

National Parks and Wildlife Service

Conservation Objectives Series

Connemara Islands SPA 004159



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

004159	Connemara Islands SPA
A045	Barnacle Goose <i>Branta leucopsis</i>
A191	Sandwich Tern <i>Sterna sandvicensis</i>
A193	Common Tern <i>Sterna hirundo</i>
A194	Arctic Tern <i>Sterna paradisaea</i>
A195	Little Tern <i>Sterna albifrons</i>

Please note that this SPA overlaps with Rosroe Bog SAC (000324), Slyne Head Islands SAC (000328), Cregduff Lough SAC (001251), Dog's Bay SAC (001257), Connemara Bog Complex SAC (002034), Slyne Head Peninsula SAC (002074), Kilkieran Bay and Islands SAC (002111) and Murvey Machair SAC (002129). See map 2. The conservation objectives for this site should be used in conjunction with those for the 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 :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Published Report
Year :	2016
Title :	A survey of breeding terns, gulls, cormorants and shags of the south Connemara offshore island group, with particular focus on the breeding terns within the Slyne Head to Ardmore Point Islands SPA
Author :	Suddaby, D.
Series :	Unpublished report to NPWS by BirdWatch Ireland
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 :	Rockabill Tern Report 2023
Author :	Fihey, A.; Crowley, C.; Fitzgerald, M.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2023
Title :	Kilcoole Little Tern Conservation Project Report 2023
Author :	Johnson, G.C.; Stanley, J.; Doyle M.; Burke, B.
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 :	Survey and conservation assessment of terns in South Connemara: results of a survey in 2023
Author :	Colhoun, K.; Latimer, J.; Newton, T.; Sarda Serra, M.
Series :	Unpublished report by KRC Ltd. for 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

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

Other References

Year : 1853
Title : The Natural History of the Birds of Ireland, Indigenous and Migratory: Containing Descriptions of the Habits, Migrations, Occurrence, and Economy, of the 261 Species Comprised in the Fauna
Author : Watters, J.J.
Series : J. McGlashan, Dublin

Year : 1900
Title : The Birds of Ireland: An Account of the Distribution, Migrations and Habits of Birds as Observed in Ireland, with All Additions to the Irish List
Author : Ussher, R.J.; Warren, R.
Series : Gurney and Jackson

Year : 1954
Title : The Birds of Ireland. Their Migrations and Habits. Assessed by G.R. Humphreys
Author : Kennedy, P.G.; Ruttledge R.F.; Scroope, C.F.
Series : London: Oliver and Boyd

Year : 1973
Title : Population Dynamics of Barnacle Geese, *Branta leucopsis*, in Ireland
Author : Cabot, D.
Series : Proceedings of the Royal Irish Academy. Section B: Biological, Geological, and Chemical Science, 73, 415–443

Year : 1978
Title : Population models for common terns in Massachusetts
Author : Nisbet, I.C.T.
Series : Bird-banding, 49(1), 50-58

Year : 1980
Title : Population dynamics of a Common Tern colony
Author : DiCostanzo, J.
Series : Journal of Field Ornithology, 51(3), pp.229-243

Year : 1985
Title : The 1984 all Ireland tern survey
Author : Whilde, A.
Series : Irish Birds 3: 1-32

Year : 1995
Title : Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds
Author : Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
Series : JNCC, Peterborough

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 :	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 :	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 :	Common tern (<i>Sterna hirundo</i>), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Arnold, J.M.; Oswald, S.A.; Nisbet, I.C.T.; Pyle, P.; Patten, M.A.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
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 :	2020
Title :	Sandwich Tern (<i>Thalasseus sandvicensis</i>), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Shealer, D.; Liechty, J. S.; Pierce, A. R.; Pyle, P.; Patten., M. A.
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 *Branta leucopsis*, 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

A045 Barnacle Goose *Branta leucopsis*

To maintain the Favourable conservation condition of Barnacle Goose at Connemara Islands 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 within the SPA is stable or increasing	The national population of wintering Barnacle Goose in Ireland has increased by 102% from 1993 to 2018 (Lewis et al., 2019) as monitored by the International Census of Greenland Barnacle Goose. During the baseline assessments to inform SPA designation, 647 Barnacle Goose were estimated to be using this SPA (4 year mean of census survey counts for baseline period 1993 - 2003; see NPWS, 2013). More recent data showed a population of 788 Barnacle Goose used the SPA during the period 2013 - 2023 (4 year mean of census survey counts from the International Census of Greenland Barnacle Goose). This represents a population increase of 22% since the baseline period, less than the national trend
Winter spatial distribution	Hectares, time and intensity of use	Sufficient 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 : Connemara Islands SPA [004159]

A191 Sandwich Tern *Sterna sandvicensis*

To restore the Favourable conservation condition of Sandwich Tern in Connemara Islands 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	Watters (1853) recorded breeding Sandwich Tern in Ireland for the first time on Rockabill Island in 1850. Breeding was first recorded in Galway in 1917 (Kennedy et al., 1954). The islands within this SPA supported 334 pairs in 1984 (Whilde et al., 1985). Since then the population has decreased and has then remained stable in subsequent surveys with estimates of 126, 137 and 131 pairs being recorded in 1995, 2016 and 2023 (Hannon et al., 1997; Suddaby et al., 2016; Colhoun et al., 2023). This represents an overall decline of 61% since 1984. The 1984 population for this SPA was 26% of the national population but the current population estimate represents less than 6% of the national population. In that time period (1984 - 2021) the Irish population has doubled. This increase can be partially attributed to the colony at Lady's Island Lake SPA where the population has increased since a wardening project began in the 1980s (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. However, the breeding population at Lady's Island Lake SPA is among the most well monitored in the country. During 2022 - 2024, estimated productivity ranged from 0.13 to 0.72 chicks presumed fledged per AON, with a mean of 0.49 (Stubbings et al., 2022, 2023, 2024). The particularly low estimate of 0.13 in 2023 was due to excessive predation at the study site and may not represent the SPA as a whole (Stubbings et al., 2023). Cook and Robinson (2010) conducted Population Viability Analyses of selected UK breeding populations and recorded productivity of 0.66 at monitored nests. If sustained, this level would lead to a 62% population decline over 25 years. Population stability would require productivity of 1.1 chicks per nest per year. As this long-lived species may return annually without fledging chicks, caution is needed when interpreting breeding numbers without productivity data
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 Sandwich Tern. Typically, colonies are located in areas with bare sand, small pebbles, or short grass (Shealer et al., 2020). In Ireland, all known large colonies are situated on marine or inland islands of varying distances from the mainland/shore. Between 1984 - 2023 Sandwich Tern have been recorded breeding on at least seven islands within this SPA. Lobinish is currently the most significant colony within the SPA

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	Sandwich Tern feed primarily along coastal marine areas. They are largely piscivorous. In north-temperate regions of Europe they primarily eat Clupeidae (herrings) and Ammodytidae (sandeels) families (Shealer 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 Sandwich Tern foraging ranges from the nest site during the breeding season, which are 9km, 34km, and 80km 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 Sandwich Tern foraging ranges from the nest site during the breeding season, which are 9km, 34km, and 80km respectively (see Power et al., 2021)

Conservation Objectives for : Connemara Islands SPA [004159]

A193 Common Tern *Sterna hirundo*

To restore the Favourable conservation condition of Common Tern in Connemara Islands 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	Common Tern have been recorded breeding on the marine islands of Galway since at least the 19th century (Ussher and Warren, 1900). Kennedy et al. (1954) noted the presence of multiple, small fluctuating colonies in the region of the current SPA. The islands within this SPA supported 420 pairs in 1984 (Whilde et al., 1985) which represents the peak count for this SPA. A subsequent survey yielded only 59 pairs (Hannon et al., 1997) and dropped further to 34 pairs in 2010 (NPWS internal files). The population has increased to 74 and 76 pairs in the two most recent surveys in 2016 and 2023 (Suddaby et al., 2016; Colhoun et al., 2023). This represents an overall decline of 82% since 1984. The national population trend has seen a significant increase in Common Tern but this can be partially attributed to the growth of the colony at Rockabill SPA where the population has increased rapidly since a wardening project began in the 1980s (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. A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this species at site level. Walsh et al. (1995) set out methods to estimate the productivity rate for this species. A productivity rate of 1.1 young per pair is needed to maintain a colony according to DiCostanzo (1980) and Nisbet (1978). However, it has been noted that colonies with productivity rates of 0.6 and above can have stable or growing tern populations. Colonies such as Rockabill Island have supported a stable/growing Common Tern population with a productivity rate between 0.6 and 1.1 (Allbrook et al., 2022). As this species is long-lived there is a possibility that a population could be returning to a nest site annually but not fledging any chicks. Caution should be taken when interpreting the results of tern breeding numbers, especially on offshore islands, without having productivity data
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	Common Tern are ground nesting birds. Typically colonies are found in open areas with loose substrate, such as sand or shingle, with some scattered vegetation to provide cover for chicks (Arnold et al., 2020). Between 1984 - 2023 Common Tern have been recorded breeding on at least 18 islands within this SPA. Geabhrog Island, Lobinish Green Islands, Cashel Bay, Illaunnaguroge and Glencoh Rock have been the most significant colonies in that time period
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	Common Tern are largely piscivorous, feeding on small fish up to 150mm in length (Arnold et al., 2020). Common Tern feed almost entirely on live, aquatic prey (Arnold 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 Common Tern foraging ranges from the nest site during the breeding season, which are 6.4km, 18km, and 30km 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	Tern 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	Terns, 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 Common Tern foraging ranges from the nest site during the breeding season, which are 6.4km, 18km, and 30km respectively (see Power et al., 2021)

A194 Arctic Tern *Sterna paradisaea*

To restore the Favourable conservation condition of Arctic Tern in Connemara Islands 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	Watters (1853) noted that Arctic Tern were extensively distributed on the west coast while Ussher and Warren (1900) stated the islands close to Slyne Head held large numbers of this species. The islands within this SPA supported 514 and 592 pairs of Arctic Tern in 1984 and 1995 respectively (Whilde et al., 1985; Hannon et al., 1997). The population was somewhat similar in 2010 with an estimated 467 pairs recorded (NPWS internal files). However, the population dropped to 195 in 2016 (Suddaby et al., 2016) and declined further to 43 pairs in 2023 (Colhoun et al., 2023), the lowest recorded for this area. This represents an overall decline of 92% since 1984. The 1984 population for this SPA was approximately 26% of the national population at that time but the current population estimate represents less than 2% of the national population. This contrasts with the national population trend which has increased in that time period (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). As this species is long-lived there is a possibility that a population could be returning to a nest site annually but not fledging any chicks. Caution should be taken when interpreting the results of tern breeding numbers, especially on offshore islands, without having productivity data
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. Between 1984 and 2023 Arctic Tern have been recorded breeding on at least 34 islands within this SPA. Illaunamid, Duck Island and Fox Island have held the most significant colonies in that time period
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)

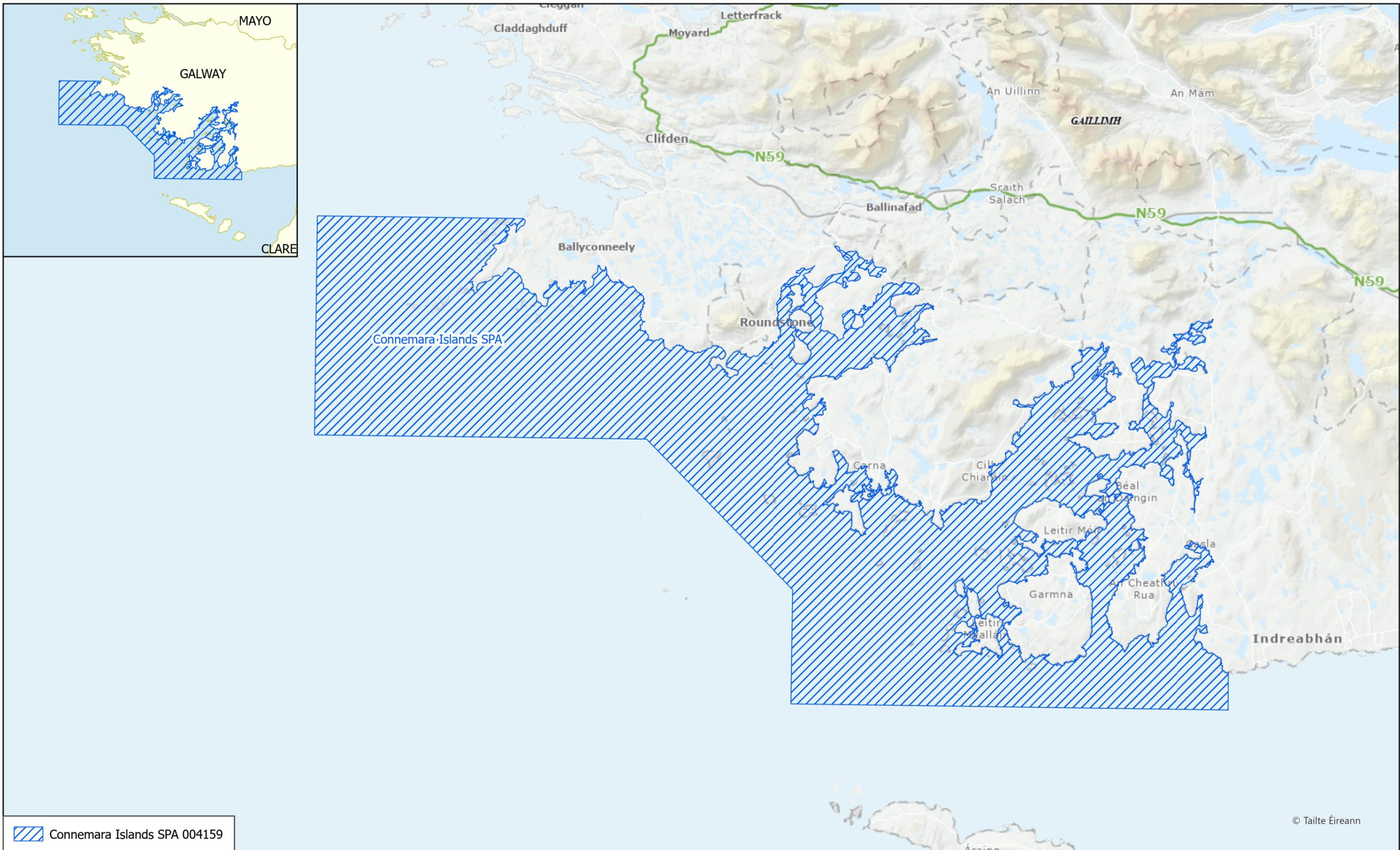
Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment 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)

A195 Little Tern *Sterna albifrons*

To maintain the Favourable conservation condition of Little Tern in Connemara Islands 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	Little Tern have been breeding off the coast of Galway since at least the 1850s (Watters, 1853), with Ussher and Warren (1900) noting their presence off the coast of Connemara near Roundstone. The breeding islands within this SPA supported 25 pairs of Little Tern in 1984 (Whilde et al., 1985). Since then the population has increased and then remained stable with estimates of 45, 41 and 42 pairs being recorded in 1995, 2016 and 2023 (Hannon et al., 1997; Suddaby et al., 2016; Colhoun et al., 2023). This represents an overall increase of 68% since 1984. The national population trend for Little Tern has seen a significant increase but this can be attributed to the growth of the colony at The Murrough SPA, where the population has increased rapidly since the establishment of a wardening project in the 1980s (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. A productivity rate of 0.7 chicks per pair is required for population stability for Little Tern, according to an analysis by Cook and Robinson (2010). In 2023, the productivity rate at the wardened Little Tern colony at The Murrough SPA was 1.5 and since 2010 the productivity has been above 1.0 for most years, which is well above the output needed to maintain the population (Johnson et al., 2023). As this species is long-lived there is a possibility that a population could be returning to a nest site annually but not fledging any chicks. Caution should be taken when interpreting the results of tern breeding numbers, especially on offshore islands, without having productivity data
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 Little Tern. Between 1984 and 2023 Little Tern have been recorded breeding on at least 16 islands within this SPA. Fox Island, Illaunurra and Mason Island have been the most significant colonies in that time period
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	Little Tern are largely piscivorous; studies from an east coast Irish colony show that sandeels (<i>Ammodytes</i> spp.) along with clupeids and, to a lesser extent, gadoids can form important prey bases (Johnson et al., 2022). Based on two studies on a single colony, Woodward et al. (2019) summarises the mean foraging range and the mean-maximum foraging range as 3.5km and 5km, respectively

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 breeding colony can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance 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 and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on two studies on a single colony, Woodward et al. (2019) summarises the mean foraging range and the mean-maximum foraging range as 3.5km and 5km respectively



 Connemara Islands SPA 004159

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NPWS An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

**MAP 1: CONNEMARA ISLANDS SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION**
SITE CODE: 004159 SPA; Version 3.02; CO. GALWAY

0 5 10 km

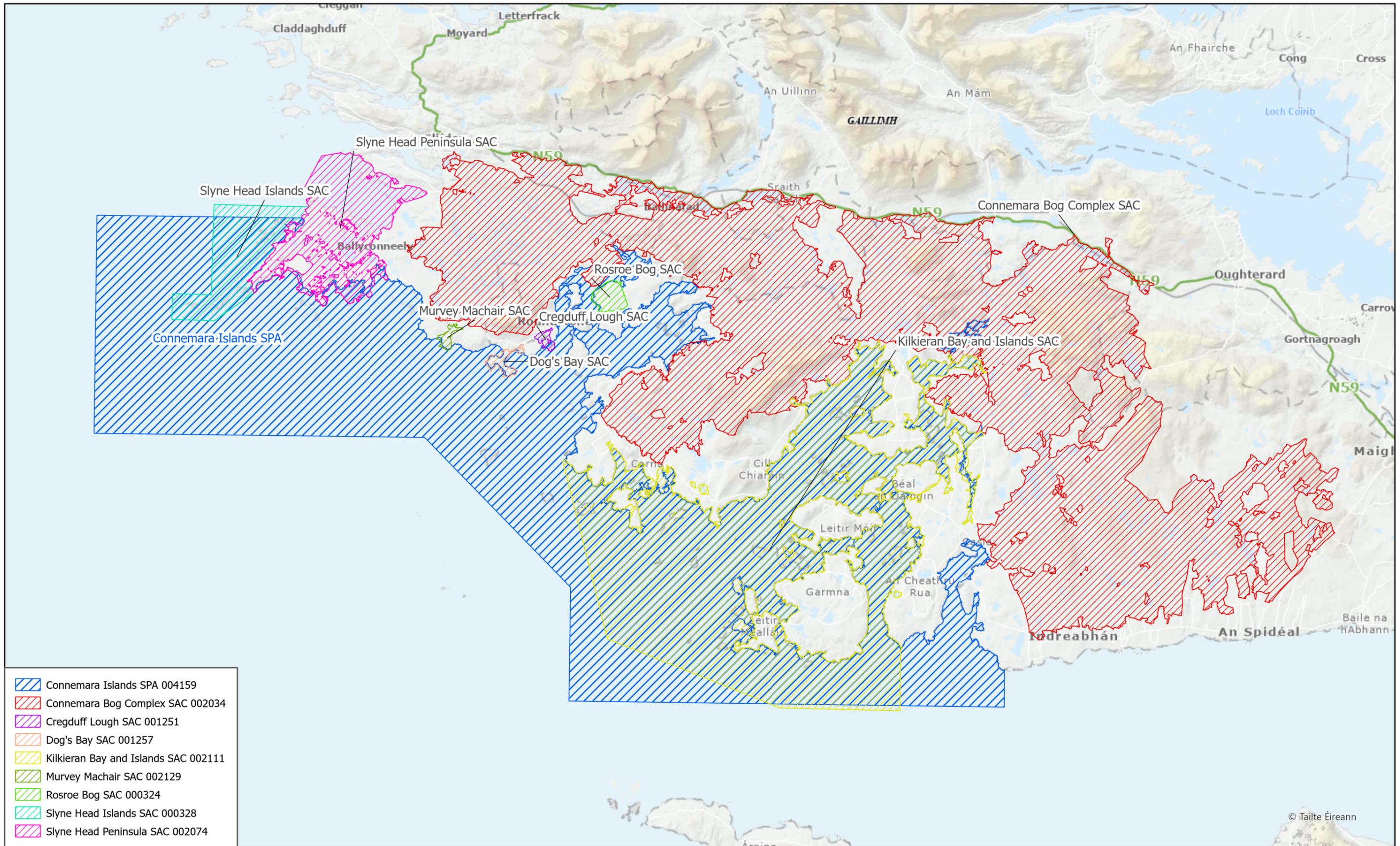
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision. Reproduced from © Tailte Éireann – Surveying material by permission of the Government (Permit number: CYAL50512861)

Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe. Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas (Ceadunas Uimh. CYAL50512861)

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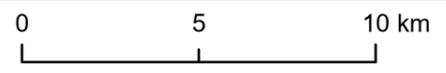


**Map Version 1
Date: February 2026**



-  Connemara Islands SPA 004159
-  Connemara Bog Complex SAC 002034
-  Cregduff Lough SAC 001251
-  Dog's Bay SAC 001257
-  Kilkieran Bay and Islands SAC 002111
-  Murvey Machair SAC 002129
-  Rosroe Bog SAC 000324
-  Slyne Head Islands SAC 000328
-  Slyne Head Peninsula SAC 002074

**MAP 2: CONNEMARA ISLANDS SPA
CONSERVATION OBJECTIVES
OVERLAPPING & ADJACENT SITES**
SITE CODE: 004159 SPA; Version 3.02; CO. GALWAY



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Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe. Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas (Ceadunas Uimh. CYAL50512861)

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Map Version 1
Date: February 2026