Fisheries Natura Plan for mussel seed (*Mytilus edulis*) in the Irish Sea, 2018-2022

1.0 Legal Basis

The Irish Sea, Seed mussel fishery occurs in areas designated as both Special Areas of Conservation (SACs) and Special Protected Areas (SPAs). This draft fisheries Natura plan relates exclusively to mussel seed fishing in the area over the five year period 2018-2022, subsequent husbandry practices are considered in bay specific assessments.

The Minister for Agriculture, Food and the Marine, as a public authority under regulation 27 of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), must exercise his functions so as to ensure compliance with the requirements of the Habitats Directive, the Birds Directive and the 2011 Regulations.

The European Union (Birds and Natural Habitats) (Sea-Fisheries) Regulations 2013 (SI 290 of 2013) as amended provide for the submission of a draft fisheries Natura plan and the appropriate assessment of a plan to identify where sea-fisheries may be allowed to proceed within appropriate guidelines to address risks to protected species and habitats (Regulation 5 assessment) to enable the fulfilment of the Minister’s obligations.

The Minister for Agriculture, Food and the Marine also must exercise his functions so as to ensure compliance with the requirements of the Common Fisheries Policy (Regulation (EU) No. 1380/2013), with an emphasis on the article 2 objectives of aiming for the environmental sustainability of fisheries in the long term and applying the precautionary approach to fisheries management.

The plan was drafted by the Secretariat of the Bottom Grown Mussel Consultative Forum (BGMCF) in consultation with Bord Iascaigh Mhara (BIM), and industry members of the Bottom Grown Mussel Consultative Forum (persons affected by the designation). It was submitted to the Minister for Agriculture, Food and the Marine in September 2017. The plan was reviewed by the Marine Institute (MI) as part of the Regulation 5 assessment of the plan. The plan was modified and adopted by the Minister in accordance with Regulation 6 of SI 290 of 2013.

The draft plan covers fishing in the period 1 January 2018 to 31 December 2022.

2.0 Rationale for Mitigation

The potential generic ecological effects on the qualifying interests of the sites mentioned relate to the physical and biological effects of dredging shellfish species which overlap with invertebrate communities found in inter-tidal and sub-tidal.
Bird populations may also be affected by these habitat changes and by disturbance caused by fishing vessels and by changes in the availability of prey species as a result of changes in habitat brought about by shellfish production.

Utilising the mussel seed sustainably, to ensure a continuing and prosperous fishery, is in line with Government and EU policy.

3.0 Seed Mussel Fisheries

3.1 Introduction

In the context of this plan “Seed fishing” refers to the subtidal collection of mussel for relaying on aquaculture sites, seed mussel is not suitable for direct human consumption. The plan covers all areas of suitable subtidal substrate for seed mussel fishing within the protected sites under consideration.

The Irish Sea blue mussel seed fishery has been exploited since the late 1960’s, when the Irish Sea Fisheries Board (BIM) provided support to what was considered a sustainable opportunity for the development of bottom growing culture of seed mussel that was re-located to inshore, protected environments where yield would be improved compared to the wild fishery.

The bottom grown mussel industry relies on a consistent settlement of mussel spat to provide seed which is then relayed and on-grown on sheltered inshore and licenced beds. Settlement of mussel seed varies (volume, location & exact time of settlement) annually (Figures 1,2,3). Furthermore, identifying the locations of mussel settlement in the southern Irish Sea is very challenging and all beds are not formally identified in advance of fishing.

Figure 1- Variation in seed mussel bed area 1970-2016
There are two types of natural mussel beds, a ‘permanent mussel bed’ which receives regular (or periodic) spat settlement, and thus contains mussels from a range of age classes; and the second is a ‘seed mussel’ bed – an area in which there is periodic settlement of spat, which may survive a few months or until the following winter but which is then frequently lost or dispersed by winter storms (highly energetic) or predators. As the relayed stocks spawn prior to harvest relayed mussels continue to contribute to the spawning stock within Irish Sea.

The exploitation of these two types of seed beds will have different consequences for the overall mussel population, because while permanent beds can be expected to be a source of larvae, seed mussel beds will not produce larvae, or at least to a much lesser extent, since mussel mortality in these beds is very high before mussels reach reproductive maturity\(^1\). It is thus preferable to exploit these seed beds, rather than permanent mussel beds where possible.

BIM have been undertaking subtidal seed surveys in the Irish Sea since the 1970’s. The historical surveys are the best source of available scientific information on the nature and extent of seed beds in the Irish Sea, these records were examined to assess the assertions that stable “overwintering” beds exist in this area. The data indicates that while seed beds do sometimes overwinter, no currently identified beds consistently overwinter in all years and therefore no currently identified beds can be described as “permanent”.

The absence of “permanent” beds is thought to be due to the highly energetic nature of the Irish Sea when compared with the location of stable beds elsewhere in Europe where they occur in much more sheltered locations, and the level of starfish predation.

Given the dynamic nature of the environment and the type of dredge used, repeated seed surveys of the Irish Sea has found that seed fishing leaves no permanent tracks on the areas fished. And repeated settlements on the same ground as shown in figures 2 and 3 shows fishing activity does not prevent settlement of seed in the same area in the following years.

### 3.2 Spatial Extent

Mussel fishing activity may occur in or adjacent to the following SACs/SPAs. Restrictions apply in some sites as indicated, and fishing may not take place in intertidal areas.

- Long Bank SAC
- Blackwater Bank SAC
- Wicklow Reef SAC (outside the exclusion zone within the SAC)
- Rockabill to Dalkey Island SAC (not in reef habitats)
- The Murrough Wetlands SAC
- Wicklow Head SPA
- Howth Head Coast SPA
- Dundalk Bay SPA

• Skerries Islands SPA
• Ireland’s Eye SPA
• Dalkey Island SPA (not in reef habitats)
• Rockabill SPA (not in reef habitats)
• The Murroughs SPA
• Raven SPA

Mussel seed is targeted in areas of sands, muds, coarse sands and mixed bivalve shell. In sandbank areas dredging does not occur on the tops or slopes of the banks as seed mussel is not found in these areas and the gear is not effective on such grounds. Mobile gear cannot be deployed in rocky or reef areas therefore these areas are not targeted.
Figure 2 Historical spatial extent of seed fishing areas southern Irish Sea 1970-2016
Figure 3 Spatial extent of seed fishing areas southern Irish Sea 1970-2016
3.3 Temporal Extent
Fishing takes place on suitable neap tides (≤7m as predicted in the Llanelli tide tables) subject to seed availability, allocation and suitable weather conditions. Fishing generally takes place in the early spring (2 tides) and autumn (August to December) subject to seed availability. Also a force majeure clause may be initiated and a request made to the Minister through the Bottom Grown Mussel Consultative Forum to have the area opened outside these periods, if the bed is subject to high predation pressure.

Maximum permitted fishing days in a given year is 70 and fishing is only carried out from 6.00 to 18.00.

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<tbody>
<tr>
<td>Total Seed fished (Net)</td>
<td>9496.4</td>
<td>9333.5</td>
<td>10036</td>
<td>2626</td>
<td>5544.5</td>
<td>11519</td>
<td>14910</td>
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<td>Days fished</td>
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<td>50</td>
<td>33</td>
<td>14</td>
<td>29</td>
<td>30</td>
<td>41</td>
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<tr>
<td>Vessels</td>
<td>19</td>
<td>23</td>
<td>21</td>
<td>12</td>
<td>18</td>
<td>25</td>
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Table 1 – Seed fishing statistics (tonnes) NI and ROI waters 2010-2016

3.4 Vessel Numbers
The number of permitted vessels in a given year is at a maximum level of 35 however not all vessels participate every year – Please see Table 1 above.

Previously these vessels were exclusively licenced in IE or NI and were subject to a range of management requirements outlined in section 4.0 below. However on 27 October 2016, the Supreme Court issued a judgment in a case taken by a number of mussel seed fishermen (Barlow & ors -v- Minister for Agriculture, Food and the Marine & ors [2016] IESC 62, 27th October 2016). In the judgment, the Supreme Court found that fishing by Northern Ireland boats within the 0 to 6 nautical mile zone of the territorial waters of the State is not permitted by law.

In light of the Supreme Court’s judgment, authorisations for the 2017 mussel seed fishery were only provided to eligible Irish sea-fishing boats nominated to fish mussel seed allocations on behalf of IE aquacultures sites and to eligible operators previously facilitated under the administrative arrangements to relay at Lough Foyle on an interim basis.

3.5 Gear Type

Seed Surveys
Seed surveys seek to identify seed areas in advance of the fishing season. Seed may not be fished outside the permitted tides and all surveys conducted by industry members must be notified in advance to the SFPA. If seed is found this is also reported to the SFPA.

Surveys are conducted by industry members using ground discrimination software onboard the vessels and commercial fishing equipment to “ground truth” results. Surveys are generally conducted on 1-2 available tides in advance of the defined opening periods in May and August. Surveys will only be conducted in areas of suitable substrate.
BIM surveys are conducted from May to September (inclusive) using both a “light” and “heavy “box dredge. On the light dredge the chaffing outer lining is 70mm mesh double and the inner 60 mm. For the “heavy” one, the inner lining is 35 mm mesh size; the belly is 70 mm with dollies. Both dredges are 1 m wide equipped with some chain at the back of the bag. A 14 mm combination rope is used for towing and it is connected to the dredge with 4 meters of chain.

BIM surveying for the location of these beds is done by acoustic means using appropriate echo-sounders and by subsequent ground truthing using a small sample dredge.

Seed survey reports are published on the BIM website as they become available.

Given the large areas of the fishery and the ephemeral nature of the resource not all beds are identified by a formal survey in advance of fishing. Beds may be discovered and exploited during the fishing season by industry members, however all seed fishing locations are reported via log book and SMS returns as per the management measures discussed in section 4.0 below.

**Harvesting**

Mussels are harvested by industry members in compliance with the management measures presented in section 4.0 below. Mussel seed fishing is conducted using a variety of equipment types. By far the most commonly used dredge is the modified Dutch design.

Depending on size, vessels deploy four dredges at a time. The dredge is composed of a fixed bar (of between 2 and 4 meters in length, the bar is round and without teeth) and a frame with a net bag attached, which is 2-3 meters in length to retain the seed mussel catches. The dredge is designed to skim the surface of the substrate and separate mussels from the underlying sediment. This mud bar in effect ‘peels’ the overlying seed mussel ‘mat’ away from the underlying substrate and in doing so removes the mussel seed which is caught in a bag which follows the bar. The bottom part of the bag is made up of either a chain link matrix or a nylon mesh. The upper part of the bag is made of nylon mesh. In the case where a chain link matrix is used on the lower part of the bag it is common practice for a rubber mat or rope dollies (bits of chafed ropes) to be attached to the belly of the dredge to minimize disturbance of the substrate. The dredge is towed with a steel cable. The length of this cable during fishing operations is usually three times the water column depth, although this varies according to the speed of the current and the seed mussel bed type.

### 4.0 Management Measures

The fishing of seed mussel and the operation of mussel dredgers is controlled primarily by the following legislation: the Sea-Fisheries and Maritime Jurisdiction Act 2006 (No 8 of 2006); the Mussel Seed (Fishing) Regulations 2006 (S.I. No. 311 of 2006); the Molluscan Shellfish (Conservation of Stocks) Regulations 2006 (S.I. No. 345 of 2006); the European Communities (Health of Aquaculture Animals and Products) Regulations 2008 (S.I. No. 261 of 2008); the European Communities (Natural Habitats and Birds) (Sea-fisheries) Regulations 2013 (S.I. No. 290 of 2013); Fisheries Natura Declaration No 2 of 2018 (Mussel Fishing).

Regulations are made annually under the Sea-Fisheries and Maritime Jurisdiction Act 2006 to allow for the fishing of mussel seed for defined periods.
Working from this legislative base and from a fishery conservation point of view, and in the interests of minimising any possible adverse environmental impact, the following are the general terms and conditions that will apply to all vessels involved in the sub-tidal fishery in the areas under assessment 2018-2022;

Mussel fishing will not be permitted within the sensitive reef habitat of Wicklow Reef SAC at any time, that is, within the following co-ordinates:

- Latitude 52°59.1600’ N, Longitude 005°57.6960’ W through
- Latitude 52°57.5160’ N, Longitude 005°55.5960’ W through
- Latitude 52°57.5160’ N, Longitude 005°58.2660’ W through
- Latitude 52°58.6260’ N, Longitude 005°59.1360’ W to
- Latitude 52°59.1600’ N, Longitude 005°57.6960’ W

To further protect the reef habitat of Wicklow Reef SAC, a buffer zone shall operate around the above excluded area. Vessels wishing to fish mussels within the buffer zone but outside the excluded area shall be required to have an EU Vessel Monitoring System (‘Blue box’) on board and transmit data every 5 minutes when entering the buffer zone. The buffer zone shall be defined by the following coordinates, which enclose the excluded area:

- Latitude 52°59.3000’ N, Longitude 005°59.4000’ W through
- Latitude 52°59.3000’ N, Longitude 005°55.3000’ W through
- Latitude 52°56.5000’ N, Longitude 005°55.3000’ W through
- Latitude 52°56.5000’ N, Longitude 005°59.4000’ W to
- Latitude 52°59.3000’ N, Longitude 005°59.4000’ W

Surveys will be conducted by BIM and by industry members following notification to the SFPA. In conjunction with industry members and BIM, the BGMCF advises the Department on decisions to open or close seed mussel beds on conservation grounds, i.e. if the seed is too small or fragile to transport. Mortality of seed would prevent the relayed stock contributing to the spawning stock in the Irish Sea.

All vessels participating in the fishery will hold a Mussel Seed Authorisation particular to that vessel. The vessel must have the correct authorisations and licences on board at all times of operation.

Prior to the issuing of seed allocations, hull markings and tracking systems will be certified by an authorised officer. All vessels will have each side of the stowage hold marked in 0.5m segments from the bottom to the top; 0m being the bottom or floor of the hold to facilitate estimation of catches on-board.

Operators will nominate for the Department’s approval which vessels will be fishing the seed allocation on their behalf. The vessels will be registered and licensed to fish mussel seed and the authorisations to fish and move seed are linked to the aquaculture operators.

Mussel vessels over 15m in length are required to have the EU Vessel Monitoring System (‘Blue box’). Their position is monitored by the Navy every two hours as part of the normal fishing regulations. In addition any vessel fishing seed mussels is required to have a functioning tracking system (which is a global positioning system that via a modem relays vessel speed heading and
position). This system allows the vessels to be monitored and tracked on a more continuous basis and allows detailed tracks and locations to be recorded.

In compliance with EU legislation all vessels above 24 m are fitted with an Automatic Identification System (AIS). This is an autonomous and continuous vessel identification and monitoring system used for maritime safety and security which allows vessels to electronically exchange with other nearby ships and authorities ashore the vessel identification data, position, course and speed. Member States may use AIS data for monitoring and control purposes.

All vessels fishing seed mussels will maintain log books as required. The Master will inform a Sea Fisheries officer at least 4 hours in advance of their intention to fish for mussel seed and give the name of the holder of the authorisation on whose behalf he or she intends to fish. The Master will keep a record of the licensed site or place to which the mussel seed is transplanted, the amount of seed transplanted and the date of transplantation.

Any authorised vessel will inform a local Sea Fisheries Protection Officer 2 (two) hours in advance of his intention to re-lay mussel seed and will facilitate an on-board inspection and calculation of the quantity of seed carried if required.

All seed fished must be notified via SMS to 00353 87 9885116 as part of a stock tracking system prior to boats leaving the seed fishing areas. The phone number of the skipper must be notified to the Department prior to the fishing season and caller ID must be enabled on the skipper’s phone.

SMS’s must contain;

1. The Vessel Name
2. The source of the seed
3. The destination of the seed including aquaculture licence number or plot number and bay
4. Gross Tonnage
5. Net Tonnage
6. Authorisation number

Operators recognise that under the Health of Aquaculture Animals, S.I. No. 261 of 2008 European Communities (Health of Aquaculture Animals and Products) Regulations 2008, the local sea fishery protection officer has the authority to prevent the movement of animals if they feel there will be heavy mortality.

Fishing will only be take place between the hours of 06.00 and 18.00

Fishing will only take place on defined tides.