms and ragworms.	Within Northumberland Marine SPA 657 patrols have been made between October 2016 and September 2023. Bait digging has	Whilst digging with forks and crab tiling could co-occur, these activities are not targeting the same species. There is a possibility that any disturbance to the

	This activity occurs in estuaries across the NIFCA district. NIFCA officers record any intertidal fishing activity observed during routine patrols whenever a site visit coincides with low water (± 2 hours), as well as 'no activity.' There are also a small number of patrols in the SPA from partner organisations during the same tidal periods (n=13).	been observed on 19.6% of these patrols (129/657). Some areas of the District are visited more frequently by Officers, therefore sightings per unit effort (SPUE) has been calculated for each location (no. of times activity observed/site visits). Sites where bait digging has been observed on over 10% of patrols and at least 10 patrols occurred include; Boulmer North, Hadston, Hauxley, Blyth, Newton and Boulmer South. Bait digging activity has a seasonal aspect and SPUE is highest from September-January, outside of the seabird breeding season. Digging with forks has the potential to impact the bird features through visual/noise disturbance and the removal of prey species.	bird features could be increased if both activities are occurring at the same time in the same location, however, this is still likely to be at a low level during the bird breeding season. NIFCA can therefore conclude with high confidence that crab tiling and bait digging will not 'in-combination' significantly increase pressures on the bird features of the SPA.
Non-fishing Activity			
Activity	**Description**		**Assessment**
Mine water discharge	Abandoned mines are one of the biggest sources of water pollution by metals. There is a mine water treatment scheme at Lynemouth and groundwater upwellings have occurred at Hauxley/Hadston as well as water pumped from a mine, discharged through an existing outfall at Hauxley.	Sediments and invertebrate communities could be negatively impacted by mine water discharges. This could occur where mine water is not treated before release into the marine environment. In the majority of cases significant mine water outflow is identified and treated by the Coal Authority.	Appropriate licence conditions/monitoring has been incorporated to mitigate any impacts.

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	Any coastal management works along the coast under the aegis of a Coastal Management Scheme.	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 NMSPA.
Coastal Infrastructure and Cable Laying.	Any project in the marine area requiring a marine licence.	Any development in the marine environment with an intertidal element, that may impact features of the site as part of the marine licencing process. Assessments for any development must be carried out in consultation with statutory nature conservations bodies.	All marine licence applications are assessed to ensure appropriate licence conditions/monitoring are in place. These assessments must consider impacts to Marine Protected Areas, with an aim to preferably avoid, then minimise and mitigate impacts to the protected features. NIFCA are consulted on all relevant marine applications, as are other bodies such as Natural England.

Conclusion

Is the proposal likely to have a significant effect 'alone or in combination' on the Northumberland Marine SPA?

No. NIFCA do not consider that crab tiling currently poses a significant risk to the bird features of the SPA. Work to improve understanding of crab tiling and intertidal activity is ongoing.

This will be monitored through the monitoring and control plan process which is currently under development for this activity and any significant increase in activity levels will trigger a reassessment in the SPA.

Has the MMO been formally consulted on this tLSE (and do they agree)?	Not applicable as refers to intertidal assessment.
Has Natural England been formally consulted on this tLSE (and do they agree)?	Yes, collaborative discussions have occurred with NE and NIFCA since 2018.

Date of document completion/'sign-off':	11/11/2024 (Pete Welby)

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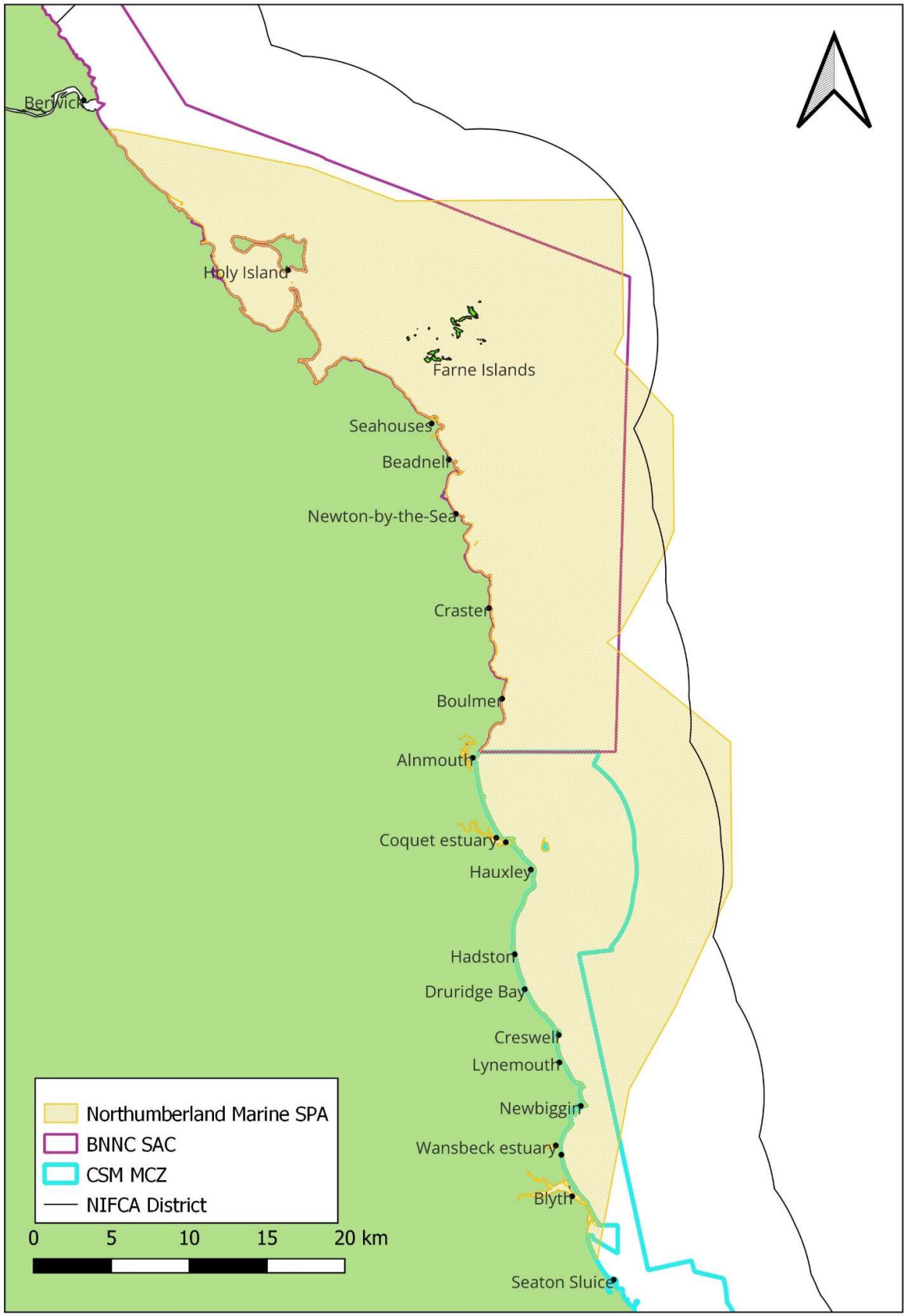
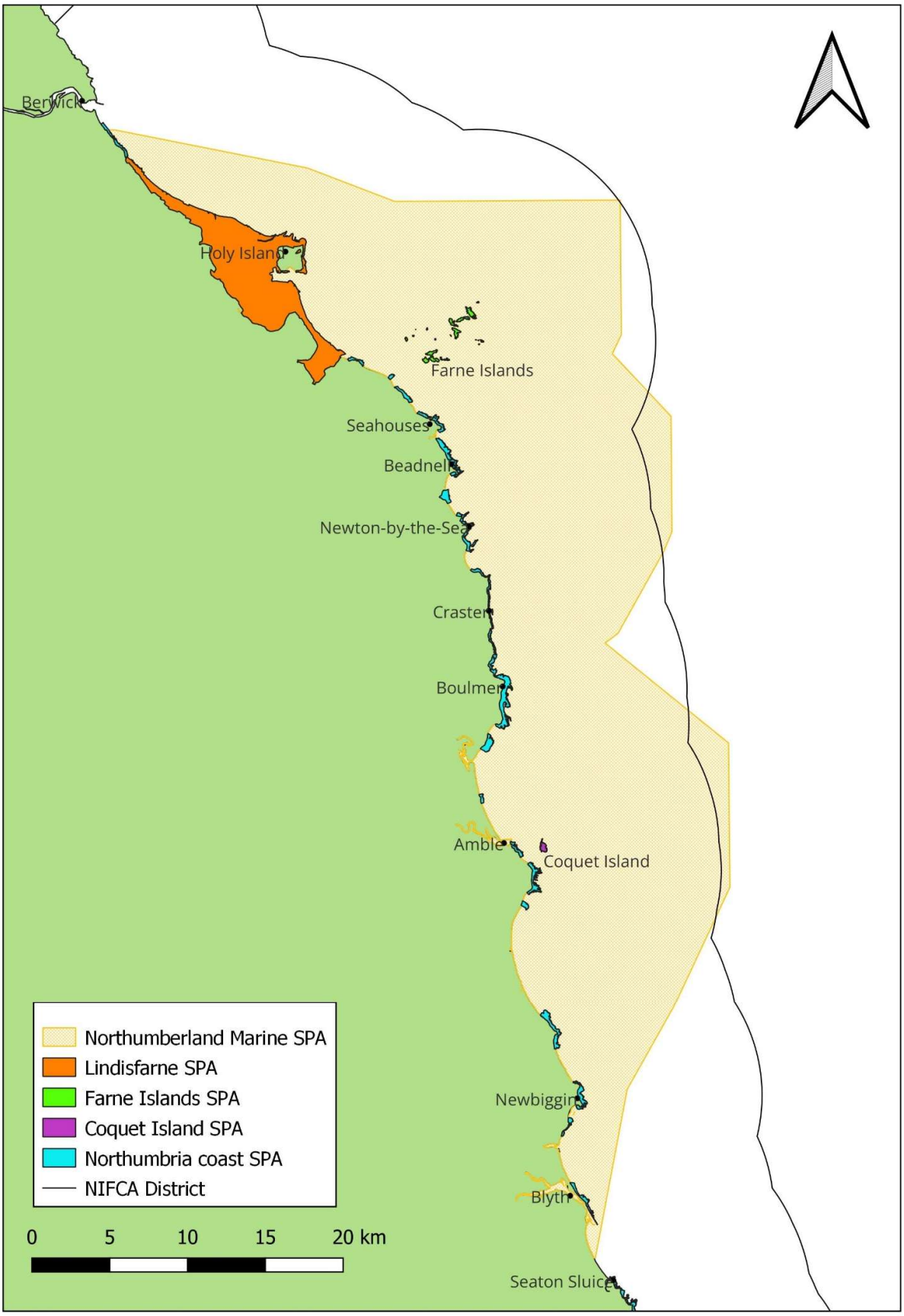
Appendix 1 Northumberland Marine SPA with intertidal fishing sites, Coquet to St Marys (CSM) MCZ and Berwick and North Numberland Coast (BNNC) SAC shown



Appendix 2 Northumberland Marine SPA and co-located SPAs



Appendix 3 – Blyth estuary voluntary code of conduct

Northumberland IFCA
Inshore Fisheries and Conservation Authority
PORT OF BLYTH

BLYTH ESTUARY BAIT COLLECTION CODE OF CONDUCT

GUIDELINES

MUSSEL COLLECTION:

- Mussels should be collected for **personal use only**.
- Take a recommended maximum of **one small-medium sized bucket** per day and avoid collecting on every suitable tide.
- Only take mussels above a minimum size of 45mm shell length.
- Disposal of mussel shells on the shore is prohibited without a licence. Take them with you and dispose responsibly, along with other litter.

To size

BAIT DIGGING:

- Backfill holes.
- Avoid walking or digging on live mussel.

CRAB COLLECTION:

- Ensure you have landowner permission before depositing tiles/tyres (or any other item).
- Materials such as stones and tiles are better for the environment than artificial objects such as tyres which may degrade and leach chemicals over time.

PURPOSE

The Blyth Estuary is part of Northumberland Shore Site of Special Scientific Interest (SSSI) and is an important habitat for mussels, birds and mammals such as otters. These guidelines are in place to protect the mussel beds and the wildlife dependent on them, and to enable limited bait collection for personal use as it is damaging and unsustainable to the mussel beds to collect on a commercial scale.

Please note that these guidelines will be kept under review by NIFCA.

For more information please scan the QR code or get in touch at:

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