RISK ASSESSMENT FOR ANNEX IV SPECIES

Extensive Aquaculture

in

Glengarriff Harbour and Woodland SAC [000090]

Co. Cork

Marine Institute

Rinville

Oranmore, Co. Galway

Date	Status	Author	Purpose/Changes
May 2026	Final	MI	Renewal and Review: T05-058N1, T05-058N2, T05-058N6, T05-276N2. Renewal: T05-058N8 and T05-276N1.

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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 proposed aquaculture activities in respect of Glengarriff Harbour and Woodland SAC, Co. Cork.

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 **51.** (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. (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— 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)(1).pdf

[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 ar 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 Habita 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

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

the probability of the protected species being present in the area affected by the works, using existing 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].

Details of Proposed Aquaculture Activities

The MI has been requested to assess 2 renewal and 4 renewal and review applications for shellfish aquaculture licenses in the Glengarriff Harbour and Woodland SAC. Details of the application sites and currently licensed sites are outlined in Table 2, the location of the applications within the bay are displayed in Figure 1 and the primary culture type at each application site can be seen in Figure 2.

Table 2 Application sites considered in this report within Glengarriff Harbour and Woodland SAC.

Site No.	Site Status	Aquaculture Type	Species	Area (ha)
T05-058N8	Renewal	Longlines	Blue Mussel (*Mytilus Edulis*)	2.10
T05-276N1	Renewal	Longlines	Blue Mussel (*Mytilus Edulis*)	1.60
T05-058N1	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	4.60
T05-058N2	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	17.25
T05-058N6	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	10.36
T05-276N2	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	3.81

This Section identifies the proposed aquaculture activities to be considered as part of this exercise.

[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

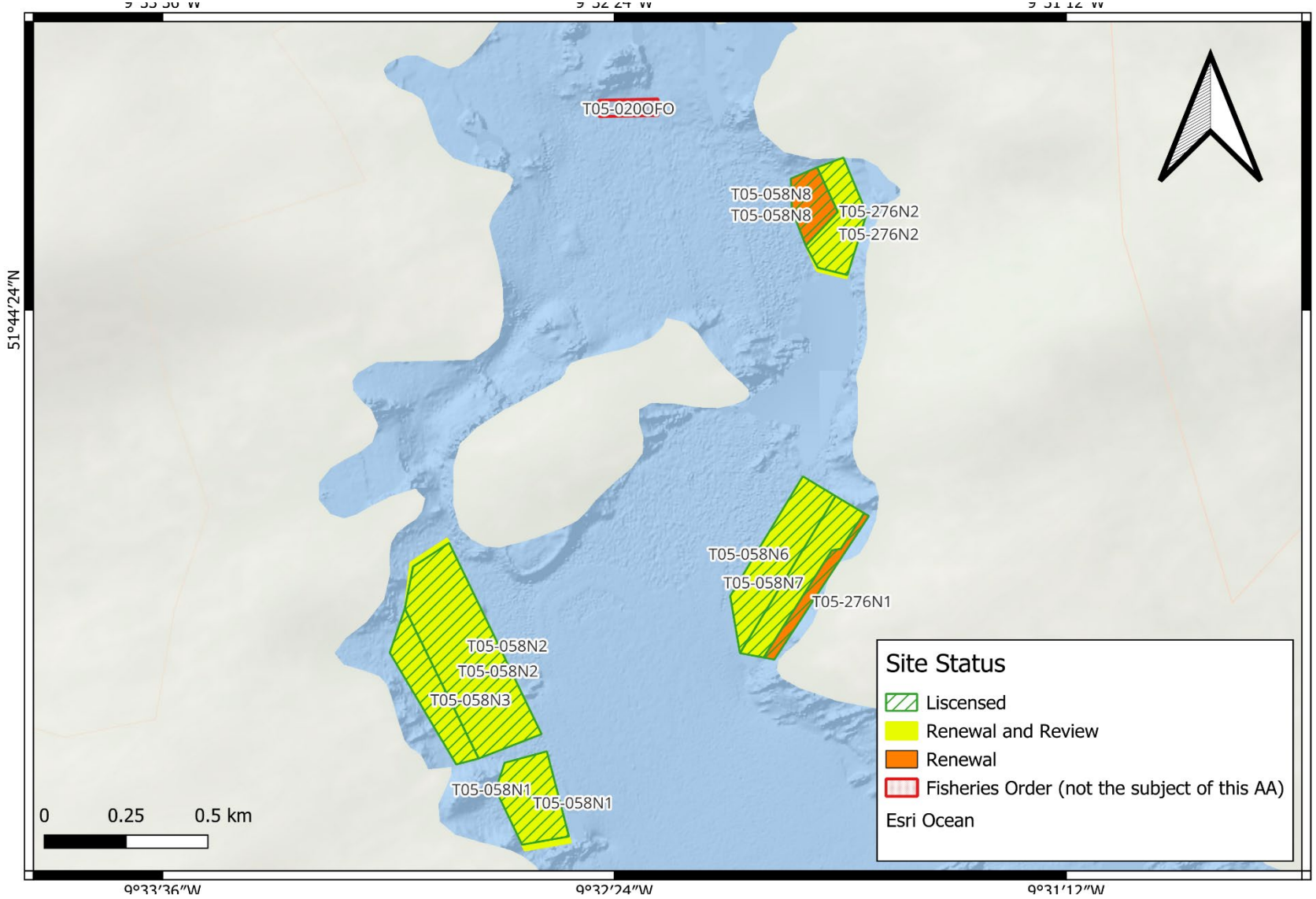

Figure 1 Status of aquaculture sites in Glengarriff Harbour and Woodland SAC.

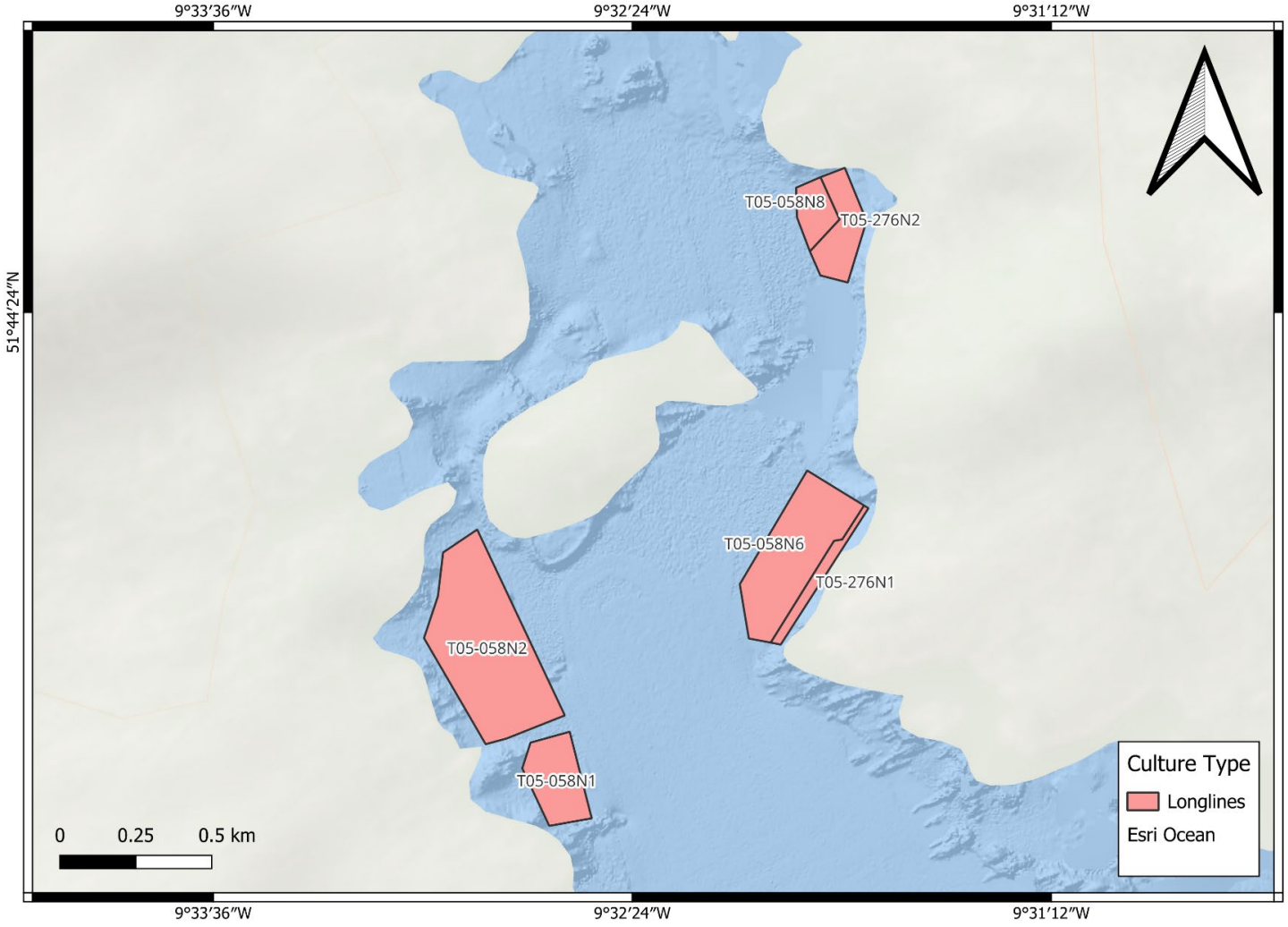

Figure 2 Primary culture type at each application site in Glengarriff Harbour and Woodland SAC.

Blue Mussel

The Blue Mussel, *Mytilus edulis*, forms the basis of mussel aquaculture operation in the Glengarriff Harbour and Woodland SAC.

Two renewal license applications (**T05-058N8** and **T05-276N1**) include application for the cultivation of Blue Mussel (*Mytilus edulis*). The source of seed will be locally sourced from natural spat fall and will be collected onsite using a continuous rope system.

T05-058N1- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing boundary from 4.3 hectares to 4.6 hectares (Table 2). One line is 110 metres in length, while the remaining four lines are each 220 metres in length, with 24 metres spacing between lines. Lines are suspended 6m below the water surface. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-058N2- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing site boundary, which involves merging the T05-058N2 and the T05-058N3 sites. This will result the new T05-058N2 being 17.25 hectares with 23 longlines. The current licensed site T05-058N2 is 12.9 hectares with 18 longlines, and the current licensed site T05-058N3 site is 4 ha with 6 longlines. The overall difference is 0.35 hectares and an additional longline present at the site. Longlines will be arranged into a formation of three blocks. The northern block will contain 1 x 100 metre longline and 4 x 110 metre longlines. The central block will contain 1 x 110m line, 2 x 180 metre lines and 5 x 220 metre lines. The southern block will contain 3 x 110m lines and 7 x 220 metre lines. Blocks will be spaced 20 metres apart with 30 metre spacing between longlines. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-058N6- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing site boundary, which involves merging the T05-058N6 and the T05-058N7 sites. This will result the new T05-058N6 being 10.36 hectares with 15 longlines. The current licensed site T05-058N6 is 5.9 hectares with 8 longlines, and the current licensed site T05-058N7 site is 4.4 hectares with 7 longlines. The overall difference is 0.06 hectares. Longlines will be arranged into a formation of two blocks. The northern block will contain 3 x 110 metre longlines; 1 x 180 metre longline and 4 x 220 metre longlines. The southern block will contain 7 x 220m lines. Blocks will be spaced 20 metres apart with 20-30 metre spacing between longlines. Seed will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-276N2- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). Application to expand existing site boundary from 3.7 hectares to 3.81 hectares. Longlines will be arranged into a formation of three blocks. The northern block will contain 4 x 80 metre longlines. The central block will contain 3 x 80m longlines. The southern block will contain 5 x 110 metres longlines with 20 metre spacing between longlines. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to

the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

Each site proposes an inbuilt St. Andrews Cross and radar reflector. Sites will be harvested using a harvesting vessel. All sites will be accessed by boat from Glengarriff pier, which is accessed by the N71 national road.

Table 3 Proposed site changes in relation to Blue Mussel culture.

Site code	Boundary size		Other proposed changes
	Current (ha)	Proposed (ha)	
T05-276N2	3.7	3.81	-
T05-058N2	12.9	17.25	Application to amend the existing site boundary to include site T05-058N3.
T05-058N1	4.3	4.6	-
T05-058N6	5.9	10.36	Application to amend the existing site boundary to include site T05-058N7.

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:

Dolphins, Whales and Porpoises

This is the list of dolphins, whales and porpoises that intersect, in some way, with the Glengariff Harbour and Woodlands SAC, based on data from the National Biodiversity Data Centre[6].

- Common dolphin (*Delphinus delphis*)
- Harbour porpoise (*Phocoena Phocoena*)
- Humpback whale (*Megaptera novaeangliae*)

It is likely that there could be Annex IV species from dolphins, whales and porpoises present in the area of the project, so they are 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 have two basic habitat requirements: adequate prey; and safe refuges where they can rest and breed. Otter maintain territories along riverbanks, lake shores and coasts. Coastal territories require a freshwater source for the otter to

[6] National Biodiversity Data Centre, Ireland Link

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.

Otters have been reported within the area of the SAC so are considered in more detail in this risk assessment.

All bat species

These are marine sites at a distance from bat habitats. These aquaculture activities do not impact on trees, hedges, buildings, bridges, caves, souterrains or changes in lighting, so bats are not likely to be present or affected by the works. 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.

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.

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.

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.

Marine Turtles

The most recent record of Leatherback Turtle (*Dermochelys coriacea*) is in Sheep's Head in 2012 (more than 27 km from the nearest aquaculture activities in the Glengarriff Harbour and Woodland SAC) by the Irish Whale and Dolphin Group (IWDG)[7]. Various turtle species are occasional visitors to Irish waters. Considering the rarity in Irish waters of these widely roaming marine species, that may utilise entire oceans, and the design of the infrastructure, 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.

Conclusion

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

- Dolphins, Whales and Porpoises.
- Otter.

Risk Assessment

Dolphins, Whales and Porpoises

It is likely that there could be dolphins, whales and porpoises that intersect with the proposed aquaculture activities, based on data from the National Biodiversity Data Centre Ireland, and therefore, in some way, with the aquaculture sites.

These are large mammals, that utilise a wide range of marine habitat environments. Whales tend to be migratory, following food, and are found in open ocean. Dolphins are found from shallow coastal waters to the deeper open ocean. They feed on a variety of fish and invertebrates, such as squid. Porpoises are also found from shallow coastal waters to the deeper open ocean and are generally shy and elusive and prefer to avoid contact with boats and humans.

The main impacts associated with the proposed project on dolphins, whales and porpoises are related to:

- Noise disturbance – The sites will be serviced by small harvesting vessels (boats). Noise from the site during operation is not considered to be significant as the sound pressure would be minimal, low and would rapidly attenuate. There is therefore unlikely to be any significant effects on cetaceans in the area.
- Collisions or entanglement - Given near-shore subtidal based nature of the proposed activities, it is not optimal habitat for dolphins, whales and porpoises in general, and it is highly unlikely they will interact with these subtidal structures and activities.
  The locations of the structures are inshore, and as such they do not present a significant barrier to movement of this species in the area. Furthermore, the structures are such that

[7] National Biodiversity Data Centre Link

echo-locating species (porpoise and dolphin) can easily detect and avoid, if necessary, the structures/sites and therefore, avoid any risk of collision or entanglement[8,9,10].

- Obstruction and displacement – the potential for the infrastructure to cause obstruction to dolphins, whales and porpoises is considered relatively low. These mobile species can avoid and go around any obstructions without any significant disturbance[11]. Therefore, risk of obstruction and displacement can be ruled out.
- Attraction – some dolphins, whales or porpoises may be attracted to structures, similar to those used in culture operations[12] as the infrastructure can act as artificial reefs and encourage fish aggregation[13]. This would be limited to the direct vicinity of the site and would be considered very small scale. There are no significant energy sources (e.g., light, noise etc.) likely to result from activities at the sites that pose a risk.
- Water quality – there are no significant water quality impacts from shellfish farming and veterinary products are not required for shellfish culture, so water quality will not be impacted in any way that would affect dolphins, whales and porpoises.
- Commissioning and decommissioning – The infrastructure involved is relatively small and easily installed and removed, so commissioning and decommissioning will not be tasks that are likely to have significant impacts on dolphins, whales or porpoises.

The potential for impact from the listed hazards is generally unlikely or of low intensity. While there may be some changes present in the environment, they are not likely to be significant. 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 surrounding areas of the SAC. Otter are an opportunist hunter, mainly eating fish, but also eats frogs, small birds, eggs, mussels, crabs and other invertebrates. 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 main impacts associated with the proposed projects on otter are related to:

- Obstruction (open water)- The longlines and activities associated with this form of shellfish farming involve rope hanging in the water column. Otters generally forage within 80-100 m of the coastline, and in shallower waters. Some longline structures are

[8] Watson-Capps JJ, Mann J (2005) The effects of aquaculture on bottlenose dolphin (Tursiops sp.) ranging in Shark Bay, Western Australia. Biological Conservation 124: 519–526.

[9] Heinrich, S. (2006) Ecology of Chilean dolphins and Peale's dolphins at Isla Chiloe, southern Chile (PhD dissertation). University of St Andrews, 239 p

[10] Ribeiro S, Viddi FA, Cordeiro JL, Freitas TRO (2007) Fine-scale habitat selection of Chilean dolphins (Cephalorhynchus eutropia): interactions with aquaculture activities in southern Chiloe Island, Chile. Journal of the Marine Biological Association of the United Kingdom 87: 119–128

[11] Bath,G.E.,Rrice,C.A.,Riley,K.L.,Morris Jr,J.A.(2022) A global review of protected species interactions with marine aquaculture. DOI:10.1111/raq.12811.

[12] Díaz López, B. & Methion, S. (2017) The impact of shellfish farming on common bottlenose dolphins' use of habitat. Marine Biology 164: 83. doi:10.1007/s00227-017-3125-x

[13] Callier M, Byron C, Bengtson D, Cranford P, Cross S, Focken U, Jansen H, Kamermans P, Kiessling A, Landry T., O'Beirn F., Petersson E., Rheault, RB., Strand, O., Sundell, K., Svasand, T., Wikfors, GH., McKindsey, CW. (2017) Attraction and repulsion of mobile wild organisms to finfish and shellfish aquaculture: a review. Rev Aquac 0:1–26

located less than 100m from the shoreline however, the structures allow for sufficient space and will not interfere with the natural behaviour of otter.

- Entanglement – Longlines 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 and subtidal 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 –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. Disturbance associated with vessel traffic could potentially affect otter at these sites. However, the level of disturbance is considered low with minimal likely encounter rates.
- 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

On the basis that any debris or loose material is removed in a timely manner, then otters and cetaceans are highly unlikely to interact with these extensive aquaculture farms in a manner to result in harm. 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 Glengarriff Harbour and Woodlands SAC, Co. Cork, 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.