Appropriate Assessment Report of Aquaculture in: Lower River Shannon SAC (Site code: 2165) and River Shannon and Fergus Estuaries SPA (Site Code: 4077)

Marine Institute

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Preface

In Ireland, the implementation of the Habitats Directive in relation to aquaculture and certain fisheries activities that occur within designated sites is achieved through Article 6(3) of the Directive whereby such activities, which are licenced by the Department of Agriculture, Food and the Marine (DAFM) or Department of Communications, Energy and Natural Resources (DCENR), are viewed as plans and projects and are therefore subject to Appropriate Assessment (AA). The Habitats Directive is transposed in Ireland in the European Communities (Birds and Natural Habitats) Regulations 2011. Appropriate assessments are currently carried out against the conservation objectives (COs), and more specifically on the version of the COs that are available at the time of the Assessment, for designated ecological features, within the site, as defined by the National Parks and Wildlife Service (NPWS). NPWS are the competent authority for the management of Natura 2000 sites in Ireland. Obviously, aquaculture and fishing operations existed in coastal areas prior to the designation of such areas under the Directives. Ireland is thereby assessing both existing and proposed aquaculture and fishing activities in such sites. This is an incremental process, as agreed with the EU Commission in 2009, and will eventually cover all fishing and aquaculture activities in all Natura 2000 sites.

The process of identifying existing and proposed activities and submitting these for assessment is, in the case of fisheries, outlined in SI 346/2009. Here, the industry or the Minister may bring forward fishing proposals or plans which become subject to assessment. These so called Fishery Natura Plans (FNPs) may simply be descriptions of existing activities or may also include modifications to activities that mitigate, prior to the assessment, perceived effects to the ecology of a designated feature in the site. In the case of aquaculture DAMF receives applications to undertake such activity and submits a set of applications, at a defined point in time, for assessment. The FNPs and aquaculture applications are then subject to AA. If the AA finds that significant effects of such activities cannot be discounted the plans or projects will need to be mitigated further if such activities are to continue. The AA is not explicit on how this mitigation should be achieved but rather the degree of mitigation required. In effect, therefore, the AA is a 'point in time' assessment of aquaculture and fishing activities to determine if they are consistent with COs for designated features within a Natura site and thereby compliant with the Directives.

This report is structured such that the summary, conclusions and recommendations from the assessments of fisheries and aquaculture activities in Natura 2000 features for the Lower River Shannon SAC (Site code: 2165) and River Shannon and Fergus Estuaries SPA (Site Code: 4077) are provided in the first part of this report while the full assessments on the SAC and the SPA are provided in Annex 1 and 2, respectively.

Summary SAC Considerations

The SAC

Lower River Shannon is designated as a Special Area of Conservation (SAC) under the Habitats Directive. The marine area is designated for the Annex I habitats Sandbanks which are slightly covered by sea water all the time (1110), Estuaries (1130), Mudflats and sandflats not covered by seawater at low tide (1140), Coastal lagoons (1150), Large shallow inlets and bays (1160) and Reefs (1170). The bay supports a variety of sub-tidal and intertidal sedimentary and reef habitats. The area is also designated for marine mammals (bottlenose dolphin, otter), freshwater fish (Sea, Brook, and River lampreys), the freshwater mussel and the Atlantic salmon (only in freshwater). Conservation Objectives for these habitats and species were identified by NPWS (2012a) and relate to the requirement to maintain habitat distribution, structure and function, as defined by characterizing (dominant) species in these habitats. For designated species the objective is to maintain various attributes of the populations including population size, cohort structure and the distribution of the species in the SAC. Guidance on the conservation objectives is provided by NPWS (2012b).

Activities in the SAC

Aquaculture is confined to the production of shellfish (Oysters, Mussels). The main aquaculture activity is oyster culture, which involves the culture of the native (Ostrea edulis) and pacific oyster (Crassostrea gigas) on trestles in intertidal areas and subtidally on the seafloor. Mussel culture includes subtidal suspended (longlines) and bottom culture.

The profile of the aquaculture industry in the Lower River Shannon SAC, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the Marine Institute for assessment in August 2013.

The appropriate assessment process

The function of an appropriate assessment and risk assessment is to determine if the ongoing and proposed aquaculture and fisheries activities are consistent with the Conservation Objectives for the Natura site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities. NPWS (2012b) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long-term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities. For the practical purpose of management of sedimentary habitats a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

The appropriate assessment and risk assessment process is divided into a number of stages consisting of a preliminary risk identification, and subsequent assessment (allied with mitigation measures if necessary) which are covered in this report. The first stage of the AA process is an initial screening wherein activities which cannot have, because they do not spatially overlap with a given habitat or have a clear pathway for interaction, any impact on the conservation features and are therefore excluded from further consideration. The next phase is the Natura Impact Statement (NIS) where interactions (or risk of) are identified. Further to this, an assessment on the significance of the likely interactions between activities and conservation features is conducted. Mitigation measures (if necessary) will be introduced in situations where the risk of significant disturbance is identified. In situations where there is no obvious mitigation to reduce the risk of significant impact, it is advised that caution should be applied in licencing decisions. Overall, the Appropriate Assessment is both

the process and the assessment undertaken by the competent authority to effectively validate this Screening Report and/or NIS. It is important to note that the screening process is considered conservative, in that other activities which may overlap with habitats but which may have very benign effects are retained for full assessment. In the case or risk assessments consequence and likelihood of the consequence occurring are scored categorically as separate components of risk. Risk scores are used to indicate the requirement for mitigation.

Data supports

Distribution of habitats and species population data are provided by NPWS. Scientific reports on the potential effects of various activities on habitats and species have been compiled by the MI and provide the evidence base for the findings. The data supporting the assessment of individual activities vary and provides for varying degrees of confidence in the findings.

Findings

In the Lower Shannon River SAC aquaculture focuses primarily on shellfish species (mussels, oysters). Oysters are the predominant shellfish species cultured within the SAC, mussels are produced at a lower scale; while Scallops, although licensed, are not currently produced in the area. Based upon this and the information provided in the aquaculture profiling (Section 5), the likely interaction between this aquaculture and conservation features (habitats and species) of the site were considered.

An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration by virtue of the fact that no spatial overlap of the culture activities was expected to occur. The habitats and species excluded from further consideration were Freshwater Pearl Mussel Margaritifera margaritifera (1029), Sea Lamprey Petromyzon marinus (1095), Brook Lamprey Lampetra planeri (1096), River Lamprey Lampetra fluviatilis (1099), Atlantic Salmon Salmo salar (only in fresh water)(1106), Sandbanks which are slightly covered by sea water all the time (1110), Coastal lagoons (1150), Perennial vegetation of stony banks (1220), Vegetated sea cliffs of the Atlantic and Baltic coasts (1230), Salicornia and other annuals colonizing mud and sand (1310), Atlantic salt meadows (Glauco-Puccinellietalia maritimae)(1330), Mediterranean salt meadows (Juncetalia maritimi)(1410), Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260), Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410) and 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae).

Summary SPA Considerations

The SPA

This report presents an Appropriate Assessment of aquaculture within the Shannon Estuary. There are a total of 60 aquaculture sites, covering a total area of 631 ha, included in this assessment. Five of the sites are located outside the River Shannon and River Fergus Estuaries Special Protection Area (SPA) in Carrigaholt and Rinnevella Bays. All the sites within the SPA are located in the lower part of the Shannon Estuary downstream of the Fergus Estuary. There are 52 sites (covering 200 ha) of intertidal oyster cultivation, three sites (97 ha) of bottom oyster cultivation, two sites (130 ha) of bouchet pole mussel cultivation, three sites (313 ha) of bottom mussel cultivation and two sites (29 ha) of mussel longline cultivation.

The report assesses the potential impact of the development of these aquaculture sites on the Special Conservation Interests (SCIs) of the River Shannon and River Fergus Estuaries SPA, and on the SCIs of other SPAs where these SCIs may have connectivity with the Shannon Estuary. The potential for cumulative impacts from development of these aquaculture sites in combination with other relevant activities and plans is also assessed. The in-combination activities and plans assessed include: three Fishery Orders, which permit additional aquaculture development in the River Shannon and River Fergus Estuaries SPA; the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary, which provides the framework for the development of various marine-related industries and activities in and around the River Shannon and River Fergus Estuaries SPA; and a range of water-based recreational and commercial activities.

The SCIs of the River Shannon and River Fergus Estuaries SPA covered by this assessment are: Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Cormorant, Golden Plover, Grey Plover, Lapwing, Ringed Plover, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Knot, Dunlin, Greenshank, Redshank and Black-headed Gul. The SCIs of other SPAs covered by this assessment are: the Fulmar SCI of the Kerry Head SPA, the Kittiwake and Guillemot SCIs of the Loop Head SPA, and the Wigeon, Teal, Mallard, Shoveler and Black-tailed Godwit SCIs of the Ballyallia Lough SPA.

Methodology

Analysis of the likely impacts of activities covered in this assessment was based on a comparison of spatial overlap between the SCI species distribution and the spatial extent of the activities (as described above) as well as looking at species occurrence, behaviour and general ecology. These analyses focus on distribution patterns of feeding, or potentially feeding birds, as the main potential impacts will be to the availability and/or quality of feeding habitat; as well as an assessment of potential impacts on roosting birds, where relevant. Access points and shore based activities were also considered.

The distribution of waterbird was initially analysed using data from the Irish Wetland Bird Survey (IWeBS) counts and National Parks and Wildlife Service (NPWS) baseline waterbird survey counts (carried out in 2009/10).

Cumulative impacts

This assessment considered the cumulative impacts of the combined effects of the aquaculture and other activities within the SPA, notably fishery order activities, shipping and tourist activities.

SAC Conclusions and Recommendations

An In the Lower Shannon River SAC aquaculture focuses primarily on shellfish species (mussels, oysters) (Figure 5). Oysters are the predominant shellfish species cultured within the SAC, mussels are produced at a lower scale; while Scallops, although licensed, are not currently produced in the area. Based upon this and the information provided in the aquaculture profiling (Section 5), the

likely interaction between this aquaculture and conservation features (habitats and species) of the site were considered.

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Habitats

A full assessment was carried out on the likely interactions between aquaculture operations (as proposed) and the Annex 1 habitats 1110 (Sandbanks which are slightly covered by sea water all the time), 1130 (Estuaries), 1140 (Mudflats and sandflats not covered by seawater at low tide), 1150 (Coastal Lagoon), 1160 (Large Shallow Inlets and Bay) and 1170 (Reefs). The likely effects of the aquaculture activities (species, structures) were considered in light of the sensitivity of the constituent habitats and species of the Annex 1 habitats.

There is no overlap between the Annex I habitats Sandbanks which are slightly covered by sea water all the time (1110) and Coastal Lagoons (1150) and aquaculture activities in the Lower River Shannon SAC, therefore these features were screened out of the assessment.

Furthermore, of the 10 community types listed under the remaining habitat features (1140, 1160 and 1170) two (Estuarine subtidal muddy sand to mixed sediment with gammarids community complex and Mixed subtidal reef community complex) were also excluded from further analysis as they had no overlap with aquaculture activities.

Based upon the scale of spatial overlap the general conclusion relating to the interaction between proposed aquaculture activities with habitats is that consideration can be given to licencing (existing and applications) in the Annex 1 habitats -1140 (Mudflats and sandflats not covered by seawater at low tide), 1160 (Large Shallow Inlets and Bays) and 1170 (Reefs). However, there is one exception where Oyster culture (bottom culture) occurs on the community type Faunal turf-dominated subtidal reef community (28.4%) which is above the threshold (15%) within the qualifying feature 1130 (Estuaries). However, it is questionable whether this activity will be carried out on this community type given the nature of the substrate.

However, based on biological pressures the aquaculture activity of Subtidal Bottom Culture (Mussels, Oysters) poses a potential risk of the introduction and the potential naturalization of non-native species due the placement of mussels and oysters in an uncontained fashion on the seafloor.

Conclusion 1: With one exception (Marine Community type – Anemone-dominated subtidal reef community (28.4%) which is above the threshold (15%) within the qualifying feature Large Shallow inlet and bay), aquaculture activities (intertidal oyster culture) do not pose a risk of significant disturbance to the qualifying interests (Habitats) of the Lower River Shannon SAC. However, aquaculture activities (bottom mussel, suspended mussel and bottom oyster culture) in-combination with fishery order areas do pose a significant risk of disturbance to a number of qualifying interests in the SAC.

Conclusion 2: Give the long residence time in the Shannon Estuary and the fact that recruitment of the non-native oysters *Magallana (Crassostrea) gigas* is ongoing. The risk posed by the culture of diploid Pacific oyster, *Magallana (Crassostrea) gigas*, cannot be discounted. This risk is further

exacerbated by the culture of these oysters on the seabed. It is recommended that all oyster culture be carried out using triploid oysters and that subtidal culture of M gigas uncontained on the seafloor be reviewed in light of these findings.

Conclusion 3: The source of mussel seed stock inputted into existing licensed mussel areas is collected locally at present. If seed is sourced outside of the site in the future the risk posed by this activity cannot be discounted. It is recommended that acceptable sources of seed (in terms of alien species assessment) are identified for all shellfish culture operations. The movement of stock in and out of the Lower River Shannon SAC should adhere to relevant fish health legislation and follow best practice guidelines (e.g. http://invasivespeciesireland.com/cops/aquaculture/).

Conclusion 4: It is recommended that there be strict adherence to the access routes identified and that density of culture structures within the sites be maintained at current levels.

The activities that are known to occur within the Fishery Order Areas (i.e. bottom culture of oysters and mussel) are deemed disturbing on a number of community types. It should be noted that the information available regarding the extent of usage and type of culture occurring within the Fishery Order Areas is sparse. Therefore the spatial extents listed are the maximum areas the Fishery Order covers, however it is possible that the areas may not be fully utilised by the operators. In the absence of this information and given the fact that the fishery orders are fully licenced, it is clear the decisions regarding the licencing of aquaculture operations should take into account the licence status of the Fishery order areas.

Species

The likely interactions between the proposed aquaculture activities (incl. Fishery Order Areas) and the Annex II species otter (Lutra lutra) were also assessed. The objectives for this species in the SAC focus upon maintaining the good conservation status of the population and consider certain uses of intertidal habitats as important indicators of status. The aspect of the culture activities that could potentially disturb the otter status relates to movement of people and vehicles within the sites as well as accessing the sites over intertidal areas and via water.

It is concluded that the aquaculture activities (incl. Fishery Order Areas) proposed in areas that potentially overlap with otter habitat do not pose a threat to the conservation status of this species within the SAC.

Conclusion 5: The current and proposed levels of aquaculture activities individually and in-combination with activities in fishery order areas are considered non-disturbing to otter conservation features.

The likely interactions between the proposed aquaculture activities and the Annex II species bottlenose dolphin (*Tursiops truncatus*) were also assessed. The objectives for this species in the SAC focus upon maintaining the favourable conservation condition status of the species which is defined by maintaining species range and critical habitat. The aspect of the culture activities that could potentially influence the dolphin status relates to presence of fixed aquaculture structures (Longlines) within the critical habitat areas. However, the small spatial extent and the potential for the structures to act as fish aggregation devices suggest present little risk to the feature in question.

It is concluded that the aquaculture activities proposed in areas that have overlap with dolphin critical habitat do not present a risk to the conservation status of this species within the Lower Shannon River SAC.

Conclusion 6: The current and proposed levels of subtidal suspended and bottom culture aquaculture activities are not considered disturbing to the bottlenose dolphin conservation features.

SPA Conclusions and Recommendations

There is a high potential for development of intertidal aquaculture sites in the Ballylongford/Bunaclugga, Poulnasherry/Kilrush and Aughinish/Foynes areas to cause significant displacement impacts to Grey Plover and Bar-tailed Godwit, while significant displacement impacts to Light-bellied Brent Goose and Ringed Plover are also possible. There is potential for further significant cumulative impacts on some of these species from the development of the above sites in combination with oyster trestle cultivation in the Fishery Order that covers part of Poulnasherry Bay, and development of areas of opportunity identified in the SIFP for tidal energy in Tarbert Bay and for aquaculture in Clonderlaw Bay.

The possibility of significant disturbance impacts to high tide roosts used by Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Golden Plover, Grey Plover, Lapwing, Ringed Plover, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Knot and Dunlin from vessel activity associated with the development of sites in the Ballylongford/Bunaclugga and Aughinish/Foynes areas cannot be discounted due to a lack of information about the usage of high tide roost sites in these areas. The potential for cumulative impacts from this vessel activity in combination with other vessel activity in these areas also needs to be considered. Wigeon, Teal, Mallard, Shoveler and Black-tailed Godwit are also SCIs of the Ballyallia Lough SPA and there is potential interchange between these populations and the River Shannon and River Fergus Estuaries populations. Therefore, any significant impacts to these species in the River Shannon and River Fergus Estuaries could potentially also affect the conservation condition of these species in the Ballyallia Lough SPA.

The possibility of intertidal or subtidal aquaculture development affecting nocturnal roost sites used by Whooper Swan cannot be discounted as we have no information on the location of these roost sites.