Fisheries Natura Risk Mitigation Plan

Razor Clam Fishing

Dundalk Bay SPA

(Site No. 004026)

Marine Institute

February 2023

Contents

Summary

1. Fishing for razor clams in the Dundalk Bay SPA may cause the structure and function of seafloor habitats to change as a result of the disruption of sediments and direct and indirect mortality to fauna due to contact with the dredge
2. The level of fishing for razor clams has increased in recent years and in particular compared to an assessment of the effects of the fishery on habitats completed in 2016.
3. Changes to structure and function of habitats may have a knock on effect on some species of birds, including Common Scoter, which utilize these habitats as source of food.
4. Data from annual surveys of razor clams and iVMS data shows that the fishery occurs throughout the Bay seaward from chart datum to about 10m depth and that the abundance of characterizing species of bivalves in the sediments is very low and declining compared to other areas
5. The possibility of significant effects as described cannot be discounted given available data and in such cases mitigation is necessary
6. It is proposed to close an area of the bay to razor clam fishing. The area of the closure is a balanced response to the degree of precaution now needed to evaluate more closely the effects of fishing on habitats in the Bay.
7. A monitoring programme will be initiated to evaluate the response of habitats and birds to the closure

Introduction

This document describes the background and justification for a Fisheries-Natura risk mitigation and monitoring plan to reduce the risk of damage to marine seafloor fauna within the Dundalk Bay Special Protection Area (SPA) (SPA#004026) from hydraulic dredging for razor clams. The proposal described are in response to annual monitoring, by the Marine Institute (MI), within the area fished for razor clams. The Marine Institute are responsible for assessment of the interactions between fisheries and environment within SACs and SPAs and providing advice to DAFM on the need to reduce or remove the risk of deterioration of habitats and species within these sites. This is to ensure compliance with the Habitats Directive and specifically Article 6.2 of the Directive which requires that deterioration of habitats due to human pressures be avoided. This requirement is transposed to Irish law in The European Union (Birds and Natural Habitats) (Sea-fisheries) Regulations 2013 (SI 290 of 2013).

Dundalk Bay SPA Conservation Objectives

Dundalk Bay is a large open shallow sea bay with extensive saltmarshes and intertidal sand/mudflats which contain rich fauna of bivalves, molluscs and marine worms and crustaceans. This fauna provides key food resource to the many species of wintering waterfowl which utilise the area.

Dundalk Bay is designated as an SPA containing a number of important populations of wintering birds. The following species have been listed as species of special conservation interest (SCI) within the SPA by the National Parks and Wildlife Service (NPWS).

A005 Great crested grebe (*Podiceps cristatus*) – wintering
A043 Greylag goose (*Anser anser*) – wintering
A046 Light-bellied brent goose (*Branta bernicla hrota*) – wintering
A048 Shelduck (*Tadorna tadorna*) – wintering
A052 Teal (*Anas crecca*) – wintering
A053 Mallard (*Anas platyrhynchos*) – wintering
A054 Pintail (*Anas acuta*) – wintering
A065 Common scoter (*Melanitta nigra*) –wintering
A069 Red-breasted merganser (*Mergus serrator*) – wintering
A130 Oystercatcher (*Haematopus ostralegus*) – wintering
A137 Ringed plover (*Charadrius hiaticula*) – wintering
A140 Golden plover (*Pluvialis apricaria*) – wintering
A141 Grey plover (*Pluvialis squatarola*) – wintering
A142 Lapwing (*Vanellus vanellus*) – wintering
A143 Knot (*Calidris canutus*) – wintering
A149 Dunlin (*Calidris alpina*) – wintering
A156 Black-tailed godwit (*Limosa limosa*) – wintering
A157 Bar-tailed godwit (*Limosa lapponica*) – wintering
A160 Curlew (*Numenius arquata*) – wintering
A162 Redshank (*Tringa totanus*) – wintering
A179 Black-headed gull (*Chroicocephalus ridibundus*) – wintering
A182 Common gull (*Larus canus*) – wintering
A184 Herring gull (*Larus argentatus*) – wintering
A999 Wetlands and waterbirds

The site is one of the most important wintering waterfowl sites in Ireland. It is of international importance due to the presence of over 20,000 wintering waterbirds including internationally important populations of light-bellied brent goose, knot, black-tailed godwit and bar-tailed godwit. Other listed species are of national interest.

The conservation objectives for the SPA are based on the principle of Favourable Conservation Condition (FCC) of each SCI species and their populations (NPWS, 2011c).

Conservation Objective 1. To maintain the favourable conservation condition of the waterbird SCIs.

Attribute a) Long term population (numbers of birds wintering at the site) trend of each SCI.

Target: The long term population trend should be stable or increasing. Any SCIs will be deemed unfavourable when its population has declined by more than -25%

Measure: Long-term (10 year) percentage change

Attribute b) Distribution of SCIs within the site.

Target: There should be no significant decrease in the number and range of areas used by waterbirds other than that occurring from natural patterns of variation.

Measure: Number and range of areas used by waterbirds

Conservation Objective 2. To maintain the favourable conservation condition of the wetland habitat as a resource for the waterbirds that use it.

Attribute a) Habitat area

Target: Wetland habitat should be stable and not less than 8136, 4374 and 649ha for sub-tidal, inter-tidal and supra-tidal habitats respectively.

Measure: Hectares

Furthermore, site specific conservation objectives define the desired condition that a habitat should be in so that it can be said to be in favourable conservation status. The conservation status of a habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing; and
- the **specific structure and functions** which are necessary for its long-term maintenance exist
- and are **likely to continue to exist** for the foreseeable future; and

- the **conservation status of its typical species is favourable'**

The key marine seafloor community types (habitats in this sense) which are within these sub-tidal, inter-tidal and supra-tidal areas and their areas are in Table 1. These habitats are described according to the predominant sediment type and the main characterising species that the sediments support.

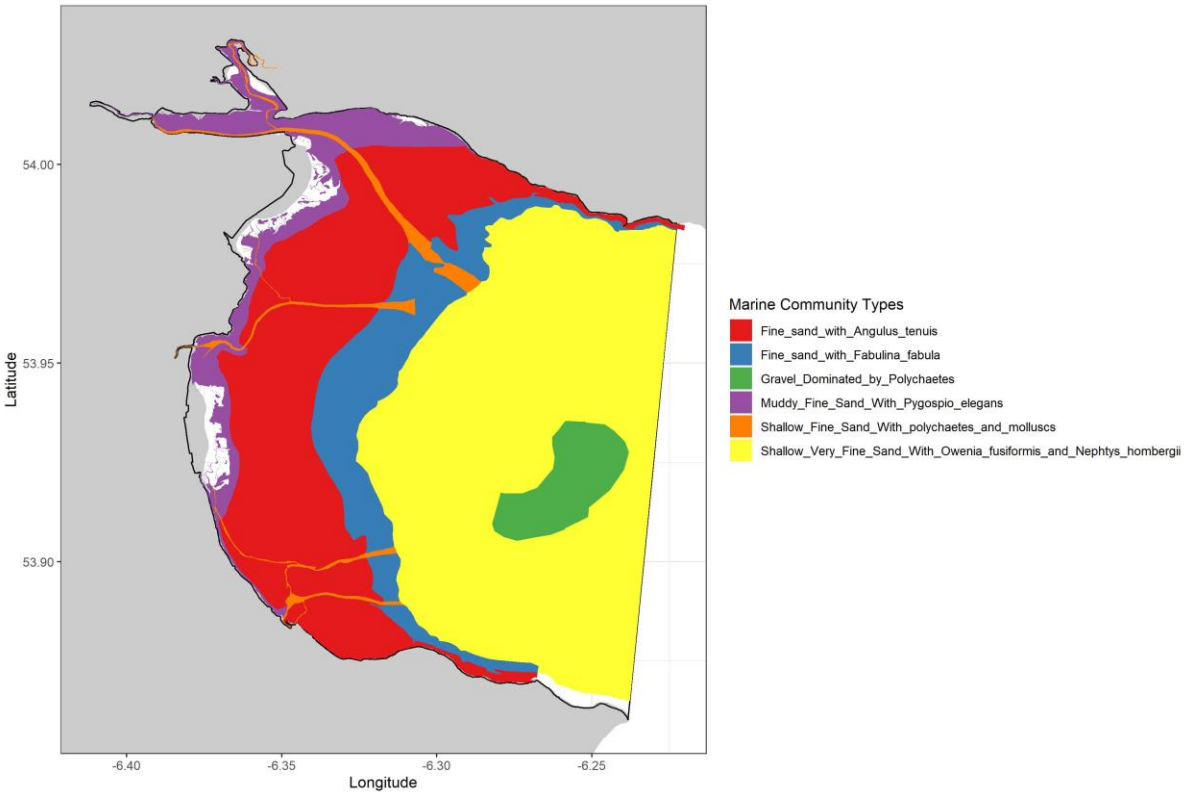

Figure 1 Marine Community Types within Dundalk Bay (NPWS 2011)

Table 1 The Marine Community Types and their areas within Dundalk Bay SPA (NPWS 2011)

Marine Community Type	**Area (Hectares)**
Fine sand with *Angulus tenuis*	3591.70
Fine sand with *Fabilina fabula*	1343.25
Gravel dominated by polychaetes	518.26
Muddy fine sand with *Pygospio elegans*	857.50
Shallow fine sand with polychaetes and molluscs	266.19
Shallow very fine sand with *Owenia fusiformis* and *Nephys hombergii*	5973.59

Current Fishing Activity for razor clams

Fishing for razor clams occurs in shallow waters generally between chart datum and waters of less than 10m in depth in an almost continuous band from the north of Dundalk Bay south to Malahide in Co. Dublin. The fishery developed in the 1980s and has been through a number of cycles of increasing and decreasing production. The vessels use hydraulic non-suction dredges varying from 0.7-1.2m in width and 1 dredge per vessel. Towing speed is approximately 0.3knots. The dredge penetrates the sediment to a depth of approximately 25cm. Landings and effort peaked at over 1000 tonnes in 2015 were over 800 tonnes per annum in 2016-2018 and have declined to approximately 500-600 tonnes per annum in recent years.

The current fishing for razor clams occurs solely within sub-tidal habitats on shallow very fine sand with *Owenia fusiformis* and *Nephyts hombergii* community (Figure 1, Figure 2). Fishing within Dundalk Bay is concentrated mainly within the middle and south of The Bay although effort has expanded northwards since 2017.

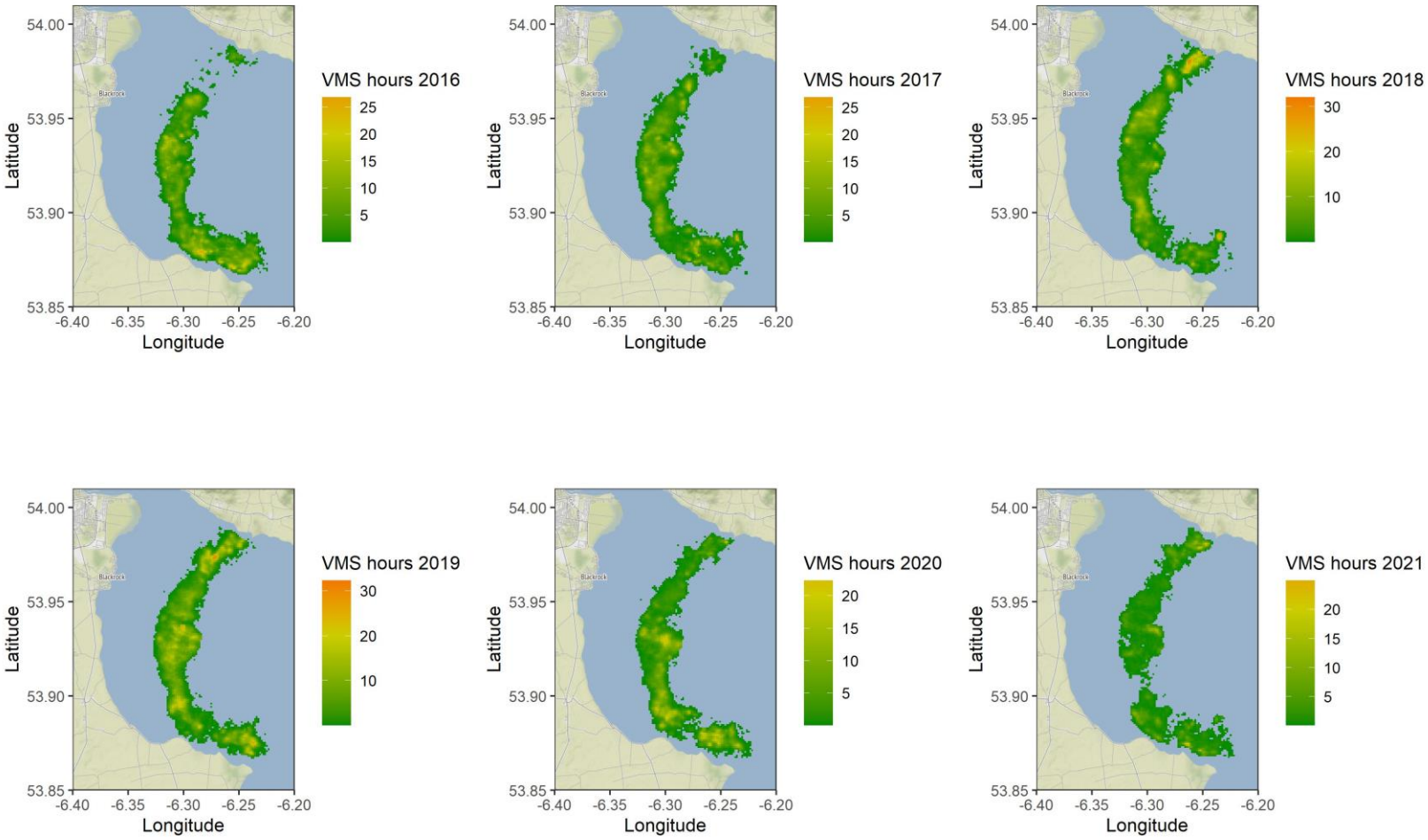

Figure 2 VMS hours fishing within Dundalk Bay between 2016 – 2021. Note. Different scales and 2021 data is from January until June only. Data for 2022 is pending

Risk assessment for Razor Clam Fishing

Razor clam fishing with hydraulic dredges may affect Objective 2 of the conservation objectives for Dundalk Bay in that the specific structure and functions and status of typical species in the subtidal wetland habitat of Dundalk Bay could be impacted. These sub-tidal sedimentary habitats host a range of species including razor clams, other deep burrowing long lived bivalves and a diversity of fauna including bivalves living in surficial or uppermost layer of sediments. Bird species such as Common Scoter, which is a SCI species in Dundalk Bay, feeds on surficial bivalves which could be affected by razor clam fishing.

In 2016 the appropriate assessment of the cockle fishery Natura plan for Dundalk Bay and the in combination effects of other fisheries such as razor clams pointed to the risks associated with fishing for razor clams in the Dundalk Bay SPA. These were:

1. Dredging for razor clams at the scale and intensity of fishing, which has expanded in recent years (up to 2016), may have a significant impact on bivalve stocks in the SPA and therefore on the food availability for Common Scoter.
2. The fishery may have physical disturbing effects on Common Scoter, Merganser and Grebe leading to displacement of these birds from the SPA.

The assessment concluded that the fishery could continue provided monitoring of potential effects were undertaken. The recommendations for monitoring were:

1. Monitor razor clam fishing vessels using high frequency VMS which was introduced in 2015.
2. Improve the data on distribution and abundance of Common Scoter in the vicinity of the SPA.
3. Identify the effects of hydraulic dredging on bivalve stocks in the SPA through a targeted survey in areas that have received different levels of fishing pressure.
4. Obtain information on the nutritional value of bivalve species preyed on by Common Scoter.
5. Monitor the distribution of flocks of Scoter, Merganser and Grebe in the absence and presence of fishing vessels.

These measures (other than 4 above) were implemented during the period 2016-2021. Monitoring with VMS showed a further escalation in fishing effort into 2017. The effects of dredging on bivalves was reported through annual razor clam surveys 2017-2022 and through a benthic survey in 2016. Aerial seabird surveys were commissioned in 2019 and the relationships between VMS activity, bivalves caught in the razor clam fishery, fauna in surface sediments and flocks of scoter were reported. Specific disturbance studies on common scoter were not undertaken. Data from these monitoring programmes are reported below.

Monitoring of Bivalves in Dundalk Bay

The North Irish Sea razor clam fishing area, including Dundalk Bay SPA, has been surveyed by the MI since 2017. There are 160 set survey stations within the bay which are surveyed annually (

Figure 3). An additional ~30 stations were added in the north of the Bay in 2022. The number and weight of the main razor clam, *Ensis siliqua*, is estimated and the total number of all other by-caught bivalves is recorded.

Figure 3 The razor clam annual survey stations in Dundalk Bay 2017-2022.

Biomass of Razor Clam (*Ensis siliqua*)

Biomass of razor clams declined between 2017 and 2018, increased from 2018 to 2020 and was stable from 2020-2022 (Figure 4). Practically all the biomass is over 130mm shell length (**Error! Reference source not found.**) although smaller size classes are poorly selected by the survey dredge and are underrepresented in the data.

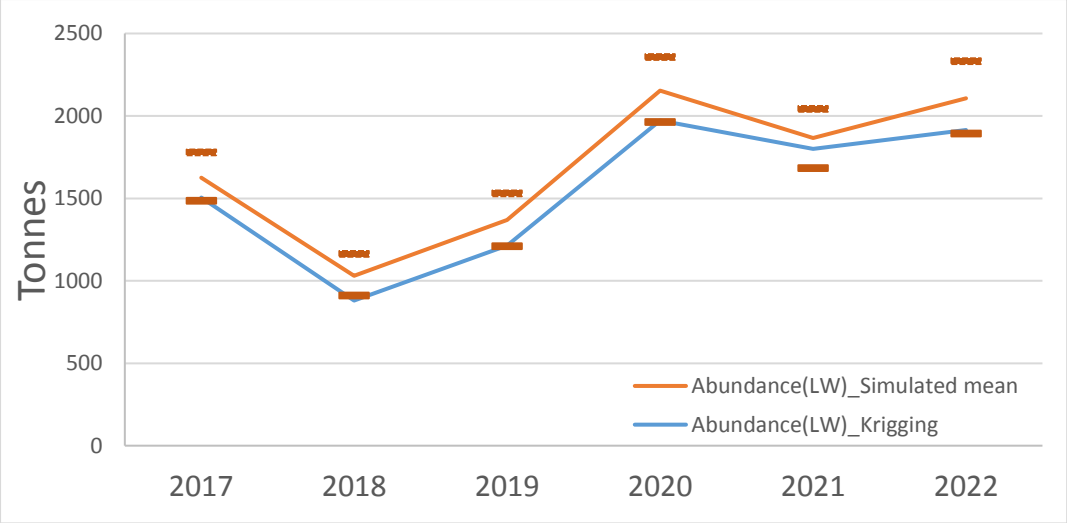

Figure 4. Biomass of razor clams in Dundalk Bay 2017-2022 estimated from survey data

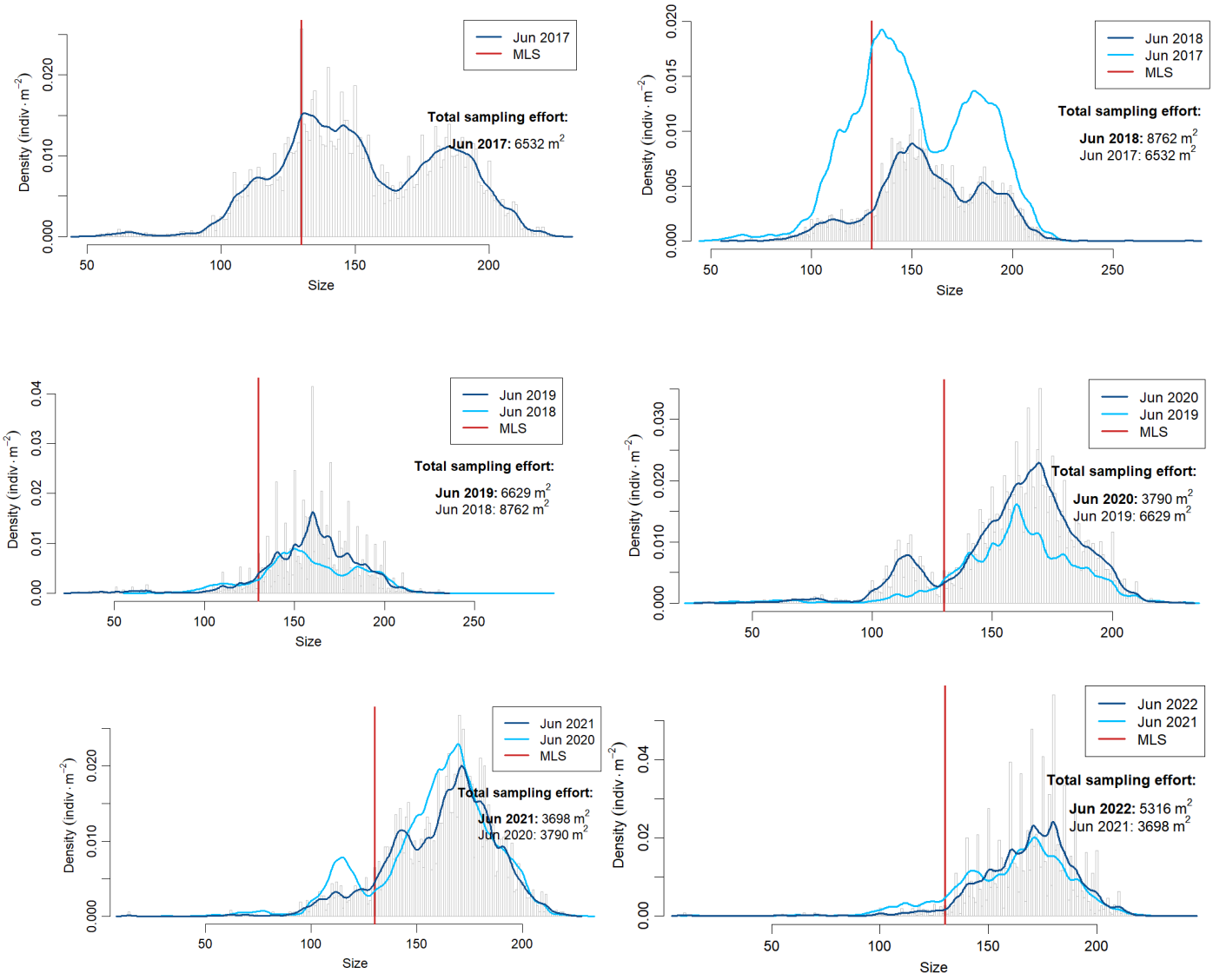

Figure 5 Size distribution of Ensis siliqua in Dundalk Bay in 2017-2022.

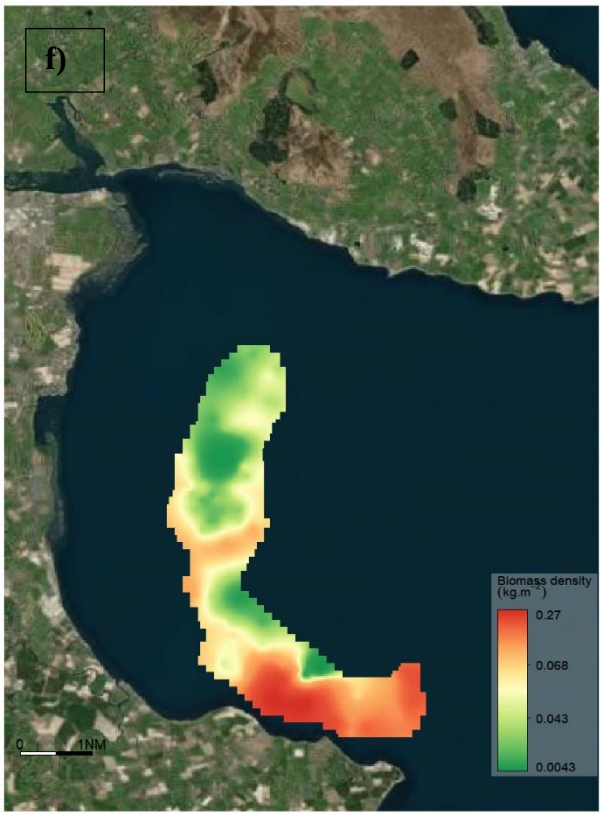

Figure 6 Distribution of biomass of Ensis siliqua in Dundalk Bay in 2022

Monitoring of bivalves caught as bycatch

All bivalves other than *E.siliqua* are considered as bycatch in the survey. This includes the other species of *Ensis* namely *E. magnus* and *E. ensis.* The false (blood) razor clam *Pharus legumen* is also found in high numbers in some areas as are species such as spiny cockle (*Acanthocardia spp) clams (Venus spp). Chamelia spp.* and the rare and long lived Icelandic clam *(Arctica islandica).*

Evidence from razor clam surveys, 2017-2022, shows low abundance (per m^2 and per station surveyed) of bivalves in Dundalk Bay compared to other areas (Figure 7), and an overall decrease since 2017. This compares to an increase in bivalves in areas other than Dundalk Bay (Figure 7).

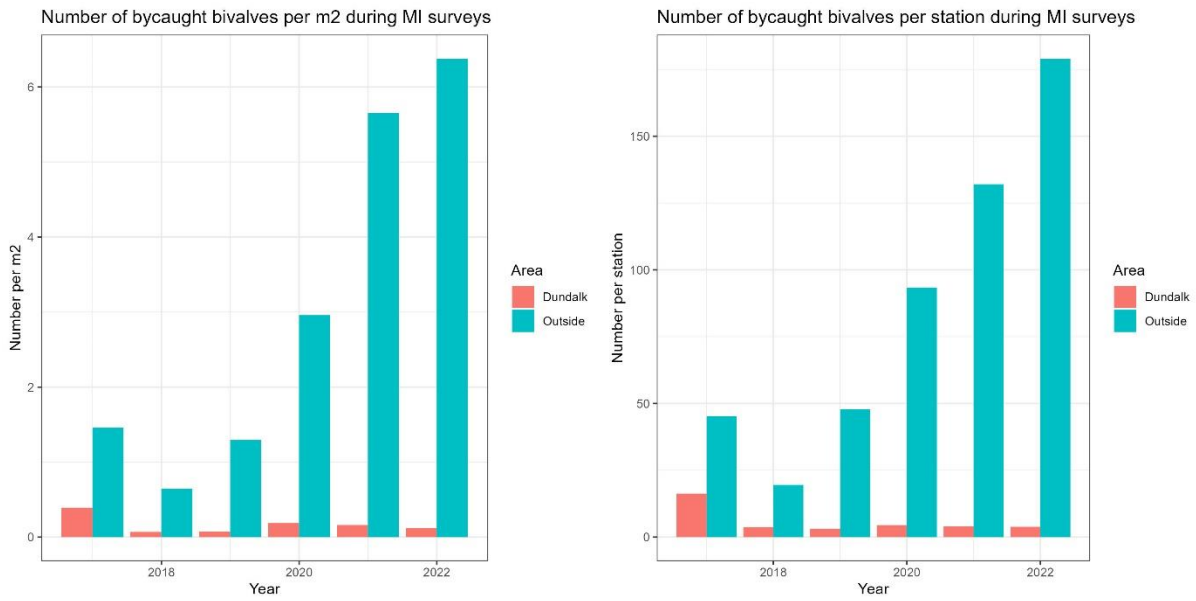

Figure 7 Number of bycaught bivalves per metre squared (a) and number of bycaught bivalves per survey station (b) between 2017- 2021 within Dundalk Bay (red) and outside Dundalk Bay (blue).

Species richness (total number of species recorded) within Dundalk Bay also declined from 2017 to 2019 but was stable from 2019-2022. Richness was higher in other areas (Figure 8). The slow growing long-lived bivalve *Arctica islandica* (Ocean Quahog) was not recorded in Dundalk Bay in MI survey data since 2018 (Figure 9).

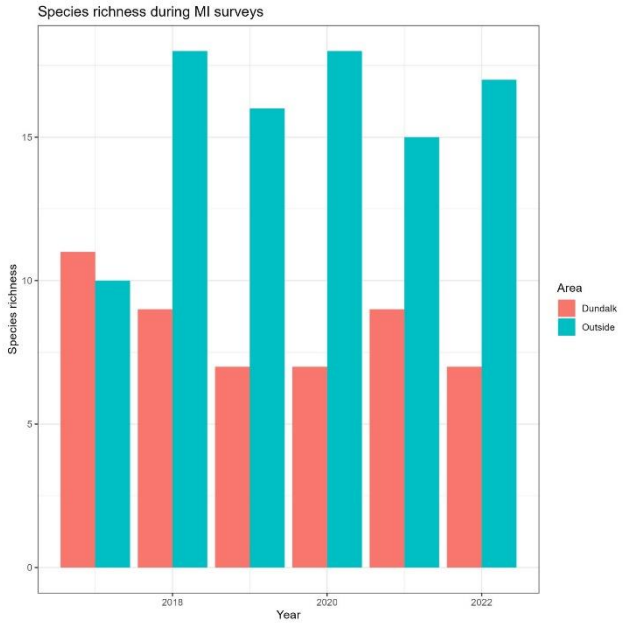

Figure 8 Species richness between 2017 - 2021 within Dundalk Bay (red) and outside Dundalk Bay (blue).

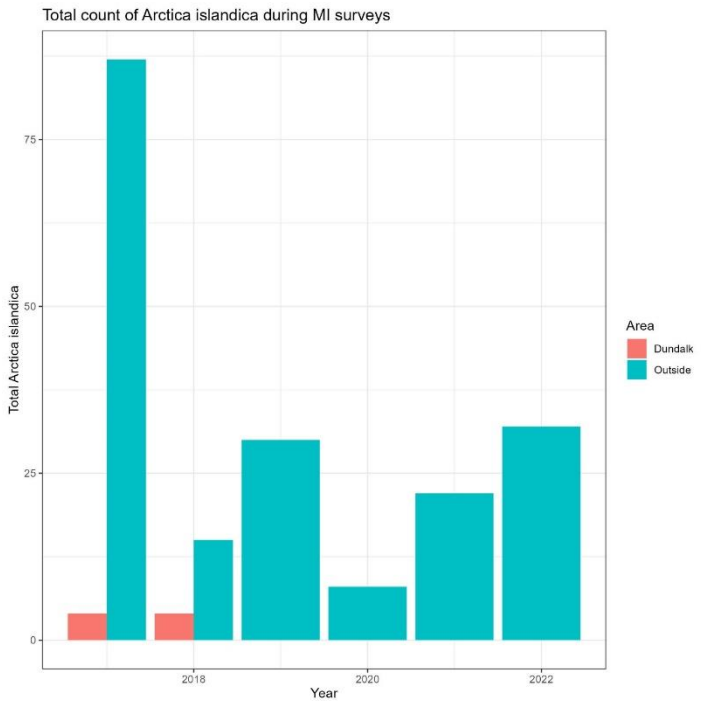

Figure 9 Total number of Arctica islandica within Dundalk Bay (red) and outside Dundalk Bay (blue) between 2017- 2021.

Risk mitigation proposal

Management of razor clams

Measures to manage and limit the total outtake of razor clams in the North Irish Sea are needed to stabilize biomass and landings and increase the average size and grade of razor clam landed by the vessels. These measures include

1. An annual total allowable catch based on the annual survey trends. Advice for July 2022 to May 2023 is that landings should not exceed 636 tonnes from the north Irish Sea from Malahide in the south to Dundalk Bay in the north
2. The fishery will close during the months of June.
3. A weekly individual vessel quota, not exceeding 600kgs, will apply.
4. All other measures in place, including reporting of iVMS data, minimum landing sizes and any restrictions relating to food safety in the production areas, will continue

Spatial restriction on hydraulic dredging within Dundalk Bay

In addition to measures above, which are to manage razor clam stocks for the future stability of the fishery, it is proposed to close an area to razor clam fishing and other towed fishing gears

in Dundalk Bay. The closed area would be bounded by geodesic lines between points of latitude and longitude below and as shown in (Figure 10). Fishing for razor clams, and use of towed bottom contacting fishing gears, in this area would be prohibited for a period of time sufficient to enable potential changes in fauna of the marine communities in the absence of fishing to take effect. The likely time can be informed by biological traits of the characterising species in the habitat. Such changes may or may not occur; if fishing has significantly impacted marine communities then removal of fishing will lead to changes (recovery) of fauna over time. If the current status is unrelated to fishing pressure no changes may be seen. Sufficient time should be given to enable potential recovery.

It is proposed that the closed area would take effect in 2023.

The total area of the proposed closure is 6km^2 and extends from intertidal fine sands (with *Angulus tenuis*) seawards into sub-tidal fine sands (with *Fabulina fabula*) and to slightly deeper very fine sands with *Owenia fusiformis* and *Nephtys hombergii*.

Longitude	**Latitude**
-6.324406	53.93324
-6.302002	53.963986
-6.281266	53.95953
-6.284876	53.932979

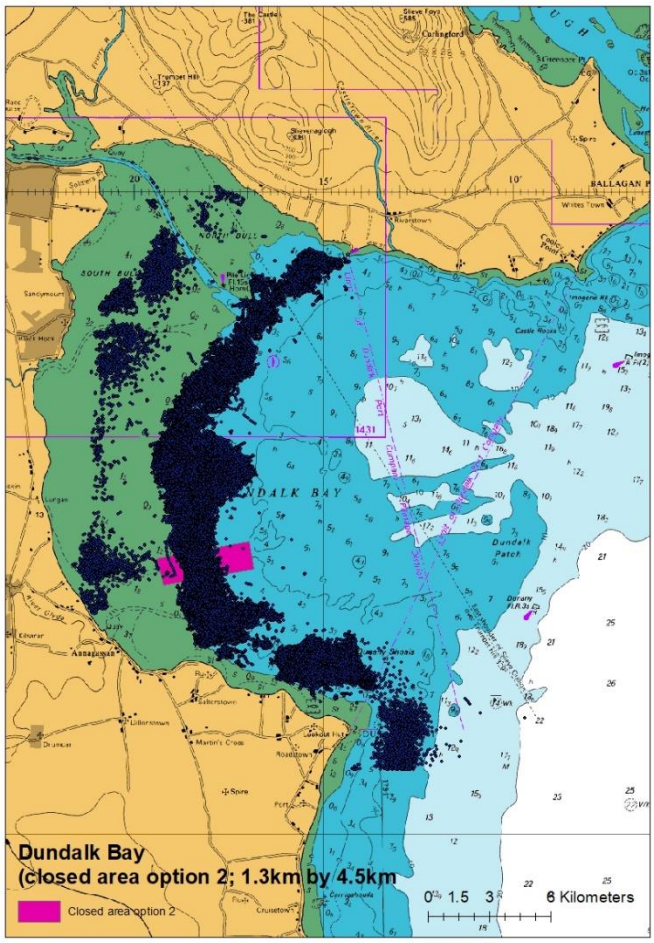

Figure 10 The proposed closed area in relation to the distribution of fishing activity reported from iVMS units on board razor clam and cockle vessels.

Monitoring plan for the Dundalk Bay closed area

In order to assess the effect, if any, that closure of the razor clam fishery will have on seafloor habitats in the closed area an annual monitoring programme will be undertaken within the closed area for the duration of the closure and for comparison in areas that continue to be fished immediately outside of the closed area (Figure 11).

The monitoring programme should be set up so that before and after impacts can be assessed within the closure. Biomass and recruitment of *E. siliqua*, abundance and species richness of deep burrowing bivalves, surficial marine fauna and the numbers and distribution of wintering bivalve feeding birds utilising the closed area will be monitored.

Data derived from the monitoring programme can inform management measures within the entire Dundalk Bay SPA in the future.

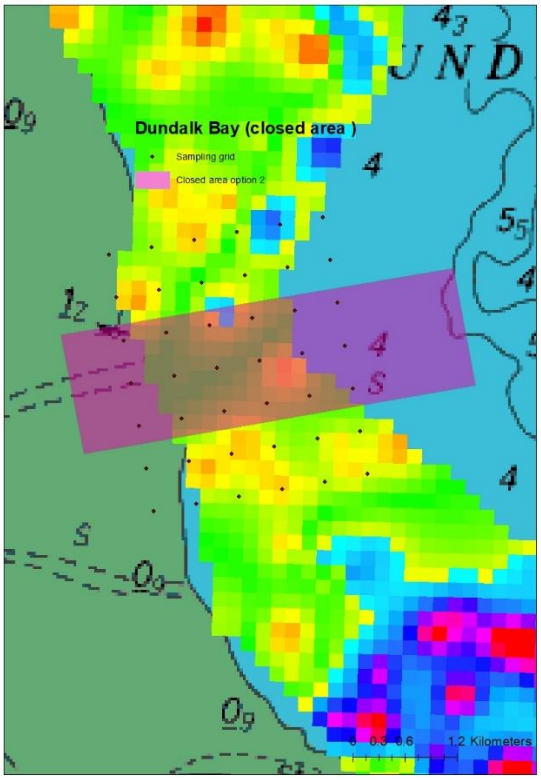

Figure 11. Proposed sampling design (grid of dots) to assess the effects of removing of fishing activity from the closed area (shaded). Gridded fishing activity, derived from iVMS data, is shown.

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