



**Appropriate Assessment Report of Aquaculture in North
Inishowen SAC (Site code: 2012) and Trawbreaga Bay SPA
(Site Code: 4034)**

Marine Institute

Version: May 2016

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Annex I: Appropriate Assessment of Aquaculture in North Inishowen Coast SAC (002012)

**Annex II: Marine Institute Bird Studies: Trawbreaga Bay SPA (004034) Appropriate
Assessment of Aquaculture**

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 North Inishowen Coast SAC (2012) and the Trawbreaga Bay SPA (4034) 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

The North Inishowen Coast situated on the north Donegal coast of is designated as a Special Area of Conservation (SAC) under the Habitats Directive. The marine area is designated for Mudflats and sand flats not covered by seawater at low tide (1140) which support a variety of soft sedimentary communities and community complexes. The area is also designated for otter. Conservation Objectives for marine habitats and constituent communities (within the North Inishowen Coast SAC) were identified by NPWS (2014a) and relate primarily 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, habitats quality and the distribution of the species.

Aquaculture Activities in the SAC

Current aquaculture activities within the North Inishowen SAC occur at Trawbreaga Bay and focus on the cultivation of the Pacific oyster *Crassostrea gigas* on trestles in intertidal areas. The profile of the aquaculture industry in the Bay, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the MI for assessment in February 2015. Currently there are 23 valid oyster production licences with a further 44 new applications.

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 (2014a) 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 proposed mitigation measures if necessary) which are covered in this report. The first stage of the 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 of 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 NPWS¹. 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 profile of aquaculture activities was provided by BIM. The data supporting the assessment of individual activities vary and provides for varying degrees of confidence in the findings.

Findings

The likely interaction between aquaculture activity and conservation features (habitats and species) of the North Inishowen Coast SAC of the site was considered. An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration. None of the aquaculture activities (existing and/or proposed) overlaps or likely interacts with the following features or species, and therefore these 5 habitats and 1 species were excluded from further consideration in the assessment:

- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 21A0 Machairs (*priority habitat in Ireland)
- 4030 European dry heaths
- 1014 Narrow-mouthed Whorl Snail *Vertigo angustior*

Of the four constituent community types recorded within the qualifying interest of Mudflats and sandflats not covered by seawater at low tide (1140) two were shown to have no overlap with aquaculture activities and were excluded from further analysis. These community types are:

- Fine to medium sand with *Eurydice pulchra* community complex
- *Zostera*-dominated community

A full assessment was carried out on the likely interactions between current and proposed aquaculture operations and the feature Annex 1 habitat Mudflats and Sandflats not covered by seawater at low tide (1140). The likely effects of existing and proposed aquaculture activities were considered in light of the sensitivity of the constituent communities of the Annex 1 habitat.

The appropriate assessment report finds that existing and proposed activities do not pose a risk of significant disturbance to the conservation of the designated habitat feature of Mudflats and sandflats not covered by seawater at low tide (1140) or constituent community of Muddy sand to coarse sediment with *Pygospio elegans* community complex, and Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex. However, in one instance (T12/492A), the risk of significant disturbance cannot be dismissed as the hydrodynamics of the inner part of the bay (and subsequently, the structure of the constituent community types) may be impacted by the scale of the proposed operation.

Finally, it was concluded that the aquaculture activities did not present a barrier to movement or a risk to the (freshwater) attributes for the Otter (*Lutra lutra*) and was therefore, excluded from further analysis.

¹ NPWS Geodatabase Ver: April 2015 - <http://www.npws.ie/mapsanddata/habitatspeciesdata/>

Summary SPA Considerations

The SPA

The Special Conservation Interests (SCIs) of the Trawbreaga Bay SPA include non-breeding populations of Barnacle Goose and Light-bellied Brent Goose. In addition, both breeding and non-breeding elements of the Chough population are taken as Special Conservation Interests (NPWS 2014)². Specific attributes and targets for the conservation of Barnacle Goose & Light-bellied Brent Goose and Chough are set out in Tables 3.1 and 3.2 in Annex II, respectively. The wetland habitats within Trawbreaga Bay SPA and the waterbirds that utilise this resource are an additional SCI (the wetlands and water birds SCI). The conservation objective for this SCI is to maintain its favourable conservation condition, which is defined by there being no significant decrease in the permanent area occupied by wetland habitats. An assessment was carried out of aquaculture license areas in relation to the Trawbreaga Bay SPA features as well as any other activities in and around the bay that may be deemed to contribute to an '*in combination*' effect. The activities being assessed are within the Trawbreaga Bay SPA (site code 004034) and this SPA is the primary focus of this assessment.

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); however, due to data constraints the main analysis utilised the NPWS low tide count data from 2009/2010. Additional data on spatial distribution of geese in 2007/2008 was supplied by NPWS local office; along with a summary of year's accumulated knowledge of the site's use by geese (Emmett Johnston, Local Conservation Ranger, NPWS).

The methodology used to identify potentially significant impacts is focussed on the Conservation Objectives, and their attributes, that have been defined and described for Trawbreaga Bay SPA. Impacts that will cause displacement of 5% or more of the total SPA population of a non-breeding SCI species (for each site) have been assessed as potentially having a significant negative impact and are examined further in the context of species behaviour; relationship with aquaculture types; population trends etc. All of the SCI species for Trawbreaga Bay SPA were carried forward for full Appropriate Assessment.

Assessment of aquaculture activities

Chough

Overall, due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA.

Barnacle Geese

In Ireland, Barnacle Geese (from the Greenland breeding population) is mainly recorded along the west and northwest coasts, at sites such as Trawbreaga Bay. In the case of Trawbreaga, the flock

² NPWS (2014). *Conservation Objectives: Trawbreaga Bay SPA 004034*. Version 1 (22 April 2014). National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

would appear to be closely linked with the wider Malin flock and should be considered as a single unit. The population trend for Barnacle Goose was calculated by NPWS using IWeBS data and is based on the change between the baseline period (mean 1995/96 to 1999/00) and recent counts (mean 2007/08 to 2009/10). A mean number of 645 individuals were recorded for the baseline period with a mean number of 1,421 recorded from the recent period. This represents a 120 percent increase in numbers at Trawbreaga Bay. The site conservation condition for Barnacle Goose at Trawbreaga Bay SPA has therefore been assessed as favourable based on the increasing population. Unlike Light-bellied Brent Geese, Barnacle Geese do not feed on intertidal habitats, but favour terrestrial grassland or saltmarsh. Placement of trestles will not therefore result in direct habitat loss. While there is evidence for intertidal roosting, observed flocks have been small and ample alternate intertidal habitat exists to accommodate such day-time roosting. The main potential for conflict is from access points where there may be increased activity close to feeding birds and / or from increased levels of activity on the shoreline; key areas noted include risk of disturbance to Barnacle Geese at Magheranaul / Strath; close to Malin and close to the Glassagh access point. However, the large aquaculture site in this area (T12/492) is intended only as a nursery area for seed oyster; it will only be accessed three times in the year by a maximum of two workers and therefore, based on the level of activity proposed, it does not represent a significant source of disturbance. While the risk of negative impacts is low, development of a clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Barnacle Geese is recommended to identify and address any disturbance issues that might arise. Any intensification of activity at T12/492 would need to be reconsidered as part of this process.

Light-bellied Brent Geese

The *hrota* population of Light-bellied Brent Geese that over-winter in Ireland and breed in the Canadian high Arctic have shown increases in population since the early 1990's with a peak population estimate of 39,000 in 2007. The site population trend for Light-bellied Brent Goose at Trawbreaga Bay published by NPWS is calculated using IWeBS data and is based on the change between the baseline period (mean 1995/96 to 1999/00) and recent counts (mean 2007/08 to 2008/09). A mean number of 362 individuals were recorded for the baseline period with a mean number of 366 recorded from the recent period (2-yr mean 2007/2008 – 2008/2009). This represents a 1 percent increase in numbers at Trawbreaga Bay. As a result, the site conservation condition for Light-bellied Brent Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population.

Light-bellied Brent Geese were recorded in all but one subsite (OA441 – Malin) during the NPWS baseline waterbird surveys. Intertidal foraging was recorded them within five subsites overall: OA438, OA439, OA440, OA442 and OA443 (NPWS, 2014a). Brent Geese were recorded most frequently in subsite OA443 (Northwest) with geese present during all low tide counts. In addition this subsite held the highest mean number of Brent Geese across all low tide counts. The other two subsites where Brent Geese were consistently recorded across the low tide counts were OA439 (Trawbreaga South) and OA442 (North central); aquaculture sites are already in place in both OA439 and OA442. These two subsites also held high peak and mean numbers of Brent Geese.

Proposals for trestles are located in OA438, OA439 and OA442. Looking solely at area of subsites; areas of intertidal habitat / subsite; and area of intertidal habitat under aquaculture there is a potential for displacement of 0.35%, 2.67% and 2.69% in OA438, OA439 and OA442, respectively; a cumulative displacement of 5.1% ca. 2.9% of birds within the SPA in subsite OA439 and 2.2% within subsite OA442. As noted, impacts that will cause displacement of 5% or more of the total SPA population of a non-breeding SCI species (for each site) have been assessed as potentially having a significant negative impact and thus require further require detailed consideration in the context of species behaviour; relationship with aquaculture types; population trends etc. The current and proposed location of trestles with respect to Light-bellied Brent Geese behaviour and feeding ecology was therefore considered further. The favourable conservation status of the species; large area of available suitable habitat; foraging opportunities provided by green algae on trestles and

displacement of birds feeding in and around trestles during the course of routine maintenance all combine to determine how Light-bellied Brent Geese would be impacted by oyster cultivation. In reality displacement of birds is therefore likely to be much less than ca. 5% noted. While the risk of negative impacts is low, development of a clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Light-bellied Brent Geese is recommended to identify and address any disturbance issues that might arise.

Cumulative impacts

This assessment considered the cumulative impacts of the combined effects of the aquaculture and other activities within the SPA, notably seaweed harvesting, a proposed onshore aquaculture shed, residential and recreational developments, hand collection of shellfish, bait digging and effluent discharge.

SAC Conclusions and Recommendations

An initial screening exercise resulted in five features and one species being excluded from further consideration by virtue of the fact that no spatial overlap or associated impact with the culture activities was expected to occur. The habitats excluded from further consideration were 1220 Perennial vegetation of stony banks, 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts, 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes), 21A0 Machairs, 4030 European dry heaths and 1014 Narrow-mouthed Whorl Snail *Vertigo angustior*. A full assessment was carried out on the likely interactions between existing and proposed culture operations and the feature of the Annex 1 habitat 1140 (Mudflats and sandflats not covered by seawater at low tide). The likely effects of the aquaculture activities (Species, structures, transport routes) were considered in light of the sensitivity of two (of the four) constituent habitats and species of the Annex 1 habitat, i.e., Muddy sand to coarse sediment with *Pygospio elegans* community complex, Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex.

Based upon the scale of spatial overlap of current aquaculture activities and the relatively high tolerance levels of the habitats and associated species, the general conclusion is that current activities are non-disturbing to the Natura 2000 feature (1140) and its constituent community types.

The risk of establishment of non-native oyster species is considered low in the Trawbreaga Bay portion of North Inishowen Coast SAC. However, given that Trawbreaga Bay (oyster culture area within the SAC) effectively flows into the broader Lough Swilly this presents a risk to the Lough Swilly SAC (Code: 2287) and the factors identified by Kochmann et al (2013)³ facilitating the successful establishment of populations has been identified for Lough Swilly and indeed, non-native oysters have established in this bay (Lough Swilly). Therefore, it is important that triploid oysters continue to be used in North Inishowen Coast SAC (Code: 2012) in order to minimise any risks to Lough Swilly SAC (Code: 2237).

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 movement of stock in and out of the North Inishowen Coast SAC should adhere to relevant fish health legislation and follow best practice guidelines (e.g. <http://invasivespeciesireland.com/cops/aquaculture/>).

There are no likely in-combination interactions between other activities (e.g. fisheries and seaweed harvest) and aquaculture in North Inishowen Coast SAC.

³ Kochmann, J. F. O'Beirn, J. Yearsley and T.P. Crowe. 2013. Environmental factors associated with invasion: modeling occurrence data from a coordinated sampling programme for Pacific oysters. *Biological Invasions* 15:2265-2279.

SPA Conclusions and Recommendations

As noted above it is not anticipated that Chough would be impacted by the proposed aquaculture activities. The main disturbance threat to Chough comes from recreational pressures in the dune systems used by Chough and agricultural change affecting favoured feeding habitat.

There is a risk that presence of additional people on the shore either harvesting seaweed or bait digging etc. could increase the level of disturbance on Light-bellied Brent Geese above that arising from aquaculture activities. However, there is insufficient information in the NIS (Aquafact, 2013) to comment on the proposed timing, level and spatial distribution of activity associated with seaweed harvesting. The Light-bellied Brent Geese population is, however, currently in favourable conservation status and as noted management of *Ascophyllum* may in fact provide feeding opportunities for Light-bellied Brent Geese by encouraging the growth of smaller green / purple algae in short-term cycles before *Ascophyllum* regrows and out-competes them (see comments on proposed Code of Practice / monitoring recommendations).

Like Light-bellied Brent Geese, Barnacle Geese are also in favourable conservation status with a growing population in Trawbreaga / Malin. They are most at risk from disturbance / displacement preventing them from using key foraging sites and to a lesser extent intertidal day-time roost sites. Use of access points and shore based activities must be done in a such a way as not to disturb geese; for example the aquaculture sheds proposed for Balleelaghan (Lagg Road) must be adequately screened to prevent displacement of Barnacle Geese feeding in fields to the west of Malin (south of Lagg Road). Given the distance to preferred fields geese are likely to habituate to routine patterns of noise; as they have to day-to-day patterns of road traffic, farmyard and residential noise sources close to preferred fields. That said workers on the shoreline immediately adjoining preferred fields could result in localised displacement in addition to that arising from aquaculture activities. Given the lack of published data on the response of Barnacle Geese to nearby sources of disturbance, and their ability to habituate to same / or not, it is unclear how Barnacle Geese would respond to aquaculture sources of disturbance. Of most concern would be an increase in onshore activities close to favoured areas at Magheranaul / Strath; near Malin and along the approaches to the access point at Glassagh Point.

As identified above, it is noted that the large aquaculture site in this area (T12/492) is intended only as a nursery area for seed oyster; it will only be accessed three times in the year by a maximum of two workers and therefore, based on the level of activity proposed, it does not represent a significant source of disturbance. While the risk of negative impacts is low, development of a clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Barnacle Geese is recommended to identify and address any disturbance issues that might arise. Any intensification of activity at T12/492 would need to be reconsidered as part of this process.

As noted, there is insufficient information in the Seaweed NIS (Aquafact, 2013) to comment on the proposed timing, level and spatial distribution of activity associated with seaweed harvesting; the BioAtlantis (2014) NIS for 2014 does, however, speak about seasonal restrictions in ecologically sensitive areas which were agreed with NPWS. Given that hand-harvesting would appear to be year round it is recommended that such restrictions be incorporated into a proposed Code of Practice discussed above in order to avoid impacting key Barnacle Geese sites.