# RISK ASSESSMENT FOR ANNEX IV SPECIES

## Extensive Aquaculture

## in

## Carlingford Shore SAC and Carlingford Lough SPA,

## Co. Louth

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# Introduction

This Annex IV Risk Assessment has been prepared by the Marine Institute to comply with the provisions of Article 12 and 13 of Council Directive 92/43/EC in relation to the protection afforded to Annex IV species from disturbance or harm. Specifically, this Risk Assessment appraises the existing and proposed aquaculture activities in Carlingford Shore SAC and Carlingford Lough SPA.

## Legislative Context

The Habitats Directive has identified a number of animal and plant species across Europe, which are rare or are threatened with extinction and which need special measures to be taken to ensure their long-term survival. Under Article 12 and 13 of the Habitats Directive, Member States must establish systems of strict protection for animal and plant species which are listed on Annex IV of the Habitats Directive. Article 12 and 13 of the Habitats Directive are transposed into Irish law by Regulations 51 and 52 of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended[1].

The aim of the strict protection measures (set out in Article 12 (for animals) and 13 (for plants) of the Directive) is that the species in question will reach and remain at favourable conservation status. This means that the population dynamics of the species concerned can maintain itself on a long-term basis as a viable component of its natural habitats. It also means that the natural range of the species is neither being reduced, nor is likely to be reduced for the foreseeable future, and that there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Annex IV species are afforded strict protection throughout their range, both inside and outside of designated protected areas. This protection is afforded to these species at all stages of their life cycle and wherever they occur. This protection includes from deliberate disturbance of these species, particularly during periods of breeding, rearing, hibernation and migration. It is an offence to deliberately capture or kill, keep, transport or sell, injure or disturb a specimen in the wild, or damage or destroy a breeding site or resting place of an Annex IV animal species. For plants it is an offence to deliberately pick, collect, cut, uproot or destroy any specimen of these species in the wild, or keep, transport, or sell any specimen of these species taken in the wild.

| **S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (inc. Amendment SI 293 of 2021[2])** |
|---|
| **Protection of fauna referred to in the First Schedule**<br><br>**51.**<br><br>(1) The Minister shall take the requisite measures to establish a system of strict protection for the fauna consisting of the species referred to in Part 1 of the First Schedule.<br><br>(2) Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54 or 54A, a person who in respect of the species referred to in Part 1 of the First Schedule—<br><br>a) deliberately captures or kills any specimen of these species in the wild, |

[1] European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 - Unofficial Consolidation (Updated to 28 July 2022)

[2] https://www.irishstatutebook.ie/eli/2021/si/293/made/en/print?q=293

b) deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
c) deliberately takes or destroys eggs of those species from the wild,
d) damages or destroys a breeding site or resting place of such an animal, or
e) keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive,

shall be guilty of an offence.

(3) The prohibitions referred to in paragraph (2) shall apply to all stages of life of the biological cycle of fauna to which this Regulation applies.

(4) The Minister shall establish a system to monitor the incidental capture and killing of fauna consisting of the animal species referred to in Part 1 of the First Schedule and, having regard to the information gathered, he or she shall conduct further research or take such conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned.

**Protection of flora referred to in the First Schedule**

**52.**

(1) The Minister shall take the requisite measures to establish a system of strict protection for the flora consisting of the plant species referred to in Part 1 of the First Schedule.

(2) Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54 or 54A, a person who in respect of the plant species referred to in Part 1 of the First Schedule—

a) deliberately picks, collects, cuts, uproots or destroys any specimen of these species in the wild, or
b) keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 13(1)(b) of the Habitats Directive

shall be guilty of an offence.

(3) The prohibitions referred to in paragraph (2) shall apply to all stages of the biological cycle of the flora to which this Regulation applies.

The list of Annex IV species which occur in Ireland and its waters[3] is set out in Table 1.

*Table 1 Annex IV species which occur in Ireland (NPWS).*

| Animals | Plants |
|---|---|
| All bat species | Killarney Fern |
| Otter | Slender Naiad |
| Natterjack Toad | Marsh Saxifrage |
| Kerry Slug | |
| Dolphins, Whales and Porpoises | |
| Marine Turtles | |

As an Annex IV species may be found throughout the country, the protection of these species is not restricted in geographical terms and is not necessarily associated with areas subject to specific designations. Any works or projects must ensure compliance with the requirements of the Regulations, which means avoiding impacts to Annex IV species. To do this a project must determine the probability of the protected species being present in the area affected by the works, using existing

[3] https://www.npws.ie/legislation

information, and applying the precautionary principle. If it is highly unlikely that an Annex IV species could be present or affected by the works, then the works will be compliant with Regulations 51 and 52[4].

If information shows that the Annex IV species is present, or may be present, then an investigation to establish presence is required. The Precautionary Principle must be applied in relation to this matter at this stage. If the investigation finds the species to not be present, then the project may proceed. If an Annex IV species is found to be present, or there is a breeding or resting place to which the animals are likely to return, then the likely impacts of the project needs to be examined to see if those impacts can be avoided through the design of the works[5].

[4] Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland. 2021. National Parks and Wildlife Service Guidance Series 1. DHLGH Link

[5] Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland. 2021. National Parks and Wildlife Service Guidance Series 1. DHLGH Link

## Outline of the Proposed Aquaculture Activities

The MI has been requested to assess 19 applications for either renewal or new licences for extensive aquaculture activities within Carlingford Shore SAC and Carlingford Lough SPA (Figure 1). Two of these, are renewal applications of existing sites. The remaining 17 are all new applications for predominantly Pacific Oyster culture on trestle and bags. Some licenses also include Blue Mussels and floating or SEAPA bags.

*Table 1 Application sites currently in progress within Carlingford Lough.*

| License No. | Status | Aquaculture Type | Culture Type | Species | Area (ha) |
|---|---|---|---|---|---|
| T01-094A | New | Shellfish | Bag and Trestle | Pacific Oyster | 15.04 |
| T01-097A | New | Shellfish | Bag and Trestle | Pacific Oyster | 1.90 |
| T01-107A | New | Shellfish | Bag and Trestle | Pacific Oyster | 6.24 |
| T01-108A | New | Shellfish | Bag and Trestle | Pacific Oyster | 0.89 |
| T01-109A | New | Shellfish | Bag and Trestle | Pacific Oyster | 0.69 |
| T01-118A | New | Shellfish | Bag and Trestle | Pacific Oyster | 5.00 |
| T01-125A | New | Shellfish | Bag and Trestle | Pacific Oyster | 4.18 |
| T01-126A | New | Shellfish | Bag and Trestle, Basket | Pacific Oyster | 1.99 |
| T01-043B | Renewal | Shellfish | Bag and Trestle | Pacific Oyster | 1.81 |
| T01-043C | Renewal | Shellfish | Bag and Trestle | Pacific Oyster | 1.89 |
| T01-1012 | New | Shellfish | Bag and Trestle | Pacific Oyster | 1.55 |
| T01-1013 | New | Shellfish | Bag and Trestle; Floating bags | Pacific Oyster | 1.41 |
| T01-1014 | New | Shellfish | Bag and Trestle, Other | Pacific Oyster | 2.46 |
| T01-1020 | New | Shellfish | Bag and Trestle | Pacific Oyster | 1.03 |
| T01-1019 | New | Shellfish | Bag and Trestle, Floating bags | Pacific Oyster | 8.29 |
| T01-1018 | New | Shellfish | Bag and Trestle, Floating bags | Pacific Oyster | 5.72 |
| T01-1017 | New | Shellfish | Bag and Trestle, Floating bags | Pacific Oyster | 2.28 |
| T01-1016 | New | Shellfish | Bag and Trestle, Floating bags | Pacific Oyster | 6.29 |
| T01-1015 | New | Shellfish | Bag and Trestle, Floating bags | Pacific Oyster | 0.78 |

There are currently 37 licenced aquaculture sites in Carlingford Lough, in addition to the 2 sites which are being renewed and are listed above. All sites are licenced for shellfish, 13 of these grow blue mussel (*Mytilus edulis*), all using bottom culture and 24 are licenced for oyster (*Magallana gigas* & *Ostrea edulis*) on bags and trestles, baskets or roll 'n' bags (Table 2; Figure 1).

*Table 2 Currently licensed aquaculture which are not being considered for renewal in Carlingford Lough.*

| License No. | Status | Aquaculture Type | Culture Type | Species | Area (ha) |
|---|---|---|---|---|---|
| T01-020 | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 6.18 |
| T01-021 | Licensed | Shellfish | Bag and Trestle, Floating Bags | Pacific Oyster | 12.25 |
| T01-019 | Licensed | Shellfish | Bag and Trestle, Floating Bags | Pacific Oyster | 11.35 |
| T01-029B | Licensed | Shellfish | Bottom | Blue Mussel | 13.32 |
| T01-050C | Licensed | Shellfish | Bottom | Blue Mussel | 64.28 |
| T01-018A | Licensed | Shellfish | Bag and Trestle, Floating Bags | Pacific Oyster | 10.00 |
| T01-018B | Licensed | Shellfish | Bag and Trestle, Floating Bags | Pacific Oyster | 2.00 |
| T01-025A | Licensed | Shellfish | Bag and Trestle, Floating Bags, Basket, | Pacific Oyster | 2.14 |
| T01-025C | Licensed | Shellfish | Bag and Trestle, Floating Bags, Basket, | Pacific Oyster | 0.27 |
| T01-008A | Licensed | Shellfish | Bag and Trestle, Floating Bags, Basket | Pacific Oyster | 4.14 |
| T01-044A | Licensed | Shellfish | Bag and Trestle, Floating bags plus SEAPA bags | Pacific Oyster | 2.95 |
| T01-044B | Licensed | Shellfish | Bag and Trestle, Floating bags plus SEAPA bags | Pacific Oyster | 1.63 |
| T01-043A | Licensed | Shellfish | Bag and Trestle, Basket plus Floating Bags and Trestles | Pacific Oyster | 3.29 |
| T01-023A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 6.20 |
| T01-024 | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 6.43 |
| T01-026A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 13.11 |

| License No. | Status | Aquaculture Type | Culture Type | Species | Area (ha) |
|---|---|---|---|---|---|
| T01-009 | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.55 |
| T01-012 | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.60 |
| T01-071A | Licensed | Shellfish | Bottom | Blue Mussel | 65.10 |
| T01-066A | Licensed | Shellfish | Bottom | Blue Mussel | 31.73 |
| T01-061A1 | Licensed | Shellfish | Bottom | Blue Mussel | 15.83 |
| T01-060A1 | Licensed | Shellfish | Bottom | Blue Mussel | 48.723 |
| T01-072B1 | Licensed | Shellfish | Bottom | Blue Mussel | 27.08 |
| T01-074A2 | Licensed | Shellfish | Bottom | Blue Mussel | 16.73 |
| T01-090A | Licensed | Shellfish | Bottom | Blue Mussel | 13.28 |
| T01-089A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 2.06 |
| T01-100A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.70 |
| T01-101A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 6.12 |
| T01-102A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.51 |
| T01-103A | Licensed | Shellfish | Bottom | Blue Mussel | 95.09 |
| T01-105A | Licensed | Shellfish | Bottom | Blue Mussel | 49.23 |
| T01-117A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.08 |
| T01-120A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 0.92 |
| T01-121A | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 1.64 |
| T01-050A1 | Licensed | Shellfish | Bottom | Blue Mussel | 61.05 |
| T01-070A1 | Licensed | Shellfish | Bottom | Blue Mussel | 57.73 |
| T01-004 | Licensed | Shellfish | Bag and Trestle | Pacific Oyster | 2.45 |

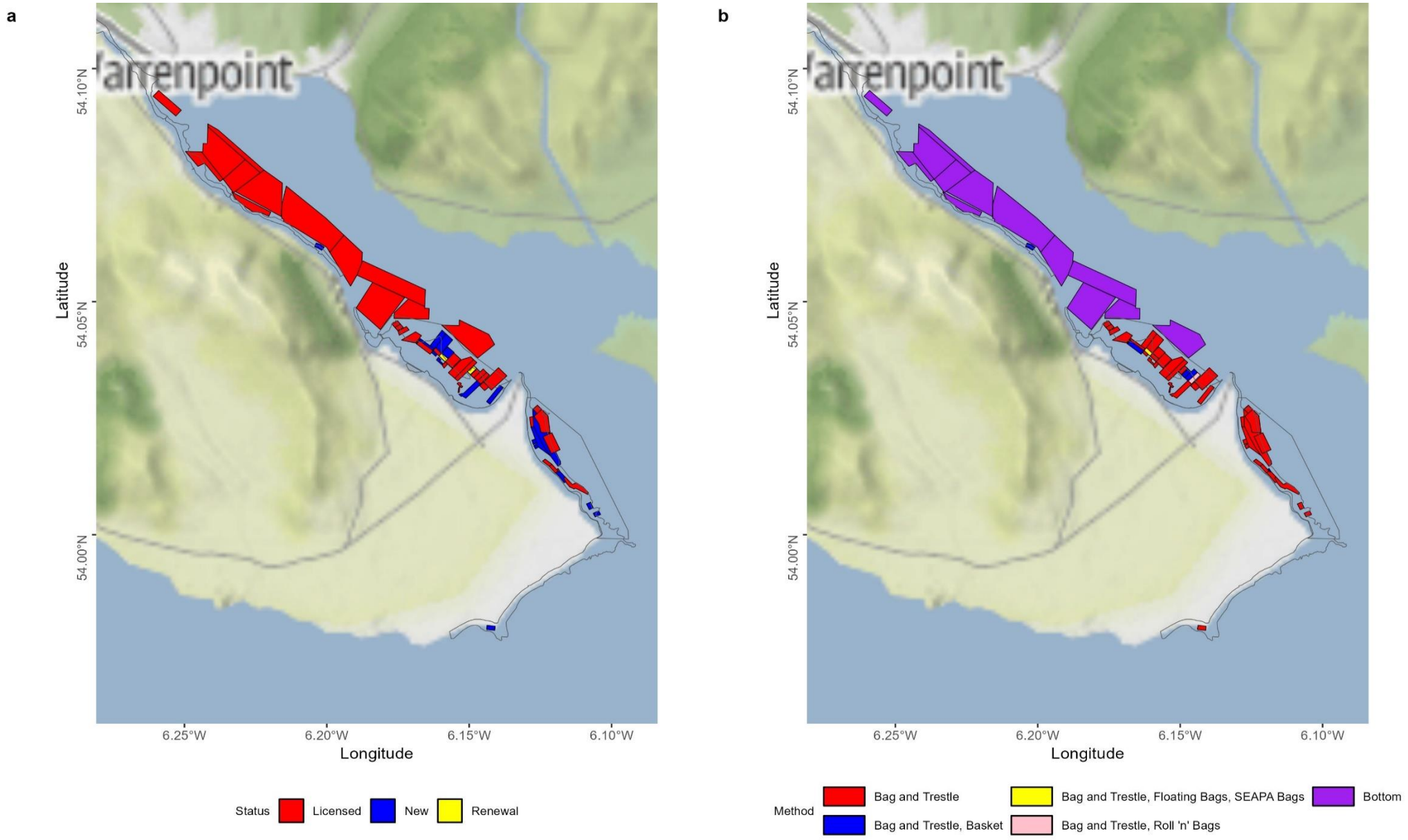


*Figure 1 a) Licenced and renewal aquaculture sites in Carlingford Lough; b) Primary culture type at each licenced site in Carlingford Lough. The grey outlines indicate the boundary of the SAC and SPA.*

## Relevant Annex IV Species

The Habitats Directive has identified a number of plant and animal species across Europe, which are rare or are threatened with extinction and which need special measures to be taken to ensure their long-term survival. All species listed under Annex IV with the potential to be impacted by the proposed site investigation works should be included, even if they have been separately assessed in the AA process.

Of the animal and plant species on Annex IV known to occur in Ireland, the following species were identified as relevant to the proposed development:

### Cetaceans

Below is the list of Cetaceans that have been sighted, in some way, within the vicinity of Carlingford Lough (data from the National Biodiversity Data Centre Ireland)[6].

- Bowhead whale (*Balaena mysticetus*)
- Bottlenosed Dolphin (*Tursiops truncatus*)
- Common Dolphin (*Delphinus delphis*)
- Harbour Porpoise (*Phocoena phocoena*)
- Humpback whale (*Megaptera novaeangliae*)
- Minke whale (*Balaenoptera acutorostrata*)

**Given the potential for overlap between the proposed activities and these species they will be considered in more detail in this risk assessment.**

### Otter

Ireland remains a European stronghold for the otter and the species is widespread here in our rivers and streams and along our coastline and lakeshores. Otter has two basic habitat requirements: adequate prey; and safe refuges where they can rest and breed. Otter maintain territories along river banks, lake shores and coasts. Coastal territories require a freshwater source for the otter to wash, so will always include a stream or spring. In productive areas, such as coastlines, territories are in the range of 5-6 km. On the coast, Otter forage within 80-100m of the coastline, typically in depth of <3m, but up to 10-12m. For foraging they prefer shallow, rocky environments with seaweed cover. Otter maintain numerous resting places, known as couches (above-ground, hidden in foliage) and holts (underground, among roots, rocks, or tunnels) within its territory. They breed all year, nesting in a well-hidden natal holt.

**There are otter reports within Carlingford Shore SAC[7], so are considered in more detail in this risk assessment.**

### All bat species

Lough Swilly SAC and SPA is a marine site at a distance from bat habitats. The aquaculture activities do not impact on trees, hedges, buildings, bridges, caves or changes in lighting, so bats are not likely

[6] National Biodiversity Data Centre Link
[7] National Biodiversity Data Centre Link

to be present or affected by the proposed activities. As bats are not likely to be present, the lack of spatial overlap or likely interactions between the Annex IV species and the aquaculture activities means there is no significant risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced. **Therefore, bats are not carried forward for a risk assessment.**

### Natterjack Toad

The natural ranges for the Natterjack Toad are freshwater and terrestrial. Populations are restricted to sites in County Kerry. Natterjacks are nocturnal and during the day they hide under logs and stones. Over winter, natterjacks hibernate in burrows that they dig themselves in sandy soils, or in piles of rocks or dry-stone walls. The toad breeds in shallow ponds and forages in the areas around those ponds at these locations. These extensive aquaculture sites are not a suitable habitat for Natterjack toads. There is not likely any overlap between these marine sites and this species, so there is no risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced. **Therefore, Natterjack Toads are not carried forward for a risk assessment.**

### The Kerry Slug

The Kerry Slug are terrestrial and nocturnal (generally), with their natural ranges restricted to sites in County Kerry and west Cork (and more recently found in Galway, Limerick and Tipperary). Its habitats are woodland, and lichen covered rock outcrops and boulders. These aquaculture sites are not a suitable habitat for the Kerry slug. There is not likely any overlap between this marine site and this species, so there is no risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced. **Therefore, the Kerry Slug are not carried forward for a risk assessment.**

### Plants

The natural ranges for the Annex IV plants species (Killarney Fern, Slender Naiad, and Marsh Saxifrage) are terrestrial and they are highly unlikely to be impacted by these aquaculture activities, so there is no risk to these Annex IV species. **Therefore, the Killarney Fern, Slender Naiad and Marsh Saxifrage are not carried forward for a risk assessment.**

### Marine Turtles

Various turtle species are occasional visitors to Irish waters however none have been recorded in the vicinity of Carlingford Lough (Biodiversity Data Centre). Considering the rarity in Irish waters of these widely roaming marine species, the design of the infrastructure with weighted lines and moorings and the predominately shallow subtidal and intertidal nature of the proposed activities it is not likely that there will be any significant interactions with these Annex IV species, and there is no risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced. **Therefore, marine turtles are not carried forward for a risk assessment.**

## Conclusion

The relevant Annex IV species which are likely to be present in the area or potentially affected by these projects, and are considered for further investigation, are:

- Cetaceans
- Otter

## Risk Assessment

### Cetaceans

The National Biodiversity Data Centre, Ireland data indicates that there is 2 delphinidae species (Bottle-nosed Dolphin (*Tursiops truncatus*) and Common Dolphin (*Delphinus delphis*)), 3 baleen whale species (Humpback Whale (*Megaptera movaeangliae*); Minke Whale (*Balaenoptera acutorostrata*); Bowhead Whale (*Balaena mysticetus*) and one porpoise species Harbour Porpoise (*Phocoena phocoena*) which could potentially utilise waters in the vicinity of Carlingford Lough.

There is only a single sighting of both the Bowhead Whale and Humpback Whale near Carlingford Lough. The Irish Sea is not a key part of the range of these species and can therefore be rule out of further risk.

Bottlenose Dolphin has been screened in during the screening process as a wide ranging species which appears to utilise the internal waters of Carlingford Lough and which might therefore overlap with the proposed or existing sites. **The full conservation objectives for SACs designated or these species will be considered further in the Stage 2 Assessment.**

The remaining three species; Common Dolphin, Minke Whale and Harbour Porpoise are all regularly recorded in The Irish Sea and may utilise waters close to the proposed and existing activities in Carlingford Lough. The main impacts associated with the proposed projects on dolphins, whales and porpoises are related to:

- **Noise disturbance** - Noise associated with marine harvesting vessels is considered low and ambient. The increase in vessel activities associated with the proposed activities will be local and are unlikely to add significantly to the ambient noise level from existing activities. **There is therefore unlikely to be any significant effects on cetaceans in the area.**
- **Collisions or entanglement** - the small number of vessels that will be required for the proposed activities will not significantly increase vessel traffic in the area. These vessels will be travelling at slow speeds, in a predefined trajectory, allowing for animals to avoid vessels. There is very low risk of an interaction with mussel laying or harvesting vessels or gear.
  Given the sheltered and shallow locations for the inter-tidal activities, it is not optimal habitat for cetaceans in general. **There will be no interaction with intertidal structures therefore risk of collision or entanglement can be ruled out.**
- **Obstruction and displacement** – the potential for the infrastructure to cause obstruction to cetaceans is considered low. These mobile species can avoid and go around any obstructions without any significant disturbance. The size of the proposed and existing activities is relatively limited and not significant when considered against the overall area available to these species there will be no loss of habitat to these wide-ranging species. **Therefore, risk of obstruction and displacement can be ruled out.**

The potential for impact from the listed hazards is generally unlikely or of low intensity. While there may be isolated sightings in the vicinity, the lack of spatial overlap or likely interactions between the Annex IV species and the aquaculture activities means there is no significant risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced by the existing and proposed shellfish aquaculture operations.

## Otter

Otter are reported within the area of the SAC, therefore suitable habitat must exist within the Carlingford Shore SAC. Otter are an opportunist hunter, mainly eating fish, but also eats frogs, small birds, eggs, mussels, crabs and other invertebrates. The preferred foraging habitat is intertidal rocky environments with seaweed cover. The main habitats utilised by the proposed and existing aquaculture licences are intertidal and subtidal mud and sand flats with good flat hard ground. There will therefore be very little overlap in the preferred habitat of Otter and the proposed or existing habitat.

The main pressures associated with the proposed projects on otter are related to:

- **Obstruction (intertidal)-** The trestles and activities associated with this form of oyster culture structures are positioned on, and rising to approximately 1m above, the intertidal seabed. They are oriented in rows with gaps between structures, thus allowing free movement through and within the sites. The structures are placed on the lower-shore, in the intertidal area, which is covered by water for most of the tide. They will not interfere with the natural behaviour of the otter.
- **Entanglement** - Shellfish production activities are highly unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- **Displacement -** While the general habitat in the area is likely to support otters, the intertidal areas of extensive aquaculture are not considered ideal foraging areas for otter, which prefer shallow, rocky environments with seaweed cover for foraging. The extensive aquaculture, being in the intertidal area, and the access routes, being in well-travelled routes, are highly unlikely to interfere with the couches and holts within its territory, nor to disturb the breeding locations.
- **Disturbance** – Vessels being used during harvesting and site access as well as tractor activity on the shore will have a disturbing effect from both visual and noise disturbance on resting or foraging otter. The proposed operations are generally carried out in daylight hours. The interaction with the otter will be minimal, given that otter foraging is primarily crepuscular. Therefore, the level of disturbance is likely to be low, localised, occasional and will be dictated by tidal state in daylight hours.
- **Prey competition** - The nature of this extensive aquaculture means it is not likely to have an effect on the number or availability of prey for the otter.

The potential for impact from the listed hazards are generally highly unlikely or of low intensity. The lack of significant spatial overlap or likely interactions between the Annex IV species and the aquaculture activities means there is no significant risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced.

## Mitigation Measures

Otters and cetaceans other than Bottlenose Dolphins are highly unlikely to interact with these extensive aquaculture farms. Based on the information above, no mitigation measures for encounters are considered necessary for these projects.

## Conclusions

Following a risk assessment of the proposed extensive aquaculture licence applications in Carlingford Shore SAC and Carlingford Lough SPA the activities pose no risk to the number of individuals to breed successfully, nor to the survival of the population, and the species natural range is secure and will not be reduced, for the Annex IV species which occur in Ireland and its waters.