

National Parks and Wildlife Service

Conservation Objectives Series

High Island, Inishshark and Davillaun SPA 004144



NPWS

An tSeirbhís Páirceanna
Náisiúnta agus Fiadhúlra
National Parks and Wildlife
Service

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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- 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.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

** indicates a priority habitat under the Habitats Directive*

004144	High Island, Inishshark and Davillaun SPA
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A009	Fulmar <i>Fulmarus glacialis</i>
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A045	Barnacle Goose <i>Branta leucopsis</i>
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A194	Arctic Tern <i>Sterna paradisaea</i>
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Please note that this SPA overlaps with Inishbofin and Inishshark SAC (000278) and is adjacent to West Connacht Coast SAC (002998). See map 2. The conservation objectives for this site should be used in conjunction with those for the adjacent/overlapping site(s) as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	2007
Title :	Seabird Productivity at East and South coast colonies in Ireland in 2007: Site accounts
Author :	Trewby, M.; Burt E.; Newton, S.
Series :	Unpublished report to NPWS
Year :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Published Report
Year :	2019
Title :	Irish wetland bird survey: waterbird status and distribution 2009/10-2015/16
Author :	Lewis, L.J.; Burke, B.; Fitzgerald, N.; Tierney, T.D.; Kelly, S.
Series :	Irish Wildlife Manuals No. 106
Year :	2021
Title :	Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Author :	Power, A.; McDonnell, P.; Tierney, T.D.
Series :	Published NPWS report
Year :	2022
Title :	Rockabill Tern Report, 2022
Author :	Allbrook, D.; Dunne, S.; Fink, A.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2022
Title :	Lady's Island Lake Tern Report 2022
Author :	Stubbings, E.; Büche, B.; Murray, T.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2023
Title :	Lady's Island Lake Tern Report 2023
Author :	Stubbings, E.; Büche, B.; Murray, T.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2023
Title :	Rockabill Tern Report 2023
Author :	Fihey, A.; Crowley, C.; Fitzgerald, M.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2024
Title :	Lady's Island Lake Tern Report 2024
Author :	Stubbings, E.; Büche, B.; Doyle, H.; Burke, B.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2024
Title :	Rockabill Tern Report 2024
Author :	Coughlan, K.; Roberts, E.; Streker, R.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS

Other References

Year :	1911
Title :	The fulmar petrel breeding in Ireland
Author :	Ussher, R.J.
Series :	The Irish Naturalist, 20(9), pp.149-152
Year :	1966
Title :	Ireland's Birds: their distribution and migrations
Author :	Rutledge, R.F.
Series :	Published by HF & G Witherby, London
Year :	1973
Title :	Population Dynamics of Barnacle Geese, <i>Branta leucopsis</i> , in Ireland
Author :	Cabot, D.
Series :	Proceedings of the Royal Irish Academy. Section B: Biological, Geological, and Chemical Science, 73, 415–443
Year :	1991
Title :	The status of seabirds in Britain and Ireland
Author :	Lloyd, C.; Tasker, M.L.; Partridge, K.
Series :	Poyser Monographs Volume: 50
Year :	1995
Title :	Impacts of hunting disturbance on waterbirds - a review
Author :	Madsen, J.; Fox, A.D.
Series :	Wildlife Biology 1(4):193-207
Year :	1997
Title :	The status and distribution of breeding sandwich, roseate, common, arctic and little terns in Ireland in 1995
Author :	Hannon, C.; Berrow, S.D.; Newton, S.F.
Series :	Irish Birds, 6: 1-22
Year :	1999
Title :	Diet of the northern fulmar <i>Fulmarus glacialis</i> : reliance on commercial fisheries?
Author :	Phillips, R.A.; Petersen, M.K.; Lilliendahl, K.; Solmundsson, J.; Hamer, K.C.; Camphuysen, C.J.; Zonfrillo, B.
Series :	Marine Biology, 135 (1), pp.159-170
Year :	1999
Title :	Managing grassland for wild geese in Britain: a review
Author :	Vickery, J.; Gill, J.
Series :	Biological Conservation, 89(1), pp.93-106
Year :	2003
Title :	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
Author :	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
Series :	JNCC Report No. 329
Year :	2004
Title :	Seabird populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2010
Title :	How Representative is the Current Monitoring of Breeding Seabirds in the UK?
Author :	Cook, A.S.C.P.; Robinson, R.A.
Series :	BTO Research Report No. 573

Year :	2019
Title :	Desk-based revision of seabird foraging ranges used for HRA screening
Author :	Woodward, I.; Thaxter, C.B.; Owen, E.; Cook, A.S.C.P.
Series :	BTO Research Report No. 724
Year :	2019
Title :	Report under Article 12 of the Birds Directive Period 2013-2018
Author :	EEA
Series :	European Environment Agency. European Topic Centre on Biological Diversity. Pp 1-9. https://cdr.eionet.europa.eu/Converters/run_conversion?file=ie/eu/art12/envxztxxq/IE_birds_reports_20191031-130157.xml&conv=612&source=remote
Year :	2020
Title :	Arctic tern (<i>Sterna paradisaea</i>), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, J. J.; Gochfeld, M.; Burger, J.; Garcia, E. F. J.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2023
Title :	Seabirds Count: a census of breeding seabirds in Britain and Ireland (2015-2021)
Author :	Burnell, D.; Perkins, A.J.; Newton, S.F.; Bolton, M.; Tierney, T.D.; Dunn, T.E.
Series :	Lynx Nature Books, Barcelona
Year :	2023
Title :	Home range of a long-distance migrant, the Greenland Barnacle Goose <i>Branta leucopsis</i> , throughout the annual cycle
Author :	Doyle, S.; Cabot, D.; Griffin, L.; Kane, A.; Colhoun, K.; Redmond, C.; Walsh, A.; McMahon, B.J.
Series :	Bird Study, 70(1-2), pp.37-46

Conservation Objectives for : High Island, Inishshark and Davillaun SPA [004144]

A009 Fulmar *Fulmarus glacialis*

To maintain the Favourable conservation condition of Fulmar in High Island, Inishshark and Davillaun SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Apparently Occupied Sites (AOS)	Long term SPA population trend is stable or increasing	Fulmar were first recorded as a breeding bird in Ireland in 1911 in Co. Mayo (Ussher, 1911). It is likely that the islands of this SPA were colonised shortly after given the significant rate at which the Fulmar population and range has expanded in Ireland since. An estimated 706 Fulmar pairs nested on High Island and Inishshark in 1987 (Lloyd et al., 1991). Surveys between 1999 and 2001 recorded 830 pairs across the three main islands of this SPA (Mitchell et al., 2004). The most recent population estimate was undertaken in 2015 and 2016 and recorded 1,552 pairs across the three main islands, an increase of 120% since 1987 (NPWS internal files). This is similar to the national population trend which has increased by 89% over the period 1985 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. Trewby et al. (2007) reported that the average productivity from Lambay Island SPA was 0.32 (\pm 0.05 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (246 pairs across three subplots). Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. An analysis of the breeding success of Fulmar in the United Kingdom over a 25 year period estimated a mean breeding success of 0.39 and speculated this would result in a population decline (Cook and Robinson, 2010). They estimated that a breeding success of 0.5 would allow populations of Fulmar to stabilise and potentially increase
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Fulmar. Typically, Fulmar nest near the tops of grassy cliffs on relatively wide ledges (Mitchell et al., 2004). Nesting Fulmar in this SPA have been recorded breeding on High Island, Inishshark and Davillaun Islands but the largest abundances have been found on Inishshark in all surveys
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The colonisation of Ireland and Britain by Fulmar over the last two centuries has been largely attributed to their close association with fisheries, but contemporary dietary studies indicate that they also feed on a wide variety of prey, including sandeels, crustaceans, and squid (Phillips et al., 1999). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Fulmar foraging ranges from the nest site during the breeding season, which are 135km, 542km, and 2,736km respectively (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening). Work carried out in the UK found that the highest densities of Fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Work carried out in the UK found that the highest densities of Fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2003). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Fulmar foraging ranges from the nest site during the breeding season, which are 135km, 542km, and 2,736km respectively (see Power et al., 2021)

Conservation Objectives for : High Island, Inishshark and Davillaun SPA [004144]

A045 Barnacle Goose *Branta leucopsis*

To maintain the Favourable conservation condition of Barnacle Goose in High Island, Inishshark and Davillaun SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of wintering Barnacle Goose in Ireland has increased by 102% from 1993 - 2018 (Lewis et al., 2019) as monitored by the International Census of Greenland Barnacle Goose. During the baseline assessments to inform SPA designation, 371 Barnacle Goose were estimated to be using this SPA and Cruagh Island SPA (4 year mean of census counts for baseline period 1993 - 2003; see NPWS, 2013). More recent data showed a population of 668 Barnacle Goose used these SPAs during the period 2013 - 2023 (4 year mean of census counts from the International Census of Greenland Barnacle Goose). This represents a population increase of 80% since the baseline period, similar to the national trend
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas are likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species is a grazing herbivore. Historically, in Ireland, foraging habitat included salt marsh, but currently the species is typically associated with open coastal pasture, mostly improved and semi-improved agricultural grasslands. Barnacle Goose grazes on leaves, stems, rhizomes, roots and seeds, with grass and <i>Plantago/Bellis/Festuca</i> swards comprising preferred food sources (Cabot, 1973). This species selects a preferred sward height of <10cm but birds can feed on swards >15cm if preferred areas are depleted (based on birds in Islay, see Vickery and Gill, 1999). Birds are highly likely to exhibit foraging site fidelity and may be found foraging on offshore islands as well as commuting to forage on the mainland. Maximum foraging distance is approximately 7km for wintering birds (Doyle et al., 2023)
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Roosting is a critical ecological requirement for the wintering population. When roosting, this species uses open habitats (primarily pastures) that provide wide sightlines for the birds and which are typically adjacent to water bodies; thus, offshore islands are commonly used. Birds exhibit strong roost site fidelity (Doyle et al., 2023). Daytime roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

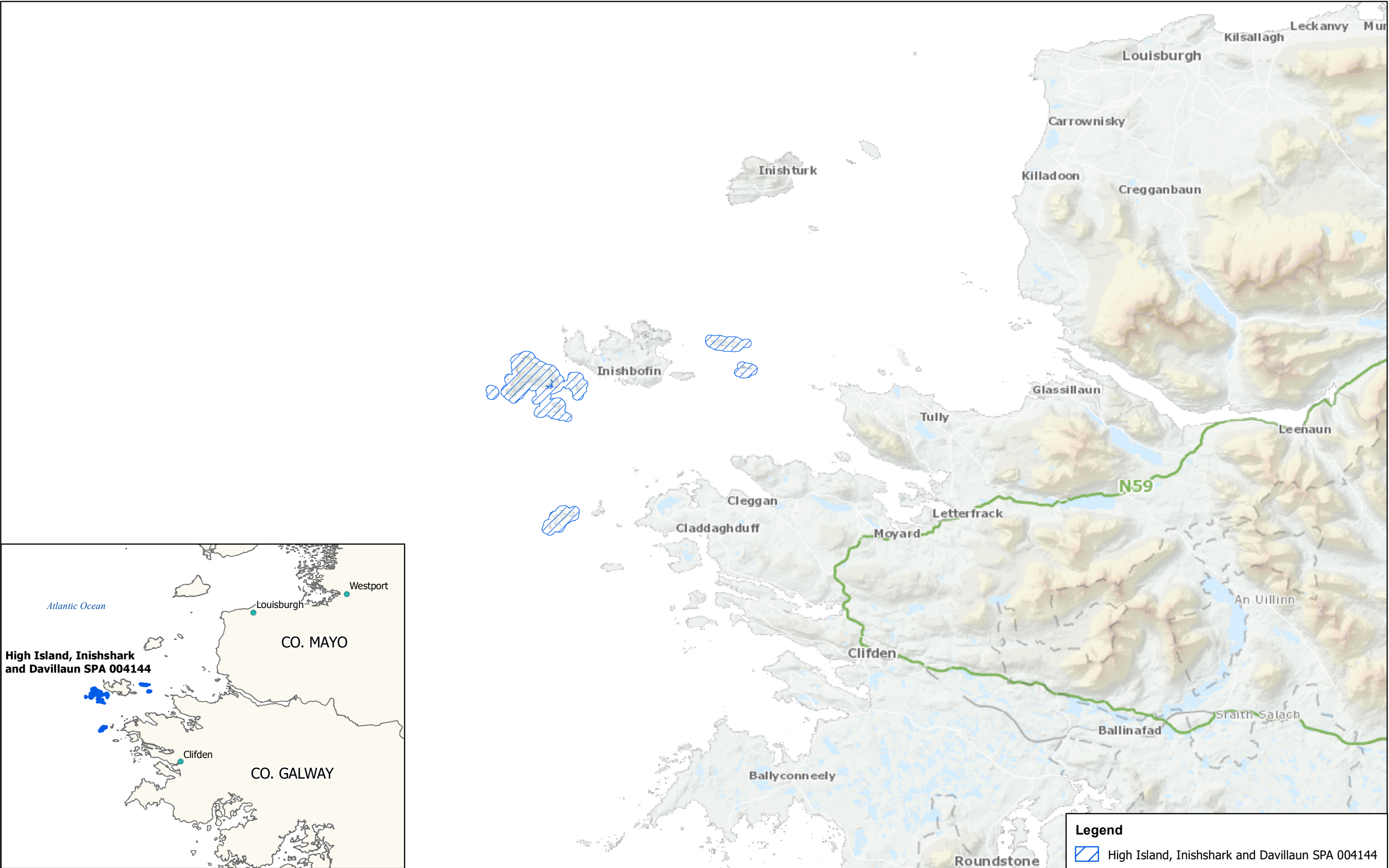
Conservation Objectives for : High Island, Inishshark and Davillaun SPA [004144]

A194 Arctic Tern *Sterna paradisaea*


To restore the Favourable conservation condition of Arctic Tern in High Island, Inishshark and Davillaun SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	Long term SPA population trend is stable or increasing	Ruttledge (1966) noted that coastal Arctic Tern colonies in Galway and Mayo were small, less than 10 pairs in size. However, the offshore islands of this region can be difficult to access and survey accurately. This SPA is comprised of multiple offshore islands and islets and is not surveyed regularly due to logistical challenges. The Arctic Tern population in this SPA was surveyed in 1995 as part of the all-Ireland tern survey which recorded 60 pairs breeding on the Davillaun Islands and Inishgort (Hannon et al., 1997). Between 2016 and 2018 an estimated 6 pairs of Arctic Tern were recorded breeding across Davillaun Islands, Inishgort and Inishskinnymore (NPWS internal files), a decline of 90% since 1995. The national population in 1998 - 2002 and 2015 - 2021 was 2,735 and 2,708 pairs respectively which indicates a stable population (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. Annual productivity estimates are available from the wardened tern colonies of Rockabill and Lady's Island Lake. Over a three-year period (2022 - 2024) the average productivity estimates were 0.24 and 0.93 chicks per nest respectively (Stubbings et al., 2022, 2023 and 2024; Coughlan et al., 2024, Fihey et al., 2023; and Allbrook et al., 2022)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Arctic Tern. Terns are ground nesting birds. Typically colonies are found in open areas close to the shore, frequently in areas with loose substrate or low vegetation (Hatch et al., 2020). In Ireland all known large colonies are situated on marine or inland islands of varying distances from the mainland/shore. Within this SPA Arctic Tern have been recorded breeding on the Davillaun Islands, Inishgort and Inishskinnymore
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Arctic Tern are largely piscivorous. The most frequent fish prey are small, schooling species commonly caught in open water, at tide rips, and over predators (e.g. jellyfish and marine mammals). These are usually 1- or 2-year-old fish from the Clupeidae (herring), Gadidae (cod, pollock) and Ammodytidae (sandeel) families (Hatch et al., 2020). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Arctic Tern foraging ranges from the nest site during the breeding season, which are 6km, 26km, and 46km respectively (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Seabird species can make extensive use of the waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003). Additionally, some species may engage in maintenance behaviours outside of the breeding colony but not in the water. For example, terns may roost on rocky islets or beaches away from the breeding colony
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular access to waters ecologically connected to the colony in order to forage, as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Arctic Tern foraging ranges from the nest site during the breeding season, which are 6km, 26km, and 46km respectively (see Power et al., 2021)



Legend

 High Island, Inishshark and Davillaun SPA 004144

