

Table 1: Appropriate Assessment of Aquaculture Activities in Killary Harbour for site applications T09/508, T09/509, T09/510, T09/511A and T09/477– consideration of Special Protection Areas										
1.1 Brief description of Project or Plan	Mussels (<i>M. edulis</i>) are grown in suspended culture at a total of 52 licensed sites in Killary Harbour, Co. Galway, covering an area of approx. 130 ha. The locations of the sites are shown in Figure 1.									
1.2 Brief description of Natura 2000 site	<p>Killary Harbour is not a Natura 2000 site, but it is in potential range of Special Conservation Interest Species from a number of SPA's in the region. SACs are considered in the Marine Institute's AA Screening Matrix for Killary Harbour, 28/02/2019.</p> <p>Bills Rock SPA (004177) Bills Rocks are a group of three rocks lying close together approximately 10 km south of Moyteoge Head (Achill Island). The site supports nationally important population of <i>Fratercula arctica</i> (ca. 7.1% of the all-Ireland total). It also has a colony of <i>Hydrobates pelagicus</i> which is at least of regional importance. Other breeding seabird species are <i>Fulmarus glacialis</i>, <i>Phalacrocorax aristotelis</i>, <i>Larus marinus</i>, <i>Rissa tridactyla</i> and <i>Alca torda</i>. The site is an excellent example of an isolated and highly exposed seabird colony</p> <p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: ¹</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Bird Code</th> <th style="text-align: left;">Common Name</th> <th style="text-align: left;">Scientific Name</th> </tr> </thead> <tbody> <tr> <td>A014</td> <td>Storm Petrel</td> <td><i>Hydrobates pelagicus</i></td> </tr> <tr> <td>A204</td> <td>Puffin</td> <td><i>Fratercula arctica</i></td> </tr> </tbody> </table> <p>Clare Island SPA (004136) Clare Island is one of the most important seabird colonies in the country, being notable for both the size of the populations and for the diversity of species (13 regular breeders). It is of particular importance for <i>Fulmarus glacialis</i> (10% of the all-Ireland total and the largest population in the country) and <i>Rissa tridactyla</i>. It also has nationally important populations of <i>Phalacrocorax aristotelis</i>, <i>Larus canus</i>, <i>Larus marinus</i>, <i>Uria aalge</i> and <i>Alca torda</i>. Nationally important numbers of <i>Cephus grylle</i> (a non-migratory species) also occur at the site. Whilst the <i>Morus bassanus</i> (<i>Sula bassana</i>) colony</p>	Bird Code	Common Name	Scientific Name	A014	Storm Petrel	<i>Hydrobates pelagicus</i>	A204	Puffin	<i>Fratercula arctica</i>
Bird Code	Common Name	Scientific Name								
A014	Storm Petrel	<i>Hydrobates pelagicus</i>								
A204	Puffin	<i>Fratercula arctica</i>								

¹ NPWS (2021) Conservation objectives for Bills Rocks SPA [004177]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

has not grown to any extent since its establishment in the 1970s, this is still of significance as it is one of the only 5 in Ireland and the only colony on the west coast. Other breeding species include *Fratercula artica*, *Phalacrocorax carbo* (recently established) and *Larus fuscus*. *Larus argentatus* formerly bred in large numbers but the population has declined markedly, in line with a national decrease. *Hydrobates pelagicus* has been suspected of breeding in the past but there have been no recent surveys. Clare Island is an important stronghold for *Pyrhocorax pyrrhocorax*, with a nationally important population. *Falco peregrinus* also breeds. There is a long history of recording, dating back to the 1909-11 Clare Island Survey.

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- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: ²

Bird Code	Common Name	Scientific Name
A009	Fulmar	<i>Fulmarus glacialis</i>
A018	Shag	<i>Phalacrocorax aristotelis</i>
A182	Common Gull	<i>Larus canus</i>
A188	Kittiwake	<i>Rissa tridactyla</i>
A199	Guillemot	<i>Uria aalge</i>
A200	Razorbill	<i>Alca torda</i>
A346	Chough	<i>Pyrhocorax pyrrhocorax</i>

Owenduff/Nephin Complex SPA (004098) The Owenduff/Nephin Complex SPA is one of the largest expanses of blanket bog in the country and the site supports an excellent diversity of bird species characteristic of blanket bog and mountain habitats. *Anser albifrons flavirostris* regularly visit the site in winter though numbers nowadays are relatively low. The population is a sub-flock of the main Bog of Erris population (4 other sub-flocks). The site supports breeding populations of several important species, notably *Falco columbarius*, *Falco peregrinus* and *Pluvialis apricaria*. Recent studies have shown that there is a good population of *Lagopus lagopus*, an Irish Red Data Book species. Several species listed in Annex II of the E.U. Habitats Directive occur, notably *Saxifraga hirculus*, *Drepanocladus vernicosus*, *Lutra lutra* and *Salmo salar*. Much of the site is incorporated into the Mayo National Park.

² NPWS (2021) Conservation objectives for Clare Island SPA [004136]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

	<p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: ³</p> <table border="0"> <thead> <tr> <th>Bird Code</th> <th>Common Name</th> <th>Scientific Name</th> </tr> </thead> <tbody> <tr> <td>A098</td> <td>Merlin</td> <td>Falco columbarius</td> </tr> <tr> <td>A140</td> <td>Golden Plover</td> <td>Pluvialis apricaria</td> </tr> </tbody> </table> <p>Cross Lough (Killadoon) SPA (004212) Cross Lough is located near Killadoon village, approximately 12 km south-west of Louisburgh, in Co. Mayo. The Cross Lough is the former site of a long-established <i>Sterna sandvicensis</i> colony (107 pairs in 1984 and 70 pairs in 1995), which was located on a small islet within the lake. Recent counts (1998-99) suggest that the terns no longer breed at this site, possibly due to predation by feral Mink (<i>Mustela vison</i>); however, terns are well-known to abandon unsuitable sites, but often return once conditions become more favourable. <i>Larus ridibundus</i> also breeds (70 pairs in 1995) and there are a small numbers of breeding <i>Larus canus</i> (c.10 pairs).</p> <p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: ⁴</p> <table border="0"> <thead> <tr> <th>Bird Code</th> <th>Common Name</th> <th>Scientific Name</th> </tr> </thead> <tbody> <tr> <td>A191</td> <td>Sandwich Tern</td> <td><i>Sterna sandvicensis</i></td> </tr> </tbody> </table>	Bird Code	Common Name	Scientific Name	A098	Merlin	Falco columbarius	A140	Golden Plover	Pluvialis apricaria	Bird Code	Common Name	Scientific Name	A191	Sandwich Tern	<i>Sterna sandvicensis</i>
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³ NPWS (2021) Conservation objectives for Owenduff/Nepin Complex SPA [004098]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

⁴ NPWS (2021) Conservation objectives for Cross Lough (Killadoon) SPA [004212]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Illaunnanoon SPA (004221) Illaunnanoon, also known as Lamb's Island, is a small low-lying island located about 2 km west of Letterfrack, Co. Galway. Illaunnanoon supports a nationally important population of *Sterna sandvicensis*, which has been breeding there since at least 1984. *Sterna hirundo*, *Larus ridibundus* and *Larus canus* also breed on the island.

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- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: ⁵

Bird Code	Common Name	Scientific Name
A191	Sandwich Tern	<i>Sterna sandvicensis</i>

High Island, Inishshark and Davillaun SPA (044144) High Island, Inishshark and Davillaun are small, uninhabited islands lying some 3-5 km north and west of Aughrus Point on the Co. Galway coast. Grassland is the main vegetation type found with vegetated sea cliffs, dry heath, exposed rock, and some freshwater marsh also present. High Island, Inishshark and Davillaun are utilised in winter by a nationally important population of *Branta leucopsis* (4.3% of the all-Ireland population total). In addition, this site is an important breeding sites for seabird species, with nationally important numbers of *Fulmarus glacialis* (2.1% of the all-Ireland total) and *Sterna paradisaea* (1.8%). Other breeding birds occur include *Rissa tridactyla*, *Puffinus puffinus*, *Phalacrocorax aristotelis*, *Larus argentatus* and *Larus canus*.

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- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

⁵ NPWS (2021) Conservation objectives for Illaunnanoon SPA [004221]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:⁶

Bird Code	Common Name	Scientific Name
A009	Fulmar	Fulmarus glacialis
A045	Barnacle Goose	Branta leucopsis
A194	Arctic Tern	Sterna paradisaea

Cruagh Island SPA (004170) Cruagh Island is located approximately 2 km west of Omey Island, off the Connemara coast. It is a medium-sized, low-lying island (maximum height of 62 m) and is uninhabited. Cruagh Island supports an internationally important population of Puffinus puffinus, which is one of the most important colonies in the country. This was discovered in 2001 and was undoubtedly overlooked in the past. The site provides excellent habitat for the Shearwaters. It also has a nationally important colony of Larus marinus and a small number of breeding Fulmarus glacialis. Cruagh Island is a regular feeding site for Branta leucopsis during the winter. The geese that frequent this island are most probably part of the internationally important Inishshark flock.

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- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:⁷

Bird Code	Common Name	Scientific Name
A013	Manx Shearwater	Puffinus puffinus
A045	Barnacle Goose	Branta leucopsis

Connemara Bog complex SPA (004181) The Connemara Bog Complex SPA is a large site encompassing the majority of the south Connemara lowlands, Co. Galway. The Connemara Bog Complex SPA supports nationally important populations of four species. Of particular note are the populations of Pluvialis apricaria and Falco columbarius which represent 18% and 1.8-3.6% of the all-Ireland totals respectively.

The favourable conservation status of a species is achieved when:

⁶ NPWS (2021) Conservation objectives for High Island, Inishshark and Davillaun SPA [004144]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

⁷ NPWS (2021) Conservation objectives for Cruagh Island SPA [004170]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:⁸

Bird Code	Common Name	Scientific Name
A017	Cormorant	Phalacrocorax carbo
A098	Merlin	Falco columbarius
A140	Golden Plover	Pluvialis apricaria
A182	Common Gull	Larus canus

Lough Carra SPA (004051) Lough Carra, which extends for over 9 km along its long axis, lies to the north-east of Lough Mask, in the Corrib catchment. It is one of the best examples in Ireland of a hard water marl lake. It is a shallow (mean depth 1.5 m, max depth 18 m), predominantly spring-fed lake with only a few streams flowing into it. It is connected to Lough Mask via the Keel River. Lough Carra is an important site for wintering waterfowl, with nationally important populations of *Anas strepera* and *Anas clypeata* occurring. A range of other species occur, including diving duck, though all are in relatively low numbers. The site supports important breeding colonies of *Larus canus* and *Larus ridibundus*, representing over 6% and 2.5% of the respective national totals. However, considerably higher numbers of both of these species have been recorded in the past.

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Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:⁹

Bird Code	Common Name	Scientific Name
A182	Common Gull	Larus canus

⁸ NPWS (2021) Conservation objectives for Connemara Bog Complex SPA [004181]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

⁹ NPWS (2021) Conservation objectives for Lough Carra SPA [004051]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Lough Mask SPA (004062) Lough Mask, at over 8,000 ha, is the sixth largest lake in the country. It extends for over 14 km along its long axis and is on average about 5 km in width. The underlying geology is of Carboniferous limestones, with some shales and sandstones. The main inflowing rivers are the Cloon, Robe and the stream from Lough Carra to the north-east. The main outflow is to Lough Corrib to the south. The lake is shallow off the eastern shore but considerably deeper off the western where there is a long narrow trench with a maximum depth of 58 m. Lough Mask is one of the most important sites in the country for nesting *Larus ridibundus*, *Larus canus* and *Larus fuscus*, accounting for 8.4%, 1.7% and 10% of the respective national totals. It also supports a nationally important colony of *Sterna hirundo*. In winter the site has a range of waterfowl, especially diving duck, with the *Aythya fuligula* population being of national importance. It also supports *Cygnus cygnus* and is visited at times by part of the Erriff / Derrycraff population of *Anser albifrons flavirostris*. The lake has a population of *Salvelinus alpinus*, a Red Data book species and is an important site for *Lutra lutra*. Lough Mask is an important salmonid fishery.

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- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Objective: To maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:¹⁰

Bird Code	Common Name	Scientific Name
A061	Tufted Duck	<i>Aythya fuligula</i>
A179	Black-headed Gull	<i>Chroicocephalus ridibundus</i>
A182	Common Gull	<i>Larus canus</i>
A183	Lesser Black-backed Gull	<i>Larus fuscus</i>
A193	Common Tern	<i>Sterna hirundo</i>
A395	Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>

Lough Corrib SPA (004042) Lough Corrib is the largest lake in the Republic of Ireland. The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south and a larger, deeper basin, underlain by more acidic granite,

¹⁰ NPWS (2021) Conservation objectives for Lough Mask SPA [004062]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

schists, shales and sandstones, to the north. The main inflowing rivers are the Black, Clare, Dooghta, Cregg, Owenriff and the channel from Lough Mask. The main outflowing river is the Corrib, which reaches the sea at Galway City. Lough Corrib is classified as a mesotrophic system and overall water quality is considered to be satisfactory. The site is of international importance for wintering *Aythya ferina* but also qualifies for international importance because it regularly supports well in excess of 20,000 waterfowl. It is one of the top five sites in the country for wintering waterfowl. Of particular importance is that it is the most important site in the country for *Aythya ferina*, *Aythya fuligula* and *Fulica atra* supporting 21%, 46% and 13% of the respective national totals. It also has nationally important populations of wintering *Cygnus olor*, *Anas strepera*, *Anas clypeata*, *Pluvialis apricaria* and *Vanellus vanellus*. The lake is a traditional site for *Anser albifrons flavirostris*. Small numbers of *Cygnus cygnus* winter. Lough Corrib is a traditional breeding site for gulls and terns. There are nationally important colonies of *Sterna hirundo* and *Sterna paradisaea*, as well as *Larus ridibundus* and *Larus canus*. Considerable higher numbers of gulls bred in the 1970s and 1980s. Whilst only colonised in the 1970s/80s by nesting *Melanitta nigra*, Lough Corrib now supports approximately half of the national population of this rare duck, which is a Red Data Book species. The population has been stable since the mid-1990s. Lough Corrib supports a range of species listed on Annex II of the E.U. Habitats Directive, including *Lutra lutra*, *Salmo salar* and *Najas flexilis*.

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Objective: To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA¹¹:

Bird Code	Common Name	Scientific Name
A051	Gadwall	<i>Anas strepera</i>
A056	Shoveler	<i>Anas clypeata</i>
A059	Pochard	<i>Aythya ferina</i>
A061	Tufted Duck	<i>Aythya fuligula</i>
A065	Common Scoter	<i>Melanitta nigra</i>

¹¹ NPWS (2021) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

	A082	Hen Harrier	<i>Circus cyaneus</i> A
	125	Coot	<i>Fulica atra</i>
	A140	Golden Plover	<i>Pluvialis apricaria</i>
	A179	Black-headed Gull	<i>Chroicocephalus ridibundus</i>
	A182	Common Gull	<i>Larus canus</i>
	A193	Common Tern	<i>Sterna hirundo</i>
	A194	Arctic Tern	<i>Sterna paradisaea</i>
	A395	Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>
	<p>Slyne Head to Ardmore Point SPA (004159) The site includes a number of islands along the Connemara coast, Co. Galway, from Slyne Head to Kilkieran Bay. It is characterised by a large number of small, uninhabited islands, rocks and skerries. Some of the islands are up to 4 km from the mainland, whilst others are in very shallow waters close to the shoreline. The larger islands in the site include Inishlackan, Croaghnaकेela Island, St Macdara’s Island, Masson Island, Birmore Island, Freaghillaun, Illaunamid and Illaunurra. The islands within the site support an internationally important wintering population of <i>Branta leucopsis</i> (646 – 4 survey mean between 1993 and 2003). Since 1993, aerial surveys have recorded between 523 (1993) and 875 (2003) birds within the site. The count in 2003 represented approximately 10% of the national total. The islands used by the geese include St Macdara’s Island, Croaghnaकेela Island, Illaunacroagh More, Illaunacroagh Beg, Inishmuskerry and Birmore Island. The site is also a traditional breeding area for a number of tern species, with nationally important populations of three species occurring, i.e. <i>Sterna sandvicensis</i> (126 pairs in 1995, or 4% of the All-Ireland population), <i>Sterna paradisaea</i> (582 pairs in 1995, approximately 19% of the All-Ireland total) and <i>Sterna albifrons</i> (41 pairs in 1995, 24% of the All-Ireland total). <i>Sterna hirundo</i> (24 pairs in 1995) and <i>Sterna dougalii</i> (5 pairs in 1984) have also been recorded breeding within the site. The terns can use different islands between years.</p> <p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.¹²</p>		
	Bird Code	Common Name	Scientific Name

¹² : NPWS (2021) Conservation objectives for Slyne Head to Ardmore Point Islands SPA [004159]. Generic Version 8.0. Department of Housing, Local Government and Heritage

	<table border="0"> <tr> <td>A045</td> <td>Barnacle Goose</td> <td>Branta leucopsis</td> </tr> <tr> <td>A191</td> <td>Sandwich Tern</td> <td>Sterna sandvicensis</td> </tr> <tr> <td>A194</td> <td>Arctic Tern</td> <td>Sterna paradisaea</td> </tr> <tr> <td>A195</td> <td>Little Tern</td> <td>Sterna albifrons</td> </tr> </table> <p>Inishbofin, Omev Island and Turbot island SPA (004231) Inishbofin, Omev Island and Turbot Island SPA comprises parts of three islands lying off the coast of Connemara in Co. Galway. Inishbofin, the largest of the three islands, is situated c. 5 km from the mainland and some 20 km north-west of Clifden. It is composed of metamorphic schists and gneiss and rises to a maximum height of 89 m above sea level. The Special Protection Area (SPA) includes approximately one fifth of the island and mostly comprises agricultural grassland used for cattle and/or sheep pasture and fodder. Omev Island is a small island situated 10 km west-north-west of Clifden. Turbot Island is a flat, low-lying island situated less than 1 km off the coast and 8 km west of Clifden. The island is approximately 1.5 km in length and is underlain by granite. Almost all of the island is included within the SPA. The Inishbofin, Omev Island and Turbot Island SPA supports a nationally important breeding population of <i>Crex crex</i> and is one of a suite of sites along the western seaboard that is regularly utilised by nationally important breeding numbers of this species. <i>Crex crex</i> is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.</p> <p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. <p>Objective: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA¹³:</p> <table border="0"> <thead> <tr> <th>Bird Code</th> <th>Common Name</th> <th>Scientific Name</th> </tr> </thead> <tbody> <tr> <td>A122</td> <td>Corncrake</td> <td><i>Crex crex</i></td> </tr> </tbody> </table>	A045	Barnacle Goose	Branta leucopsis	A191	Sandwich Tern	Sterna sandvicensis	A194	Arctic Tern	Sterna paradisaea	A195	Little Tern	Sterna albifrons	Bird Code	Common Name	Scientific Name	A122	Corncrake	<i>Crex crex</i>
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<p>1.3 Describe the individual elements of the project (either alone or in combination with other plans and projects) likely to give rise to</p>	<p>Mussels are cultured using longlines. A long-line supported by a series of small floats joined by a cable or chain and anchored at the bottom on both ends is employed. Mussel spat (seed) is collected on ropes or strings (droppers) are suspended on the line. From each of the lines there are a number of dropper lines (up to 5m in length). The depth of the droppers, which is directly related to the quantity of mussels being</p>																		

¹³ : NPWS (2021) Conservation objectives for Inishbofin, Omev Island and Turbot Island SPA [004231]. Generic Version 8.0. Department of Housing, Local Government and Heritage

<p>impacts on the Natura 2000 site</p>	<p>cultured, is dependant upon a number of factors including water depth, the floatation provided and the carrying capacity of the system.</p> <p>Intertidal culture of <i>C. gigas</i> is carried out in bags on trestles in the intertidal zone. Depending on the size of the stock the numbers of oysters in each bag will vary with lower number in bags with larger oysters. Typically, seed is sourced form hatcheries in the UK or France.</p> <p>Finfish (salmon) are contained in floating cage structures arranged in a grid system which are secured to the seabed via ropes attached to anchors. The fish are put into the cages as smolts, where they are fed, and following a period of 18-24 months are harvested.</p> <p>For the majority of SCI species in the SPA's listed, there is no potential link in terms of either range or feeding habits to Killary Harbour.</p> <p>SCI species from the listed SPA's that have the potential to range as far as Killary Harbour and are known to feed in in-shore waters and bays are:</p> <p>Clare Island SPA - 004136</p> <ul style="list-style-type: none"> • Common Gull <p>Connemara Bog complex SPA - 004181</p> <ul style="list-style-type: none"> • Cormorant • Common gull <p>Lough Carra SPA – 004051</p> <ul style="list-style-type: none"> • Common gull <p>Lough Mask – 004062</p> <ul style="list-style-type: none"> • Lesser Black-backed gull
<p>1.4 Describe any likely direct, indirect, or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</p>	
<ul style="list-style-type: none"> • Size and scale 	None
<ul style="list-style-type: none"> • Land-take 	None
<ul style="list-style-type: none"> • Distance from the Natura 2000 site or key features of the site 	There is no spatial overlap between any of the aquaculture sites and the Natura 2000 sites.

<ul style="list-style-type: none"> • Resource requirements 	<p>Cultured bivalves (mussels and oysters) are filter feeders and they feed upon suspended particulate matter. They selectively ingest phytoplankton and other organic material (e.g. small zooplankton and bacteria) and dispose of inorganic and larger organic matter in pseudofeces, which is excreted into the water column. Typically, the faecal and pseudofaecal pellets will fall to the sea floor and may cause localised organic enrichment and/or sedimentation. The level of enrichment is a function of, <i>inter alia</i>, water depth current speed, density of culture, the quantity of suspended particulate matter in the water column, or a combination of these. The build-up of excess organic matter beyond the footprint of the sites is not considered likely. The bivalve shellfish production activities do not use any resources required by the qualifying features within the Natura 2000 sites.</p>
<ul style="list-style-type: none"> • Emissions (disposal to land, water or air): 	<p>The only emissions arising from the mussel production are faeces and pseudofaeces, which are excreted into the water column. Typically the faecal and pseudofaecal pellets will fall to the sea floor and there is no direct or indirect impact on the qualifying interests within the Natura 2000 sites.</p> <p>Activities associated with the mussel culture would include regular boat trips to the lines to seed, maintain, thin lines and/or harvest the mussels. These site visits would necessitate the use of a vessel which would increase the level of noise in the system. In addition the risk of pollution from exhaust or a spill would also be increased by virtue of the vessels operating in the system. This same risk would apply to recreational boats and wild fishery interests operating in the harbour. Any accidental oil spills / pollution events associated with mussel production activities within Killary harbour are likely to be minor in nature, have a localised impact only and will not have any direct or indirect impact on the qualifying interests of the adjoining Natura 2000 sites.</p>
<ul style="list-style-type: none"> • Excavation requirements 	<p>There are no excavation or similar activities associated with the aquaculture activity</p>
<ul style="list-style-type: none"> • Transportation requirements 	<p>Access routes to the aquaculture sites do not spatially overlap with any of the nearby Natura 2000 sites. The produced aquaculture products are transported offsite by lorry using the existing national road network with no impact on the nearby Natura 2000 sites.</p>
<ul style="list-style-type: none"> • Duration of construction, operation, decommissioning etc 	<p>During set and decommissioning there will be some temporary non-significant disturbance</p>
<ul style="list-style-type: none"> • Other 	<p>None</p>
<p>1.5 Describe any likely changes to the site arising as a result of:</p>	

<ul style="list-style-type: none"> • reduction of habitat area 	<p>There is no reduction in habitat area within the Natura 2000 sites arising from the mussel production activities.</p> <p>Mussel longlines have actually been shown in studies to provide extra perching sites for gulls, shags and cormorants, causing a potential positive impact</p>
<ul style="list-style-type: none"> • disturbance to key species 	<p>There is no evidence in the literature to suggest that rope mussel culture will negatively impact cormorants, common gulls or lesser black-backed gulls.</p> <p>The studies of Roycroft et al (2006) on mussel farm and bird interactions in a bay in SW Ireland found neutral/positive interactions for both cormorants and gull species from mussel farming</p>
<ul style="list-style-type: none"> • habitat or species fragmentation 	<p>There is no habitat or species fragmentation within the Natura 2000 sites arising from the mussel production activities.</p>
<ul style="list-style-type: none"> • reduction in species density 	<p>There is no reduction in species density within the Natura 2000 sites arising from the mussel production activities</p>
<ul style="list-style-type: none"> • changes in key indicators of conservation value (water quality etc) 	<p>There are no changes in key indicators of conservation value within the Natura 2000 sites arising from the mussel production activities.</p>
<ul style="list-style-type: none"> • climate change 	<p>Given the nature and scale of the mussel production activities the contribution to climate change is insignificant.</p>
<p>1.6 Describe any likely impacts on the Natura 2000 site as a whole in terms of:</p>	
<ul style="list-style-type: none"> • interference with the key relationships that define the structure of the site 	<p>None of the activities associated with the production of mussels in Killary harbour will interfere with the key relationships that define the structure of the nearby SPA sites</p>
<ul style="list-style-type: none"> • interference with key relationships that define the function of the site 	<p>Given the shellfish culture activity is not conducted in a Natura 2000 site the only concern would be a negative interaction between the shellfish culture activity and the potential feeding activity of SCI species from nearby SPA's who are known to feed close in-shore and have Killary Harbour within their range.</p> <p>Current knowledge indicates that these species have a positive/neutral reaction to mussel longlines, using the floats as perchs and feeding from the epibenthos growing on the ropes and floats.</p> <p>Consequently, it is concluded that the culture of mussels using longlines and rafts as it is currently constituted in Killary Harbour does</p>

	not pose significant risk to the SCI species (cormorant, common gull and black backed gull) and as such does not require a full appropriate assessment.
1.7 Provide indicators of significance as a result of the identification of effects set out above in terms of:	
• loss	None identified
• fragmentation	None identified
• disruption	None identified
• disturbance	None identified
• change to key elements of the site (e.g., water quality etc)	None identified
1.8 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	None identified

Table 2: Finding of No Significant Effects	
Details of project or plan	
2.1 Name of Project or Plan	Aquaculture Activities in Killary Harbour for site applications T09/508, T09/509, T09/510, T09/511A and T09/477 – Rope Mussel Culture
2.2 Name and location of Natura 2000 site	Killary Harbour is not a Natura 2000 site, but it is in potential range of Special Conservation Interest Species from a number of SPA's in the region. SACs are considered in the Marine Institute's AA Screening Matrix for Killary Harbour, 28/02/2019. The SPA's considered were: Bills Rock SPA (004177) Clare Island SPA (004136) Owenduff/Nepin Complex SPA (004098)

	<p>Cross Lough (Killadoon) SPA (004212) Illaunnanoon SPA (004221) High Island, Inishshark and Davillaun SPA (044144) Cruagh Island SPA (004170) Connemara Bog complex SPA (004181) Lough Carra SPA (004051) Lough Mask SPA (004062) Lough Corrib SPA (004042) Slyne Head to Ardmore Point SPA (004159) Inishbofin, Omey Island and Turbot island SPA (004231)</p>
2.3 Description of Project or Plan	Licence applications for rope mussel culture in Killary Harbour.
2.4 Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No
2.5 Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?	No
Assessment of significant effects	
2.6 Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site	No significant effects detected on nearby SPA sites and SCI species due to the planned cultivation of mussel in Killary Harbour at sites T09/508, T09/509, T09/510, T09/511A and T09/477
2.8 Explain why these effects are not considered significant	<p>The activity does not take place within the Natura 2000 sites, emissions of faeces and pseudofaeces are localised and impact the seabed beneath the longlines & rafts and have no direct or indirect effect on the qualifying interests of the adjoining Natura sites. There will be no reduction or fragmentation of any of the habitats within the sites or disruption or disturbance of key species. The integrity of the sites will not be impacted.</p> <p>Previous studies have detected positive/neutral impacts on the SCI species assessed from longline mussel culture</p> <p>On the basis of the above it is considered that there will be no significant effects posed by the culture of shellfish on the SCI species listed in 1. or any of the other qualifying interests' of the 3 adjoining Natura 2000 sites.</p>
Data collected to carry out the assessment	
2.9 Who carried out the assessment?	Dr Ciar O'Toole, Technical Advisor for the Aquaculture Licences Appeals Board

<p>2.10 Sources of data</p>	<p>NPWS (2021) Conservation objectives for Bills Rocks SPA [004177]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Clare Island SPA [004136]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Owenduff/Nepin Complex SPA [004098]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Cross Lough (Killadoon) SPA [004212]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Illaunnaon SPA [004221]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for High Island, Inishshark and Davillaun SPA [004144]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Cruagh Island SPA [004170]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Connemara Bog Complex SPA [004181]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Lough Carra SPA [004051]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Lough Mask SPA [004062]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Slyne Head to Ardmore Point Islands SPA [004159]. Generic Version 8.0. Department of Housing, Local Government and Heritage.</p> <p>NPWS (2021) Conservation objectives for Inishbofin, Omev Island and Turbot Island SPA [004231]. Generic Version 8.0. Department of Housing, Local Government and Heritage</p> <p>Updated Screening matrix for Aquaculture Activities in Killary Harbour, Marine Institute, 29/02/2019</p> <p>Roycroft, Daphne; Kelly, Thomas; Lewis, Lesley (2006) Behavioural interactions of seabirds with suspended mussel longlines Aquaculture International, Volume 15 (1) – Nov 8, 200</p> <p>Thaxter, Chris B.; Lascelles, Ben; Sugar, Kate; Cook, Aonghais S.C.P.; Roos, Staffan; Bolton M., Langston R H W, Burton N H K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation, Volume 156: 53-61 – Nov 1, 2012</p>

	Special Protection Areas (SPA) National Parks & Wildlife Service (npws.ie) gov.ie - Aquaculture & Foreshore Management (www.gov.ie)
2.11 Level of assessment completed	Desk study
2.12 Where can the full results of the assessment be accessed and viewed?	See 2.9 for references