Screening for Appropriate Assessment

Fishery Natura Plan for Seed Mussel (2024-2028)

Castlemaine Harbour SAC and SPA

Marine Institute

Rinville

Oranmore, Co. Galway

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Preface and legal basis

The seed mussel industry in Castlemaine Harbour submitted a fishery natura plan (FNP) for seed mussel to DAFM in Feb 2024 in accordance with Reg 3(1) of SI 290/2013. The plan was prepared 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.

In accordance with Reg. 4(1) of SI 290/2013 the Minister, through DAFM, requested the Marine Institute to carry out a screening for appropriate assessment.

Summary of the Fishery Natura Plan for seed mussel

The main provisions set out in the FNP are as follows:

- The fishery is for seed mussel; “seed fishing” refers to the sub-tidal and inter-tidal collection of mussels for relaying on aquaculture sites and not for sale for human consumption.
- Mussel seed beds do not develop each year. There is a lot of spatial temporal variability in where and when they develop. Typically, in any year the area fished is much smaller than the entire extent that fishing might have taken place historically. The areas to be fished will be approved annually through the fishery licencing process. The fishery typically occurs in Autumn.
- Seed mussel is fished from the sub-tidal seed areas identified in surveys under taken by BIM in collaboration with the industry. The seed is either transferred for hardening to an intertidal fishery order nursery site in Castlemaine Hbr for 6 to 12 months, placed directly onto subtidal growing areas in a fishery order area within the Harbour or directly onto aquaculture sites within the harbour.
- If seed is placed on the nursery area it is subsequently transferred to sub-tidal plots and licenced sites for on growing until harvest. Generally, seed is moved to the subtidal between June and August but the duration and timing of stock movements from the nursery area to the subtidal is dependent on a number of factors such as market conditions, growth rates, and the size of the original seed.
- The rotation of fishing and subsequent husbandry is
    - Seed are fished from sub-tidal areas at the mouth of Castlemaine Hbr in the autumn.
    - Seed may be placed in other sub-tidal areas inside the Harbour for 2-3 years at density of 35-40t per hectare
    - Seed may be placed in intertidal areas inside the Harbour for 6-12 months. Mussel cover is 12-42% in the relay area which is a but a proportion of a larger intertidal area
    - Harvesting for sale from sub-tidal areas is from late Sept to mid March

- Fishing takes place on suitable neap tides (≤7m as predicted in the Llanelli tide tables) subject to seed availability, allocation and suitable weather conditions.
- The FNP requests that the Castlemaine Fishery be managed in line with seed fisheries elsewhere on the Island of Ireland, i.e. a spring and autumn fishery subject to seed availability.
- Also, in line with the management of other seed areas on the Island, the 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 at an earlier date, if the bed is subject to high predation pressure.
- Maximum permitted fishing days in a given year will be 70 and fishing is conducted only from 6.00 to 18.00hrs
- Currently there are 5-6 large vessels using 2-4 single dredges each that could fish seed mussel. This may increase if infrastructure and funding allows.
- Between 9-10 small vessels, using single handheld dredges, may also access the seed beds. This may increase if infrastructure and funding allows.
- On larger vessels the dredges are 2-4m wide with a flat bar that is designed to skim the surface of the substrate and separate mussel seed from the underlying substrate and remove the mussel seed.
- The volume of seed harvested will be based on annual survey estimates and a harvest control rule limiting harvests to 66% of the surveyed biomass. Mussels also occur in other areas that are not suitable for fishing.
- The plan proposes also that seed mussel can be imported from the Irish Sea in years where there is limited or no availability of seed in Castlemaine
- The plan proposes that seed collected on rope anywhere in the country could be re-laid into Castlemaine Hbr.
- Predator control: There is a green crab predator control programme associated with the sub-tidal plots, generally focusing on the channels entering the inner harbour. Up to 10 boats using up to 100 pots each are involved in the potting of the area for green crab, using waste from white fish processing establishments as bait.

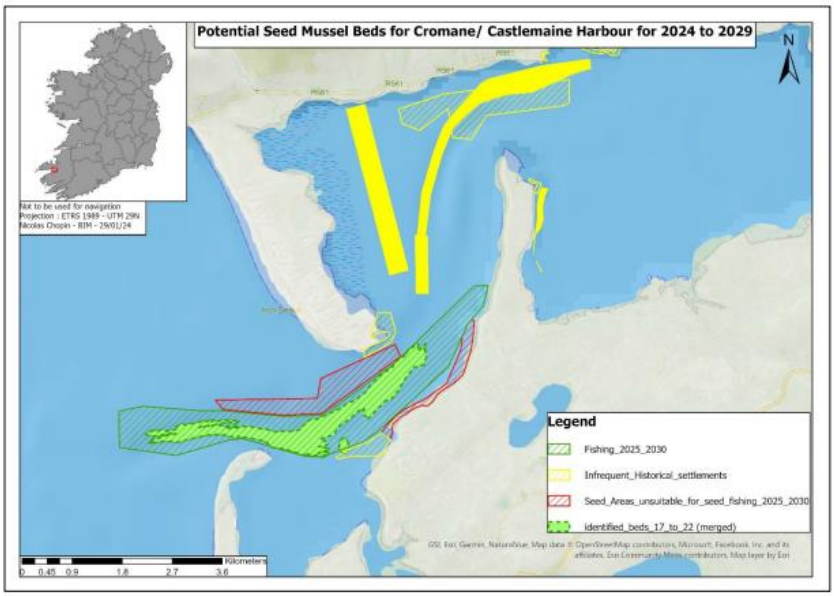

Figure 1. Suitable and historical seed mussel bed's location in Castlemaine Harbour. The yellow polygons are sub-tidal relay areas.

The conservation objectives for Castlemaine Harbour SAC and SPA

Castlemaine Harbour is designated as an SAC and SPA. SAC qualifying interests include estuaries (Habitat 1130), mud and sand flats not covered with water at low tide (Habitat 1140) and a number of coastal and lagoon habitats as listed below. The SPA is designated for 16 species of intertidal wading bird or other bird species and for the wetland habitats that support these species.

Special Area of Conservation (SAC site code IE 000343)

The following are the qualifying interest(s) in the SAC

- 1095 Sea lamprey (*Petromyzon marinus*)
- 1099 River lamprey (*Lampetra fluviatilis*)
- 1106 Salmon (*Salmo salar*)
- 1130 Estuaries with the community types outlined in Table 1, Figure 2
- 1140 Mudflats and sandflats not covered by seawater at low tide with the community types outlined in Table 1, Figure 2
- 1210 Annual vegetation of drift lines
- 1220 Perennial vegetation of stony banks
- 1310 Salicornia and other annuals colonizing mud and sand
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 1355 Otter (*Lutra lutra*)
- 1395 Petalwort (*Petalophyllum ralfsii*)

- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 2170 Dunes with *Salix repens* ssp. *argentea* (*Salix arenariae*)
- 2190 Humid dune slacks
- 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno Padion*, *Alnion incanae*, *Salicion albae*)

The distribution of inter-tidal biological communities within Castlemaine Harbour is influenced by exposure levels and sediment types. In addition, riverine inputs have a strong influence on the distribution of estuarine communities within the Harbour. These include the river channels of the Maine to the north and the Laune to the south, within the main harbour, and the Caragh River, which drains into Rossbehy Creek.

Table 1. Marine communities within habitat 1140 (Mudflat and sandflat not covered by seawater at low tide) and 1130 (Estuaries) in Castlemaine Harbour (NPWS 2011a)

Habitat code	No.	Marine community	Characterising species	Area (Hectares)
1140	1	Intertidal muddy fine sand community complex.	*Tharyx sp A, Polydora cornuta, Gammarus locusta, Macoma balthica, Hediste diversicolor, Corophium volutator, Heterochaeta costata, Pygospio elegans, Crangon crangon*	*554*
1140/1130	2	Fine to muddy fine sand with polychaetes community complex	*Pygospio elegans, Eteone longa, Scoloplos armiger, Spio martinensis, Macoma balthica, Capitella capitata, Angulus tenuis*	*3555*
1140/1130	3	Intertidal sand with *Nephtys cirrosa*	*Nephtys cirrosa, Bathypoeia pilosa, Scolelepis squamata*	*861*
1140/1130	4	*Zostera* dominated community	*Zostera sp.*	*234*
1130	5	Mixed sediment community complex	*Mytilus edulis, Corophium acherusicum, Caprella acanthifera, Pholoe synophthalmica, Nemertea indet, Pomatoceros lamarckii, Microprotopus maculatus, Abludomelita obtusata, Amphipholis squamata, Jassa pusilla, Eumida sanguinea, Nephtys cirrosa, Ammothella longipes, Angulis tenuis, Gastrosaccus spinifer*	*588*

1140	6	Fine sand with *Donax vittatus* and polychaetes community	*Donnax vittatus, Spiophanes bombyx, Magelona mirabilis etc.*	*5*

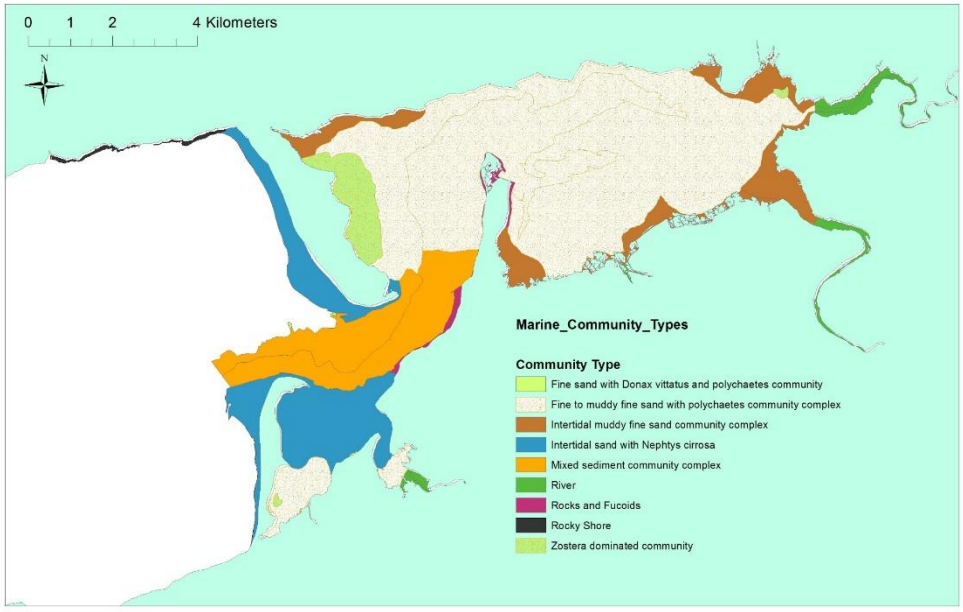

Figure 2. Distribution of inter-tidal and subtidal benthic marine communities in Castlemaine Harbour.

Conservation objectives for the SAC

NPWS (2011a) specify the conservation objectives for all qualifying interests of the SAC.

In the case of marine communities within Habitats 1130 and 1140, which spatially overlap with the seed mussel fishery, the important attributes that must be conserved are community area and community structure and function.

- Habitat area: The likely area occupied by the constituent communities of Habitats 1130 and 1140 should be stable or increasing with overall target areas of 5696ha and 4287ha respectively
- Habitat structure and function: The communities of habitats 1130 and 1140 should be stable in distribution and species composition (as outlined in Table 2).

Licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated (NPWS 2011a). Disturbance is defined as activities that result in change to habitat area, structure or function. Disturbance may be continuous or episodic or temporary or occur at a given frequency. Such

patterns of disturbance may enable habitats to recover between disturbance events and be in favourable conservation status generally. In these cases more than 15% of the habitat could be temporarily disturbed but no cumulative effects may occur due to recovery between disturbing events. These situations should be assessed case by case having regard to the sensitivity of the receiving environment and the nature of the disturbing activity.

Conservation Interests in the SPA

Special Conservation Interests for Castlemaine Harbour Special Protection Area (site code IE 4029) are:

- A001 Red-throated Diver (*Gavia stellata*)
- A017 Cormorant (*Phalacrocorax carbo*)
- A046 Light-bellied Brent Goose (*Branta bernicla hrota*)
- A050 Wigeon (*Anas penelope*)
- A053 Mallard (*Anas platyrhynchos*)
- A054 Pintail (*Anas acuta*)
- A062 Scaup (*Aythya marila*)
- A065 Common Scoter (*Melanitta nigra*)
- A130 Oystercatcher (*Haematopus ostralegus*)
- A137 Ringed Plover (*Charadrius hiaticula*)
- A144 Sanderling (*Calidris alba*)
- A157 Bar-tailed Godwit (*Limosa lapponica*)
- A162 Redshank (*Tringa totanus*)
- A164 Greenshank (*Tringa nebularia*)
- A169 Turnstone (*Arenaria interpres*)
- A346 Chough (*Pyrrhocorax pyrrhocorax*)
- A999 Wetlands & Waterbirds

Conservation Objectives for the Special Protection Area

NPWS (2011b) provide a description of the conservation objectives and targets for species of waterbirds and the wetlands which support them.

1. Population trends and Distribution, as measured by the % change in population size and the numbers of birds and range of areas used, should be stable or increasing. In particular populations would be classified as being in unfavourable status if they declined by more than 25% in the most recent 5-year period.
2. The area of subtidal, intertidal and supratidal habitats should be stable or increasing and not less than the areas of 7471, 3983 & 312 hectares for sub-tidal, intertidal and supratidal habitats, respectively other than that occurring from natural patterns of variation.

Screening for appropriate assessment

A screening assessment is an initial evaluation of the possible impacts that activities may have on the qualifying interests in the SAC and SPA. The screening process is a filter, which may lead to exclusion of certain activities or qualifying interests from further assessment, thereby simplifying the subsequent assessment process. Screening is a conservative filter that minimises the risk of false negatives.

In the case of benthic habitats and communities in the SAC screening of the qualifying interests against the proposed activities is based primarily on spatial overlap i.e. if the qualifying interests overlap spatially with the proposed activities then the possibility of effects is not screened out. Conversely, if there is no spatial overlap and/or no identified linkage between the activity and the receptor (the ecological feature), then the possibility of effects is discounted, the feature is screened out and appropriate assessment is not recommended.

In the case of species of conservation interest (birds) in the SPA screening is based on spatial overlap and also on possible direct and indirect effects that may be caused by the activity.

The following effects could result from the seed mussel fishery or from in combination effects with other fishing and aquaculture activities

- The proposed activities overlap with a number of marine benthic communities (Figure 3).
- Mussel dredging and relay may cause changes to habitat distribution, structure and function through the removal and relay of mussels and abrasion pressure caused by mussel dredges.
- Changes to habitat structure and function may have effects on bird species in changing the availability of prey resources for birds and the proposed activity may cause disturbance of birds and reduce the quality of the site for bird populations. In particular, seed mussel, which is a food source the diving seaduck (Common Scoter) will be removed or translocated. This may change the availability of food and the quality of foraging habitats for common scoter.
- The activities may also overlap with habitats for salmon, otter and lamprey or may result in by-catch or disturbance to these species.
- Vessels may cause disturbance to flocks of resting or foraging seabirds.
- Other sectors present in the area include aquaculture of oysters, mussels and clams and these could have in combination effects with the seed mussel fishery.

The results of the screening assessment based on the above criteria is summarised in Table 2

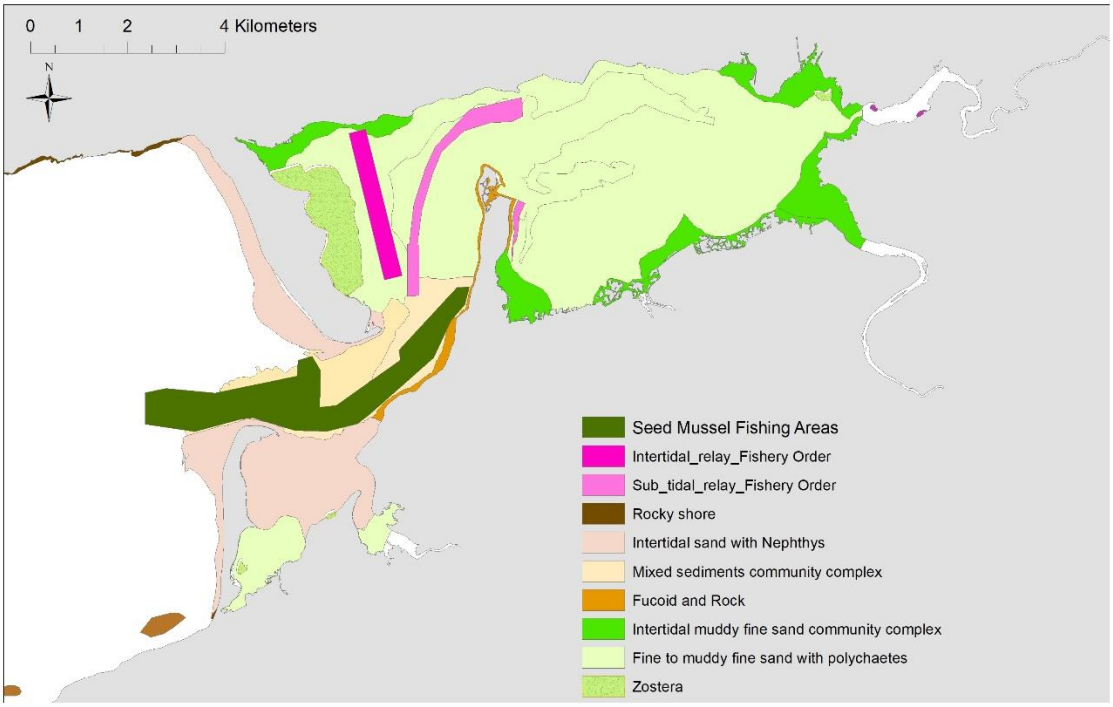

Figure 3. Spatial overlap of proposed fishing for seed mussel and marine communities in Castlemaine Harbour.

Table 2. Screening assessment for qualifying interests and species of special conservation interest in Castlemaine Harbour SAC and SPA with respect to the proposed seed mussel fishery.

Qualifying Interests	Annex qualifying interest	Is appropriate assessment recommended?	Justification	
Petalophyllum ralfsii (Petalwort)	Annex II	No	No spatial overlap	No effects linkage between activity and receptor identified
Salmo salar (Atlantic Salmon)	Annex II	**Yes**	Appropriate assessment recommended	Effects linkage possible
Petromyzon marinus (Sea Lamprey)	Annex II	**Yes**	Appropriate assessment recommended	Effects linkage possible
Lampetra fluviatilis (River Lamprey)	Annex II	**Yes**	Appropriate assessment recommended	Effects linkage possible
Lutra lutra (Otter)	Annex II, IV	**Yes**	Appropriate assessment recommended	Effects linkage possible
Fixed coastal dunes with herbaceous vegetation (grey dunes)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Mediterranean salt meadows (*Juncetalia maritimi*)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified

Dunes with *Salix repens ssp.argentea (Salix arenariae*)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Embryonic shifting dunes	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Annual vegetation of drift lines	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Spartina swards (*Spartinion maritimae*)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Estuaries	Annex I	**Yes**	Further assessment required	Effects linkage possible
Perennial vegetation of stony banks	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Salicornia and other annuals colonizing mud and sand	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Humid dune slacks	Annex I	No	No spatial overlap	No effects linkage between activity and receptor identified
Mudflats and sandflats not covered by seawater at low tide	Annex I	**Yes**	Spatial overlap/effects possible further assessment required	Effects linkage possible
Red-throated Diver	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Cormorant	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Light-bellied Brent Goose	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Wigeon	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Mallard	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Pintail	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Scaup	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Common Scoter	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible

Oystercatcher	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Ringed Plover	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Sanderling	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Bar-tailed Godwit	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Redshank	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Greenshank	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Turnstone	SCI in SPA	**Yes**	Appropriate assessment recommended	Effects linkage possible
Chough	SCI in SPA	No	No spatial overlap	No effects linkage between activity and receptor identified
Wetland and Waterbirds	79/409/EEC Wetland & Waterbirds protection	**Yes**	Appropriate assessment recommended	Effects linkage possible

Conclusions and recommendations

1. The proposed fishery for seed mussel could affect a number of marine habitats and species which are designated as conservation features in Castlemaine Harbour.
2. It is recommended that the features listed in Table 2 above are subject to appropriate assessment before any decision to licence the fishery is taken.

References

NPWS (2011a). Castlemaine Harbour (site code: 343). Conservation objectives supporting document - marine habitats Version 2.

NPWS (2011b). Castlemaine Harbour SPA (site 4029). Conservation Objectives supporting document. NPWS, Version 2