Habitats Regulations Assessment

Intertidal hand gathering of shellfish in Northern Ireland

February 2022

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Department of Agriculture, Environment and Rural Affairs
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Habitats Regulations Assessment

In accordance with Regulation 43(1) of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), DAERA Marine & Fisheries Division has considered whether the project, plan or proposal either alone or in combination (neither being directly connected with or necessary to the management of the site) is likely to have a significant effect on the SAC, SPA and Ramsar site.

As part of that consideration, DAERA Marine & Fisheries Division has:

(a) taken into account the mitigation measures contained in the project, plan or proposal, along with all legally enforceable obligations designed to avoid environmental effects; and

(b) applied the precautionary approach set out in European Commission Guidance: "Managing Natura 2000 Sites"[1] and by the European Court of Justice in C-127/02, Waddenzee, paragraphs 56 and 59[2].

"The authorisation of a plan or project may only be granted if the Competent National Authority is certain that it will not have any adverse effect on the integrity of the site concerned. That is where no reasonable scientific doubt remains as to the absence of such effect."

(c) consulted the Department and have regard to any representations made by it within such reasonable time as the competent authority may specify for the purposes of the assessment or determining whether an assessment is required for a plan or project. This is required by Regulation 43(3), The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2007[3].

(d) some notes and hyperlinks to assist completion of this template have been inserted to help the Competent Authority/Public body complete their HRA. These can be removed.

Web link references for the above:

1. European Commission Guidance: "Managing Natura 2000 Sites". http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf

2. European Court of Justice in C-127/02, Waddenzee, paragraphs 56 and 59. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?isOldUri=true&uri=CELEX:62002CJ0127

3. The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2007. http://www.legislation.gov.uk/nisr/2007/345/regulation/14/made

Notes:

i. The below template has been adapted by NIEA Natural Heritage, from the European guidance document “Assessment of plans and projects significantly affecting Natura 2000 sites”. If in doubt the Competent Authority may discuss with CDP or return to the European document: “The Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.”

   http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

ii. The Competent Authority should fill the template report form correctly showing references and include relevant annexes if necessary. If the stage 1 shows likely significant impact and /or need for mitigation then the Competent Authority should move on to stage 2 (Appropriate Assessment).

iii. Under current legislation the Department of Agriculture, Environment and Rural Affairs (NIEA CDP) is not obliged to Quality Assure another Competent Authority HRA as part of Environment (NI) Order (39, 40) Assent application.

iv. You may delete this note section from your final draft.

Stage 1: Test of Likely Significance

Name of Project or Plan	**Intertidal hand gathering of shellfish in the Northern Ireland marine area taking place within SACs, SPAs and Ramsar sites.**
Reference (if available)	• **Habitats Regulations Assessment on the Northern Area Plan 2016** https://www.planningni.gov.uk/index/policy/development_plans/devplans_az/nap2016-hra.pdf • **An Assessment of the Impact of Selected Fishing Activities on European Marine Sites and a Review of Mitigation Measures** https://www.marlin.ac.uk/assets/pdf/Fishing_EMS_Report_Final.pdf • **Fisheries impact in European marine sites: Matrix (Department for Environment, Food and Rural Affairs, Defra)** https://www.gov.uk/government/publications/fisheries-in-european-marine-sites-matrix • **JNCC Report No. 334 – Saltmarsh Review: An overview of coastal saltmarshes, their dynamic and sensitivity characteristics for conservation and management** https://data.jncc.gov.uk/data/4c1a28e7-de13-4ff5-b7c8-088e879e5a1a/JNCC-Report-334-FINAL-WEB.pdf • **Berwickshire & Northumberland - Marine Nature Partnership: Intertidal hand gathering** https://www.xbordercurrents.co.uk/mpa-toolkit/mpas-in-our-area/intertidal-hand-gathering/ • **Fareham Borough Council: Shellfish Harvesting** https://www.fareham.gov.uk/licensing_and_inspections/shellfish.aspx • **Estimated footprint of shellfishing activities in *Zostera noltei* meadows in a northern Spain estuary: Lessons for management** https://www.sciencedirect.com/science/article/pii/S0272771421001736 • **UK Terrestrial & Freshwater Habitat Types: Coastal Habitat descriptions**

	https://data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-coastal.pdf • **AFBI Fisheries and Aquatic Ecosystems Branch for DARD Fisheries and Environment Division: Intertidal Harvesting in Northern Ireland** Sustainable Development Strategy for Northern Ireland's Inshore Fisheries (afbini.gov.uk) • **Impacts of unregulated harvesting on a recovering stock of native oysters (Ostrea edulis). Smyth D, Roberts D, Browne L (2009)** Mar Pollut Bull. 2009 Jun;58(6):916-22. doi: 10.1016/j.marpolbul.2008.12.021. Epub 2009 Apr 18. PMID: 19376537. • **Human trampling as short-term disturbance on intertidal mudflats: effects on macrofauna biodiversity and population dynamics of bivalves.** **https://rdcu.be/clMbz** • **Ecology of Dunes, Saltmarsh and Shingle. Packham & Willis (1997)** [PDF] Ecology of Dunes, Salt Marsh and Shingle | Semantic Scholar
Name and location of SACs, SPAs and Ramsar sites Note ASSI features which are not SAC or SPA are not required for HRA.	• **Rathlin Island SAC** Area: 3346.59ha EU site code: UK0030055 Site centre location: Latitude 55.3, Longitude -6.216666667 Date classified: 2005-05 Link: https://sac.jncc.gov.uk/site/UK0030055 • **Rathlin Island Special Protection Area (SPA)** Area: 3346.59 ha EU site code: UK9020011 Site centre location: Latitude 55.3, Longitude -6.216666667 Date classified: 2005-05 Link: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030055.pdf • **The Maidens SAC** Area: 7464.05 ha EU site code: UK0030384

	Site centre location: Latitude 54.944, Longitude -5.752 Date classified: 2017-09 Link: https://sac.jncc.gov.uk/site/UK0030384 • **Murlough SAC** Area: 3346.59ha EU site code: UK0016612 Site centre location: Latitude 55.3, Longitude -6.216666667 Date classified: 2005-05 Link: https://sac.jncc.gov.uk/site/UK0016612 • **North Channel (NI) SAC** Area: 160367.0 ha EU site code: UK0030399 Site centre location: Latitude 54.4555, Longitude -5.2936 Date classified: 2019-02 Link: http://archive.jncc.gov.uk/default.aspx?page=7242 • **Outer Ards RAMSAR** Area: 1278.82ha EU site code: UK12018 Site centre location: Latitude 54.546388889, Longitude -5.968611111 Date classified: 2005-04 Link: https://www.daera-ni.gov.uk/publications/outer-ards-Ramsar • **East Coast (NI) Marine Proposed (p)SPA** Area: 96668.34 ha EU site code: UK9020320 Site centre location: Latitude 54.03, Longitude -6.07 Consultation date: 2016 Link: https://www.daera-ni.gov.uk/consultations/east-coast-northern-ireland-marine-special-protection-area-consultation • **Carlingford pSPA** Area: 11143.10ha EU site code: UK9020161 Site centre location: Latitude 54.05111111, Longitude -6.12 Date classified: 2015-12/2016-04

	Link: https://www.daera-ni.gov.uk/consultations/carlingford-lough-spa-renotification https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020161.pdf • **Outer Ards SPA** Area: 1410.41ha EU site code: UK9020271 Site centre location: Latitude 54.546389, Longitude -5.483889 Date classified: 2002-11 Link: https://www.daera-ni.gov.uk/publications/outer-ards-special-protection-area • **Belfast Lough Open Water SPA** Area: 5592.99ha EU Site code: UK9020290 Site centre location: Latitude 54.683333, Longitude -5.816667 Date Classified: 2009-09 Link: https://www.daera-ni.gov.uk/publications/special-protection-area-belfast-lough-open-water • **Belfast Lough SPA** Area: 432.14ha EU Site code: UK9020101 Site centre location: Latitude 54.633333, Longitude -5.9 Date Classified: 1998-08 Link: https://www.daera-ni.gov.uk/publications/special-protection-area-belfast-lough • **Larne Lough SPA** Area: 398ha EU Site code: UK9020042 Site centre location: Latitude 54.815, Longitude -5.743889 Date Classified: 1997-03 Link: https://www.daera-ni.gov.uk/publications/larne-lough-special-protection-area • **Lough Foyle SPA** Area: 2204.36ha EU Site code: UK 9020031

	Site centre location: Latitude 55.09, Longitude -7.026944 Date Classified: 1999-02 Link: https://www.daera-ni.gov.uk/publications/lough-foyle-special-protection-area • **Strangford Lough SAC** Area: 15391.77 EU site code: UK0016618 Site centre location: Latitude 54.44444444, Longitude -5.594444444 Date classified: 2005-05 Link: https://sac.jncc.gov.uk/site/UK0016618 • **Killough Bay SPA** Area: 104.23ha EU Site code: UK9020221 Site centre location: Latitude 54.255833, Longitude -5.630556 Date Classified: 2003-03 Link: https://www.daera-ni.gov.uk/publications/special-protection-area-killough-bay • **Strangford Lough SPA** Area: 15580ha EU Site code: UK9020111 Site centre location: Latitude 54.444444, Longitude -5.594444 Date Classified: 1998-03 Link: https://www.daera-ni.gov.uk/publications/strangford-lough-special-protection-area • **Strangford Lough Ramsar** Area: 15580ha EU Site code: 7UK116 Site centre location: Latitude 54.444444, Longitude -5.594444 Date Classified: 1997-12 Link: https://www.daera-ni.gov.uk/publications/strangford-lough-Ramsar • **Killough Bay Ramsar** Area: 175.91ha EU Site code: UK9020221

	Site centre location: Latitude 54.255833, Longitude -5.630556 Date Classified: 2001-12 Link: https://www.daera-ni.gov.uk/publications/killough-bay-Ramsar • **Larne Lough Ramsar** Area: 398ha EU Site code: UK002004 Site centre location: Latitude 54.815, Longitude -5.743889 Date Classified: 1997-03 Link: https://www.daera-ni.gov.uk/publications/larne-lough-Ramsar https://rsis.Ramsar.org/ris/895 • **Belfast Lough Ramsar** Area: 432.14ha EU Site code: 7UK117 Site centre location: Latitude 54.633333, Longitude -5.9 Date Classified: 1998-07 Link: https://www.daera-ni.gov.uk/publications/belfast-lough-Ramsar • **Lough Foyle Ramsar** Area: 2204.36ha EU Site code: 7UK130 Site centre location: Latitude 55.09, Longitude -7.026944 Date Classified: 1999-01 Link: https://www.daera-ni.gov.uk/publications/lough-foyle-Ramsar • **Carlingford Lough Ramsar** Area: 827ha EU Site code: UK12004 Site centre location: Latitude 54.05, Longitude -6.116667 Date Classified: 1998-03 Link: https://www.daera-ni.gov.uk/publications/carlingford-lough-Ramsar http://www.niassembly.gov.uk/globalassets/documents/raise/deposited-papers/2020/dp1643/warrenpoint/warrenpoint-port-poe-application---habitats-regulations-assessment-screening.pdf

Designated features within SACs, SPAs and Ramsar sites	**<u>Designated (marine) features likely affected:</u>** • Atlantic salt meadows (GlaucoPuccinellietalia maritimae) • Mudflats and sandflats not covered by seawater at low tide ○ Sub-feature: Zostera Spp beds (Z. noltii, Z. Marina, Z.angustifolia) • Annual vegetation of drift lines • Reefs • Coastal lagoons • Salicornia and other annuals colonising mud and sand • Grey Seal (Halichoerus grypus) • Harbour Seal (*Phoca vitulina)* • Common Eider • Light-bellied Brent goose • Golden Plover • Ringed plover • Turnstone • Common Redshank • Bar-tailed godwit • Bewick`s Swan • Whooper Swan • Common Shelduck • Red knot • Eurasian oystercatcher • Eurasian curlew • Dunlin • Northern lapwing • Purple sandpiper • European golden plover • Black-headed gull • Common gull

	• Lesser black-backed gull • Northern pintail • Mallard • Eurasian wigeon • Mute swan • Barnacle goose • Greylag goose • Common coot • Common greenshank • Black-tailed godwit • Eurasian teal • Grey plover • Ruff • Whimbrel • Gadwall • Northern shoveler • Greater scaup • Common goldeneye • Waterfowl assemblage • Waterbird assemblage **<u>Other designated features unlikely affected</u>:** • Atlantic decalcified fixed dunes (Calluno-Ulicetea) • Dunes with Salix repens ssp. Argentea (Salicion arenariae) • Embryonic shifting dunes • Fixed dunes with herbaceous vegetation (grey dunes) • Sandbanks which are slightly covered by sea water all the time • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) • Submerged or partially submerged sea caves • Vegetated sea cliffs of the Atlantic and Baltic coasts • Harbour Porpoise *Phocoena phocoena*

	• Razorbill • Common Guillemot • Black-legged Kittiwake • Great Crested Grebe • Red-throated Diver • Manx Shearwater • Seabird Assemblage • Slavonian grebe • Little Grebe • Peregrine Falcon
Description of the Project or Plan Suggested topics to be covered: • Size and scale • Land-take • Distance from **SACs, SPAs and Ramsar** sites or key features of the sites • Resource requirements (water abstraction etc.) • Emission (disposal to land, water or air) • Excavation requirements • Transportation requirements • Duration of construction, operation, de-commissioning etc. • Other	Intertidal hand gathering of shellfish in the Northern Ireland marine area taking place within SACs, SPAs and Ramsar sites. **Size and scale** The total intertidal marine area protected within SACs, SPAs and Ramsar sites potentially affected by shellfish gathering is 90.92km². **Distance from SACs, SPAs and Ramsar sites key features** Intertidal shellfish gathering occurs in varying degrees within all above listed SACs, SPAs and Ramsar sites and the most commonly gathered species include periwinkle, native oyster, cockle and blue mussel.
Is the proposal directly connected with or necessary to management of the site for conservation of	No

SACs, SPAs and Ramsar features?	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the SACs, SPAs and Ramsar sites.	The act of hand gathering of intertidal shellfish itself, can exert a range of biological and physical impacts on marine habitats and species. Different species and habitats display varying levels of sensitivities to different fishing pressures. Previous assessments undertaken by the Department have used the Marine Evidence based Sensitivity Assessment (MarESA). This approach takes the degree of sensitivity of each habitat and species and applies an exposure level based on the current level of fishing pressure. This assigns a level of vulnerability to each species/habitat based on the current fishing pressure. This approach has not been taken for intertidal shellfish gathering at this time because the hand gathering fishery is not currently regulated by the Department. This means that the data on fishing scale and intensity is not available. It is therefore not possible to assign an exposure level and subsequently a vulnerability to each feature. This assessment instead uses the *Fisheries in European marine sites: Matrix (DEFRA, 2014)* as one method of assessing the potential damage caused to conservation features in the Northern Ireland SAC/SPA network. This matrix provides a high level assessment of the risk posed by certain types of fishing to individual conservation features within the SAC/SPA network. The matrix can be used when exposure data is unavailable, as it is in this case and is discussed in more detail below. There are obvious limitations to this type of assessment as it is only applied to broad scale habitats and does not take into account local conditions or intensity of fishing. To allow for this uncertainty all effects assessed below have been referred to as ***potentially*** significant/not-significant. Where other reliable sources of site specific data and information are available these have also been used to assess the significance of impacts from shellfish gathering. A call for evidence document is being produced as part of this consultation. This will contain a questionnaire which seeks to gather further evidence to more adequately assess the vulnerability of protected features.

	Based on the responses to this call for evidence the Department can then update this draft HRA to reflect the improved evidence base.

SACs, SPAs and Ramsar Features: Mention all features	**Describe any likely direct or indirect effects to the SACs, SPAs and Ramsar features arising as a result of:** • **loss;** • **reduction of habitat area;** • **disturbance;** • **habitat or species fragmentation;** • **reduction in species density;** • **changes in key indicators of conservation value (e.g. water quality, climate change).**	**Effect significant / not significant? Explain why?**
• Saltmarshes; - Atlantic salt meadows (GlaucoPuccinellietalia maritimae) - Salicornia and other annuals colonising mud and sand	Saltmarshes are sensitive to any form of trampling which can cause abrasion to saltmarsh biotopes (MarLIN). While shellfish gathering is not usually carried out in saltmarshes themselves, the activity may involve access across saltmarshes resulting in damage from trampling. Within the NI SAC/SPA network saltmarsh is present in the intertidal zone, particularly in Strangford Lough SAC/SPA. With Strangford Lough also being the area from which the most regular reports of shellfish gathering are received, trampling occurring from access to/from the shore is likely. Low levels of trampling can encourage growth and species richness but these fall as trampling increases (Packham & Willis 1997). As the levels of gathering are currently unknown it is not possible to quantify if damaging levels of abrasion from trampling are occurring.	When assessed using the EMS matrix, saltmarshes were assigned Amber for "hand working with access from vessel" and "hand working with access from land". This means there is doubt as to whether conservation objectives for saltmarshes will be achieved because of the feature's sensitivity to intertidal handwork. The effect is **potentially significant** as abrasion to the saltmarsh directly affects the saltmarsh vegetation. Reduced vegetation cover carries with it the risks of erosion damage. It will also have an impact on the sediment fauna with possible consequences for the functioning of the marsh ecosystem as a whole.

	In general, damage to saltmarshes can be reduced by limiting the level of trampling pressure as far as possible. https://data.jncc.gov.uk/data/4c1a28e7-de13-4ff5-b7c8-088e879e5a1a/JNCC-Report-334-FINAL-WEB.pdf	https://data.jncc.gov.uk/data/4c1a28e7-de13-4ff5-b7c8-088e879e5a1a/JNCC-Report-334-FINAL-WEB.pdf
• Mudflats and sandflats not covered by seawater at low tide	Gatherers have the potential to trample over protected habitats. This can disrupt and damage the intertidal shellfish and the environment they live in. Rossi *et al.* (2007) indicated that human trampling is a relevant source of disturbance for the conservation and management of mudflats.	When assessed using the EMS matrix, mudflats and sandflats were assigned Amber vulnerability for "hand working with access from vessel" and "hand working with access from land". This means there is doubt as to whether conservation objectives for mudflats and sandflats will be achieved because of the feature's sensitivity to intertidal hand gathering. The effects to this feature are therefore assessed as **potentially significant.**
○ Sub-feature: Zostera Spp beds (Z. noltii, Z. Marina, Z.angustifolia)	Intertidal seagrasses often occupy areas of high ecological importance that are also targeted for human activities, such as intertidal shellfish gathering. Trampling and digging associated with shellfish gathering can damage intertidal seagrasses, leading to a loss of habitat area. Garmendia *et al.* (2021) concluded from their study on the estimated footprint of shellfishing activities in *Zostera noltei* beds that trampling and digging by shellfishers are the main perturbing human factors for Basque seagrasses https://www.marlin.ac.uk/assets/pdf/Fishing_EMS_Report_Final.pdf https://www.sciencedirect.com/science/article/pii/S0272771421001736	When assessed using the EMS matrix for SACs, seagrass was assigned Red vulnerability for "hand working with access from vessel" and "hand working with access from land". This means it is clear that the conservation objectives for seagrass will not be achieved because of the feature's sensitivity to intertidal hand gathering. When assessed using the EMS matrix for SPAs, seagrass was assigned Amber for "hand working with access from vessel" and "hand working with access from land". This means there is

		doubt as to whether conservation objectives for seagrass will be achieved because of the feature's sensitivity to intertidal hand gathering. The effects to this feature are therefore assessed as **potentially significant.** https://www.marlin.ac.uk/assets/pdf/Fishing_EMS_Report_Final.pdf https://www.sciencedirect.com/science/article/pii/S0272771421001736
• Annual vegetation of drift lines	Access to/from the shore to gather shellfish can cause trampling to this habitat. Shingle vegetation is fragile and the wear and tear caused by access on foot, and particularly by vehicles, has damaged many sites. The causes include military use, vehicle access to beaches by fishermen, and recreational use. Such disturbance can also affect breeding birds. https://data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-coastal.pdf	When assessed using the EMS matrix, annual vegetation of drift lines was assigned Blue for "hand working with access from vessel" and Amber for "hand working with access from land". This means there is no feasible interaction between the gear type and the feature for "hand working with access from vessel". However, there is doubt as to whether conservation objectives for annual vegetation of drift lines will be achieved for "hand working with access from land", due to the feature's sensitivity to intertidal handwork. The effects to this feature are therefore assessed as **potentially significant.** https://data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-coastal.pdf

Reef: intertidal rock and intertidal boulder communities	The removal of any species in this habitat can have unforeseen effects on other members of the community. These effects are expected to be greatest when key species are removed. Winkles are an important grazer and often the dominant grazing gastropod on the lower shore and mussels are a particularly important space occupying species. The recovery of any population will depend on the degree of exploitation. Intertidal boulder habitats are also considered sensitive to hand gathering and trampling activities which disturb boulders and rocks. Hand harvesting can also remove a portion of the algal canopy as by-catch. Eninterd.PDF (marinebiodiversity.org) Review-of-sensitvity-Roberts-etal-2010.pdf (marlin.ac.uk) (PDF) Sensitivity of Intertidal Benthic Habitats to Impacts Caused by Access to Fishing Grounds (researchgate.net) https://www.marlin.ac.uk/species/detail/1328	The effects to this feature are therefore assessed as **potentially significant.**
• Coastal lagoons	As described above for intertidal mudflats, sandflats and intertidal rock	As above

• Grey Seal (Halichoerus grypus) • Harbour Seal (*Phoca vitulina)*	Disturbance Seals haul out onto the shore to rest and digest their food. The largest numbers tend to do this during the hours of low tide so there is a direct overlap in timing and location with regard to hand gathering of intertidal shellfish. Seals usually have favoured spots that are used regularly over many years and suitable alternative sites are usually limited. Disturbance can impact seals in a number of ways: • Groups of seals can stampede into the sea potentially injuring themselves or others, such as small pups. • Seals flushed into the sea will use up vital energy and have raised stress levels. They lose out on important resting time making them more vulnerable to illness and disease. • Seals that are regularly disturbed at a haul-out may stop using that site, reducing the areas available to rest and breed. • Adult females that are heavily pregnant may suffer serious medical complications that have consequences for them and/or their pups. • Rest (and efficient digestion) is critical during pregnancy. Underweight mothers lead to underweight pups which are unlikely to survive. • Mothers disturbed when feeding their pups may escape to the water. The mother may delay returning to feed. Undernourished pups are not likely to survive their first winter. If repeatedly disturbed, a mother may be forced to abandon her pup altogether. • Even seals that appear undisturbed by remaining hauled out on rocks during the presence of humans are affected. Research shows that increased vigilance results in raised	Harbour Seal: The potential for significant effect cannot be ruled out. The Harbour Seal feature in Strangford Lough SAC is currently in unfavourable condition. Any losses of adults or pups due to disturbance that causes injury/mortality or just simply drives them away from the site will hamper any possibility of feature recovery. The population in Murlough SAC is maintaining its numbers. The largest haul-out at Ballykinler is not vulnerable to disturbance from shellfish gatherers. However some of the smaller haul-outs could potentially be impacted. The direct overlap in target locations for seals and gatherers makes disturbance a risk. The activity of hand gathering of shellfish may not be significant on its own but disturbance has been an issue of concern in Murlough SAC for a number of years and in-combination effects due to other disturbance activities means that it cannot be ruled out as insignificant. Grey Seal: This species is currently increasing in Northern Ireland and therefore has better capacity to absorb negative impacts at population level. The Maidens SAC is probably not a favoured site for intertidal harvesting of shellfish due its remoteness, tidal currents and challenges in getting ashore. Harvesting when pups are present should be avoided. Hand harvesting of

	heart rates and adrenalin and cortisol releases. As a one-off this is not an issue for a particular seal, but long-term, prolonged increased vigilance as a result of repeated human proximity has potential to impact on health and welfare.	intertidal shellfish is unlikely to be currently having a significant effect on The Maidens SAC but due to the limited amount of haul-out sites has potential to impact the feature, especially at pupping time.
• **Estuarine and benthic feeding birds** • Common Eider • Light-bellied Brent goose • Golden Plover • Ringed plover • Turnstone • Common Redshank • Bar-tailed godwit • Bewick`s Swan • Whooper Swan • Common Shelduck • Red knot • Eurasian oystercatcher • Eurasian curlew • Dunlin • Northern lapwing • Purple sandpiper • European golden plover • Black-headed gull	• **Prey Reduction** A wide variety of estuarine intertidal waders including; Redshank (Belfast Lough SPA/Strangford Lough SPA), Bar-tailed godwit (Lough Foyle SPA/Ramsar) and Ringed Plover (Outer Ards SPA/Ramsar) are designated at various sites in the NI MPA network. Some species are resident year round but in winter months thousands of global migrants come to these rich sites to overwinter. These waders will feed primarily on invertebrates and shellfish buried in the substrate while it is exposed and available to them at low tide. Feeding opportunity is limited by tidal state and so a reduction in prey density or availability will impact their ability to forage effectively to maintain body condition throughout the winter season and complete their migration back to breeding grounds in the spring (Masero et al., 2008). Benthic feeding water bird features such as Common Eider (East Coast Marine pSPA) and Greater Scaup (Belfast Lough Ramsar) feed primarily on shellfish on the sea floor, both below the low water mark and within the intertidal zone as the tide covers the substrate. Although they may be less limited in their feeding opportunity	Effect is **potentially significant** as the abundance and availability of prey species available for birds could be reduced. Disturbance will also impact on feeding opportunity for waders and breeding success for ground nesting gulls. When assessed using the EMS matrix for intertidal handwork, estuarine and benthic feeding birds were assigned Amber vulnerability for “hand working with access from vessel” and “hand working with access from land”. This means there is doubt as to whether conservation objectives for these species will be achieved because of the feature’s sensitivity to intertidal hand gathering.

• Mew gull • Lesser black-backed gull • Northern pintail • Mallard • Eurasian wigeon • Mute swan • Barnacle goose • Greylag goose • Common coot • Common greenshank • Black-tailed godwit • Eurasian teal • Grey plover • Ruff • Whimbrel • Gadwall • Northern shoveler • Greater scaup • Common goldeneye • Waterfowl assemblage • Waterbird assemblage	than waders they have more specialised diets and so shellfish gathering may impact on prey availability. Other species such as the Black-headed gull (Strangford Ramsar & Larne Ramsar) or Common Gull (Belfast Lough Ramsar and Lough Foyle Ramsar) are more generalist feeders but will eat marine invertebrates if available. Reduction of prey at natural marine sites will drive them to more urban areas in search of food. Breeding gulls in Strangford Lough Ramsar (black-headed, mew and lesser black back gull) are also potentially disturbed or trampled by shellfish gathering on breeding islands. • **Disturbance** All estuarine species groups feeding in or close to the intertidal zone will be affected by disturbance by shellfish gatherers working on foot and by boat. This will impact species that do not feed on shellfish as mentioned above, but graze in similar areas such as the Pale Bellied Brent Goose (Strangford Lough SPA/Ramsar, Killough Bay SPA/Ramsar & Carlingford Lough SPA/pSPA/Ramsar). Human disturbance can negatively impact intertidal species by causing them to display caution, move away from a disturbance or in a worst case scenario they may completely leave an area where they were feeding or resting. Loss of already limited feeding opportunity or wasted energy will have a negative impact on fitness, particularly if prey density is reduced. (Goss-Custard et al., 2006).	

• Breeding seabirds (Island nesting – Surface feeding/pursuit hunting) • Sandwich Tern • Common Tern • Arctic Tern • Roseate tern • Great cormorant	• **Disturbance of nests** • Strangford Lough SPA and Ramsar hosts breeding populations of terns and cormorant. These species nest on the ground on low lying islands throughout the designated site. • Current evidence of shellfish gathering in Strangford indicates that operations are carried out on islands around the lough using boat and foot access. • Disturbance to nesting sites will have a negative impact on breeding seabird populations. Adults are flushed from nests leaving chicks/eggs vulnerable to predation. Disturbance will reduce adult provisioning to chicks and cause stress to adults and young. There is also the potential for trampling of nests which are well camouflaged on the ground. (Carney *et al.,* 1999) • Foraging/ prey availability will not be impacted for these species as they feed on fish in open water areas.	**Significant impact** where gathering may be happening on breeding sites.
Breeding seabirds (cliff nesting – surface feeding/pursuit hunting) • Razorbill • Guillemot • Kittiwake • Manx Shearwater • Seabird Assemblage	• Seabirds and water birds in this category feed in the open water subtidal zone. They feed on fish which they hunt in the water column or from above the water surface. As such they are not impacted by prey reduction associated with shellfish gathering. Feeding opportunity is unlikely to be impacted by disturbance as they are not limited to hunting close to shore where this activity takes place. • Breeding seabirds using cliffs such as Razorbill and Kittiwake (Rathlin SPA) will not have nesting	When assessed for intertidal hand gathering, surface feeding and pursuit hunting birds were assigned blue for “hand working with access from vessel” and “hand working with access from land”, with regards to vulnerability in the EMS Matrix. The matrix concludes that shellfish gathering should have no feasible interaction with these features.

Wintering waterbirds (pursuit hunters) • Slavonian grebe • Little Grebe • Great Crested Grebe • Red-throated Diver	impacted by disturbance by shellfish gathering.	The effect is therefore assessed as **not significant**.
• Peregrine Falcon	• This species is designated in Rathlin Island SPA. It is not a marine feature and there will be no impact from intertidal shellfish gathering.	

Describe any potential effects on the SACs, SPAs and Ramsar sites as a whole in terms of: interference with the key relationships that define the structure or function of the site	**Effect considered significant/non-significant:**
	As detailed information on the quantities, intensity and locations of gathered shellfish is not currently available it is not possible to accurately quantify the potential effects of this activity at site level. Hand gathering of shellfish is concentrated mainly at the lower part of the intertidal and immediate shallow subtidal. An important species in this zone is Ostrea edulis. This is a long lived species, with notably unreliable reproduction and low levels of recruitment, which makes it vulnerable to commercial harvesting.

	Direct removal of key species, bycatch, trampling and movement of boulders are all relevant pressures as described above. MarLIN - The Marine Life Information Network - Native oyster (Ostrea edulis) In addition to the feature specific effects assessed above, large scale removal of any target species will have knock-on effects to the food web for both predators and prey. This has the potential to negatively impact the species abundance, composition and diversity within the SACs, SPAs and Ramsar sites. The effect is therefore considered **potentially significant**.

Provide details of any other projects or plans that together with the project or plan being assessed could (directly or indirectly) affect the site	N/A
Is the potential scale or magnitude of any effect likely to be significant?	Yes
Alone?	Yes
In-combination with other projects of plans?	No

List of Agencies / Organisations Consulted. Provide contact name and telephone or email address Note when and who in the Department you contacted with regard to Regulation 43(3) as well as other contacts used to create this report.	• Inshore Fisheries Partnership • Strangford Lough and Lecale Partnership • Gangmasters and Labour Abuse Authority • National Trust • DAERA Marine and Fisheries Division. Marine Conservation and Reporting: Marine Conservation Advice team. • DAERA Sea Fisheries Inspectorate

Habitats Regulations Assessment Summary It is important that this makes scientific sense and is backed by good evidence or reasoning.	Intertidal gathering activities detailed above have been assessed as having the potential for a significant adverse effect on the designated site features of the assessed sites. Therefore, a full assessment and mitigation measures are required in order to ensure the conservation objectives are not adversely impacted.

Conclusion Is the proposal likely to have a significant effect on an SAC, SPA or Ramsar site?	Yes

Data collected to carry out the assessment

Who carried out the assessment? If you are an agent or consultant on behalf of a Competent Authority please give your details plus the responsible person in the CA who commissioned it.	DAERA Marine and Fisheries Division. Marine Conservation and Reporting Team.
Sources of data Use hyperlinks, references or include as annex	• DAERA SAC/SPA conservation objectives • DAERA SAC/SPA site selection assessment • DAERA and AFBI Fisheries landing data • Local information provided by users through stakeholder steering groups. • DAERA SAC/SPA condition assessments 2019 • MARLIN • Feature Activity Sensitivity Tool (FEAST). The Scottish Government. 2019 https://www.marine.scotland.gov.uk/FEAST/Index.aspx • An Assessment of the Impact of Selected Fishing Activities on European Marine Sites and a Review of Mitigation Measures • Fisheries in European marine sites: Matrix

	• Peer-reviewed literature (listed in stage 1 reference list)
Level of assessment completed	Stage 2
Where can the full results of the assessment be accessed and viewed? Must be an official address of the Competent Authority	**DAERA Marine Conservation and Reporting Team** Email: Marine.Conservation@daera-ni.gov.uk
Summary of response	Stage 1 Assessment has determined that current intertidal shellfish gathering activities have the potential to have a significant adverse effect on the designated features of the described sites, therefore a Stage 2 Appropriate Assessment is required.

DO NOT PROCEED FURTHER IF YOU HAVE ESTABLISHED THAT THIS PROPOSAL IS UNLIKELY TO IMPACT AN SAC, SPA OR RAMSAR SITE AND NO MITIGATION IS REQUIRED

Stage 2: Appropriate Assessment

Fig 1 Assessment of Effects of the Project or Plan on the Integrity of the Site

Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the site (from screening assessment)	Detailed above in stage 1
Set out the Conservation objectives of the site	• **Rathlin Island SAC** Link: https://sac.jncc.gov.uk/site/UK0030055 • **Rathlin Island Special Protection Area (SPA)** Link: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030055.pdf • **The Maidens SAC** • Link: https://sac.jncc.gov.uk/site/UK0030384 • **Murlough SAC** Link: https://sac.jncc.gov.uk/site/UK0016612 • **North Channel (NI) SAC** Link: http://archive.jncc.gov.uk/default.aspx?page=7242 • **Outer Ards RAMSAR** Link: https://www.daera-ni.gov.uk/publications/outer-ards-Ramsar • **East Coast (NI) Marine Proposed (p)SPA** Link: https://www.daera-ni.gov.uk/consultations/east-coast-northern-ireland-marine-special-protection-area-consultation • **Carlingford pSPA** Link: https://www.daera-ni.gov.uk/consultations/carlingford-lough-spa-renotification https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020161.pdf • **Outer Ards SPA** Link: https://www.daera-ni.gov.uk/publications/outer-ards-special-protection-area

	• **Belfast Lough Open Water SPA** Link: https://www.daera-ni.gov.uk/publications/special-protection-area-belfast-lough-open-water • **Belfast Lough SPA** Link: https://www.daera-ni.gov.uk/publications/special-protection-area-belfast-lough • **Larne Lough SPA** Link: https://www.daera-ni.gov.uk/publications/larne-lough-special-protection-area • **Lough Foyle SPA** Link: https://www.daera-ni.gov.uk/publications/lough-foyle-special-protection-area • **Strangford Lough SAC** Link: https://sac.jncc.gov.uk/site/UK0016618 • **Killough Bay SPA** Link: https://www.daera-ni.gov.uk/publications/special-protection-area-killough-bay • **Strangford Lough SPA** Link: https://www.daera-ni.gov.uk/publications/strangford-lough-special-protection-area • **Strangford Lough Ramsar** Link: https://www.daera-ni.gov.uk/publications/strangford-lough-Ramsar • **Killough Bay Ramsar** Link: https://www.daera-ni.gov.uk/publications/killough-bay-Ramsar • **Larne Lough Ramsar** Link: https://www.daera-ni.gov.uk/publications/larne-lough-Ramsar https://rsis.Ramsar.org/ris/895 • **Belfast Lough Ramsar** Link: https://www.daera-ni.gov.uk/publications/belfast-lough-Ramsar • **Lough Foyle Ramsar** Link: https://www.daera-ni.gov.uk/publications/lough-foyle-Ramsar • **Carlingford Lough Ramsar**

	Link: https://www.daera-ni.gov.uk/publications/carlingford-lough-Ramsar http://www.niassembly.gov.uk/globalassets/documents/raise/deposited-papers/2020/dp1643/warrenpoint/warrenpoint-port-poe-application---habitats-regulations-assessment-screening.pdf
Describe how the project or plan will affect key species, key habitats and the integrity of the site (determined by structure and function and conservation objectives). **Acknowledge uncertainties and any gaps in information.**	Detailed above in stage 1
Describe what mitigation measures are to be introduced to avoid or reduce the adverse effects on the integrity of the site. **Acknowledge uncertainties and any gaps in information**	The introduction of regulation would help further the conservation objectives by limiting and/or reducing the abovementioned pressures on the designated features assessed as being sensitive to shellfish gathering. This would help to decrease the risk of damage to key habitats and species within SACs and SPAs. The removal or reduction of these pressures on fragile and/or important habitats and species through specific regulations would contribute to sustainable fishing practices, facilitate natural habitat recovery and therefore improve biodiversity and habitat complexity. **Proposed approaches to management** **Summary of options considered** • Closed season • Minimum landing size • Bag limits • Registration system for commercial harvesters • Protection of native oyster and blue mussel beds in Strangford Lough • Prohibited/No-take zones

	• Codes of practice • Night time curfew Overall, introducing management measures for intertidal shellfish gathering in all SACs and SPAs in the intertidal zone would support stable environmental conditions and contribute towards sustainable use of the marine environment.

Fig 2 Appropriate Assessment: Mitigation Measures

List measures to be introduced	Explain how the measures will avoid the adverse effects on the integrity of the site.	Explain how the measures will reduce the adverse effects on the integrity of the site.	Provide evidence of how they will be implemented and by whom.
Closed season		Implementing a closed season for gathering during the spawning cycle will give shellfish the opportunity to reproduce, which will help improve future stocks. A study into periwinkles in Strangford Lough (AFBI, 2019) recommended a closed season between January and April in order to protect the spawning cycle. This would have the added benefit of removing fishing effort for 4 months of the year, reducing indirect pressures on intertidal habitats that can be associated with hand gathering e.g. trampling, wildlife disturbance. The adverse effects identified in the test of likely significance will be reduced as a result of the closed season.	Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966.
Minimum landing size		Setting a minimum landing size for shellfish gathering protects juvenile	Regulations will be implemented by DAERA under the Fisheries Act

		stocks. If the size is set above that at which individuals reach sexual maturity then it gives the opportunity for all juveniles to complete a spawning cycle before being picked, helping to bolster future stocks. A study into periwinkles in Strangford Lough (AFBI, 2019) recommended a minimum landing size of 16mm to allow all specimens a minimum of one winter spawning. This would help to ensure gathering practices are sustainable and protect future stocks. The adverse effects identified in the test of likely significance will be reduced as a result of the minimum landing size.	(Northern Ireland) 1966.
Bag limits – for personal consumption		Implementing a bag limit will control the amount of shellfish that can be gathered recreationally. If a bag limit is set at a certain weight/size that is appropriate for recreational gatherers then it stops the large scale harvesting that has the potential to cause the most severe environmental impact. The adverse effects identified in the test of	Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966.

		likely significance will be reduced as a result of a bag limit being set.	
Registration system for commercial harvesters		A registration system will allow the Department to gather information on weight of catch, species and harvesting location. This will allow the fishery to be managed more effectively by highlighting areas and species which are being over exploited. The current unregulated status of the fishery does not allow the Department to do this. This measure will help to protect the biodiversity of the Northern Irish coastline by equipping the regulatory authority with the data necessary to implement future management measures. The adverse effects identified in the test of likely significance will be reduced as a result of a registration system being implemented.	Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966.
Protection of native oyster and blue		Native oyster (*Ostrea edulis*) and blue mussel (*Mytilus edulis*) are both Priority Marine Feature habitats and	Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966

mussel beds in Strangford Lough.		are under consideration for designation as MCZ features in Strangford Lough MCZ. Smyth *et al* 2009 assessed the impacts of unregulated harvesting on native oysters in Strangford Lough. The stock decline from 1.2 million to 650,000 between 2003 and 2005 was attributed to unregulated harvesting. This shows the impact that can be caused as a result of unregulated gathering. Introducing additional protection for these two species within Strangford Lough SAC/MCZ/SPA will reduce pressure on the species and protect them from unsustainable levels of gathering.	
Prohibited/ No-take areas	Introducing this measure will remove the pressures and effects assessed in the stage 1 appropriate assessment. This will benefit the health of the shellfish populations and have beneficial knock-on effects for the food web and overall biodiversity.		Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966
Code of practice		Implementing a mandatory code of practice for gatherers	Regulations will be implemented by DAERA under

		will help to ensure that those gathering are adhering to best practice guidance to avoid unnecessary disturbance to sensitive habitats and species. Although this measure alone will not necessarily reduce gathering it will reduce the pressures on conservation features by requiring gatherers to adhere to conditions such as sorting and returning small shellfish to the shore and replacing overturned rocks or clumps of seaweed to their original location.	the Fisheries Act (Northern Ireland) 1966
Night time curfew		When gathering at night it is not possible for gatherers to see what damage or disturbance is being caused to sensitive habitats and species. Implementing a night time curfew will avoid this risk as well as the added benefit of reducing the amount of hours available to gather, therefore reducing fishing effort.	Regulations will be implemented by DAERA under the Fisheries Act (Northern Ireland) 1966
List mitigation measures (as above)	**Provide evidence of the degree of confidence in their likely success**	**Provide time-scale, relative to the project of plan, when they will be implemented**	**Explain the proposed monitoring scheme and how any mitigation failure will be addressed**

All proposed management measures	It is well understood that well-managed MPAs have beneficial effects on protected features and wider ecosystem benefits. All of the above measures will contribute towards ensuring that this potentially damaging activity is being undertaken sustainably. Therefore the Department is confident that the measures will be successful in reducing the impact on protected features.	The Department will launch the consultation in June 2022 with an aim of having the regulations in place by 2023.	Ongoing MPA condition monitoring and monitoring to assess effectiveness of management measures to inform adaptive management will be carried out within a 6 year reporting cycle. The development of an integrated monitoring program will allow the Department to assess current condition against baseline condition of qualifying features. These monitoring programmes will show if the expected improvement in feature condition and overall biodiversity is occurring. This will demonstrate the effectiveness of the management measures in place and give the Department the confidence to adapt management approaches going forward to meet the conservation

			objectives of each SAC/SPA.

Stage 3: Assessment of Alternative Solutions Matrix

Assessment of Alternative Solutions		
The objectives of the Plan or Project	**The 'Do Nothing' Alternatives**	
Predicted adverse effects of the project or plan on SACs, SPAs and Ramsar sites following the Appropriate Assessment include potential damage to designated features and not meeting the conservation objectives of the SACs, SPAs and Ramsar sites. Therefore, there is currently no alternative solutions assessed other than the options proposed in public consultation.		
Comparison with chosen project or plan		
Possible Alternatives	Evidence of how the alternative solutions were assessed	Describe the relative effects on the conservation objectives of on (greater or less adverse effects)
Alternative locations/routes		
Alternative One		
Alternative Two		
Alternative Three		
Alternative Size and Scale		
Alternative One		
Alternative Two		
Alternative Three		
Alternative means of meeting objectives (e.g. demand management)		
Alternative One		
Alternative Two		
Alternative Three		

Assessment of Alternative Solutions (continued)

Comparison with chosen project or plan		
Possible Alternatives	Evidence of how the alternative solutions were assessed	Describe the relative effects on the conservation objectives of on SACs, SPAs and Ramsar sites (greater or less adverse effects)
Alternative methods of construction		
Alternative One		
Alternative Two		
Alternative Three		
Alternative operational methods		
Alternative One		
Alternative Two		
Alternative Three		
Alternative decommissioning methods		
Alternative One		
Alternative Two		
Alternative Three		
Alternative time-scales		
Alternative One		
Alternative Two		
Alternative Three		
Conclusions on Assessment of Alternatives		

Alternative Solutions Assessment Statement

Describe the alternative solution that would avoid or minimise significant impacts on the SACs, SPAs and Ramsar sites	**Explain why the proposed project or plan is favoured over the other alternatives solutions assessed.**	
Provide an overall statement to explain why it is considered that in this instance there are no alternatives that would avoid reducing the conservation value of the SACs, SPAs and Ramsar sites.		

Evidence of Assessment Matrix

Consultation on Alternative Solutions			
List of Agencies Consulted:	**Response to consultation**	**Impact of alternatives on the SACs, SPAs and Ramsar sites are considered adverse (explain)**	**Impact of alternatives on the SACs, SPAs and Ramsar sites are considered positive or neutral (explain)**
Data Collected to carry out the Assessment			
Who carried out the assessment			
Sources of Data			
Level of assessment completed			
Where can the full results of the assessment be accessed and viewed?			

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain

Compensatory Measures Assessment Matrix

Name and brief description of the project or plan and how it will adversely affect the SACs, SPAs and Ramsar sites	
N/A	
Description of the compensatory measures	
Assessment Questions	**Response**
How were compensatory measures identified?	
What alternative measures were identified?	
How do these measure relate to the conservation objectives of the site?	
Do these measures address, in comparable proportions, the habitats and species negatively affected?	
How would the compensatory measures maintain or enhance the overall coherence of SAC, SPA and Ramsar site	
Do these measures relate to the same biogeographical region in the same Member State?	
If the compensation measures require the use of land outside of the affected SAC, SPA and Ramsar site, is that land in the long term ownership and control of the project or plan proponent or relevant national or local authority?	
Do the same geological, hydrogeological, soil, climate and other local conditions exist on the	

compensation site as exist on the SAC, SPA and Ramsar site adversely affected by the project or plan?	
Do the compensatory measures provide functions comparable to those that had justified the selection criteria of the original site?	
What evidence exists to demonstrate that this form of compensation will be successful the long term?	

Evidence of Assessment Matrix

Consultation on Compensatory Measures			
List of Agencies Consulted	**Response to consultation**	**Compensatory Measures were considered acceptable**	**Compensatory Measures were not considered acceptable**
Data collected to carry out the Assessment			
Who carried out the assessment			
Sources of Data			
Level of assessment			
Where can the full results of the assessment be accessed and viewed?			

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