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Conservation Objectives Series

Magharee Islands SPA 004125

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***

004125	Magharee Islands SPA
A014	Storm Petrel *Hydrobates pelagicus*
A018	Shag *Phalacrocorax aristotelis*
A045	Barnacle Goose *Branta leucopsis*
A182	Common Gull *Larus canus*
A193	Common Tern *Sterna hirundo*
A194	Arctic Tern *Sterna paradisaea*
A195	Little Tern *Sterna albifrons*

Please note that this SPA overlaps with Magharee Islands SAC (002261), and Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping or adjacent 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 :	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 :	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
Year :	2024
Title :	Foraging activity of breeding Arctic Terns and European Shags in W Ireland: results of a telemetry study in 2023
Author :	Colhoun, K.; Latimer, J.; Sardà-Serra, M.; Collins, J.; Inger, R.
Series :	Unpublished report to NPWS

Other References

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 :	1966
Title :	Ireland's Birds: their distribution and migrations
Author :	Ruttledge, R.F.
Series :	Published by HF & G Witherby, London
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 :	1976
Title :	The seabirds of Britain and Ireland.
Author :	Cramp, S.; Bourne, W.R.P.; Saunders, D.
Series :	HarperCollins
Year :	1977
Title :	Handbook of the Birds of Europe, the Middle East and North Africa. The birds of the Western Palearctic, Vol. 1
Author :	Cramp, S.; Simmons, K.E.L.
Series :	Oxford University Press, Oxford
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 :	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 :	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 :	2007
Title :	Breeding birds of the Magharees & related islands, 2006/07
Author :	O'Clery, M.
Series :	The Dingle Peninsula Bird Report 2005-2007
Year :	2008
Title :	Colony habitat selection by Little Terns *Sternula albifrons* in East Anglia: implications for coastal management
Author :	Ratcliffe, N.; Schmitt, S.; Mayo, A.; Tratalos, J.; Drewitt, A.
Series :	Seabird, 21: 55-63
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 (*Sterna hirundo*), 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 (*Sterna paradisaea*), 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 :	2021
Title :	Common Gull (*Larus canus*), version 1.1. In Birds of the World (S. M. Billerman, Editor)
Author :	Moskoff, W.; Bevier, L.R.; Rasmussen, P.C.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	European Shag (*Gulosus aristotelis*), version 1.2. In Birds of the World (B. K. Keeney, Editor)
Author :	Orta, J., Garcia, E. F. J.; Jutglar, F.; Kirwan, G. M.; Boesman, P. F. D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	European Storm-Petrel (*Hydrobates pelagicus*), version 1.1. In Birds of the World (Editor not available)
Author :	Carboneras, C.; Jutglar, F.; Kirwan, G.M.
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
Year :	2024
Title :	European Shag (*Phalacrocorax aristotelis*)
Author :	JNCC
Series :	https://jncc.gov.uk/our-work/european-shag-phalacrocorax-aristotelis/
Year :	2024
Title :	Seabird Population Trends and Causes of Change: 1986–2023, the annual report of the Seabird Monitoring Programme
Author :	Harris, S.J.; Baker, H.; Balmer, D.E.; Bolton, M.; Burton, N.H.K.; Caulfield, E.; Clarke, J.A.E.; Dunn, T.E.; Evans, T.J.; Hereward, H.R.F.; Humphreys, E.M.; Money, S.; O'Hanlon, N.J.
Series :	BTO Research Report 771

A014 Storm Petrel *Hydrobates pelagicus*

To maintain the Favourable conservation condition of Storm Petrel in Magharee Islands 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	Storm Petrel are small, nocturnal and nest underground on islands which leads to difficulties in surveying and generating accurate population estimates. Survey and analytical methods for this species have changed between surveys and are likely to change in the future (Burnell et al., 2023). Therefore, caution is required when comparing estimates. Initial population estimates for these islands were below 100 pairs (Cramp et al., 1976; Lloyd et al., 1991). The first full survey of breeding seabirds in this SPA took place in 2006 - 2007 and an estimated 1,272 pairs of Storm Petrel were recorded breeding across four islands in this SPA (O'Clery, 2007). The largest population was recorded on Illauntannig with 851 pairs recorded (O'Clery, 2007). Illauntannig was surveyed in 2018 and an estimated 923 pairs were recorded (Burnell et al., 2023) which indicates a stable population on that island
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. There is a lack of published productivity estimates for this species. On Skellig Michael there is an ongoing programme of work to develop a method to produce robust productivity estimates for Storm Petrel at that site. In the UK there is insufficient data to produce productivity trends due to the difficulties involved in monitoring breeding success for this burrow and crevice nesting species (Harris et al., 2024)
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 Strom Petrel. Storm Petrel breed on rocky ground on offshore islands and stacks, and occasionally on headlands (Carboneras et al., 2021). Storm Petrel use a range of nesting habitats, including natural crevices, under rocks and boulders, in stone walls, in self-excavated burrows, and in burrows originally excavated by other species (Cramp and Simmons, 1977). In decreasing order of abundance, O'Clery (2007) recorded Storm Petrel breeding on Illauntannig, Illaunimmil, Inishtooskert and Gurrig
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 primary diet of the Storm Petrel is small fish (*Sprattus sprattus*, *Ammodytes marinus*), squid, and crustaceans (Carboneras et al., 2021). Based on several studies, Woodward et al. (2019) estimate a mean-max foraging range of 336km for Storm Petrel from the nest site during the breeding season (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), as defined in 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. Based on several studies, Woodward et al. (2019) estimate a mean-max foraging range of 336km for Storm Petrel from the nest site during the breeding season (see Power et al., 2021)

A018 Shag *Phalacrocorax aristotelis*

To restore the Favourable conservation condition of Shag in Magharee 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	An estimated 63 pairs of Shag nested on Gurrig Island in 1987 (NPWS internal files). A survey in 2001 yielded 44 pairs on Gurrig island and 61 in total for the site across four islands (NPWS internal files). The first full survey of the Magharee Islands for breeding seabirds took place in 2006 - 2007 (O'Clery, 2007). In 2006, a total of 198 - 218 pairs of Shag were recorded on seven islands (O'Clery, 2007). In 2007, there were 223 - 236 pairs on five islands (O'Clery, 2007). In 2016 the population was estimated to be 47 pairs breeding across two islands (Burnell et al., 2023). The national population of Shag has increased by 40% between surveys in 1998 - 2002 and 2015 - 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 1.69 (± 0.08 SE) chicks fledged per AON in 2007 (135 pairs across five 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. Shag productivity in Scotland has averaged 1.28 chicks fledged per pair between 1986 and 2019 (JNCC, 2024). In this time period the Scottish population of Shag has decreased 47% (Burnell et al., 2023). However, the cause of decline may not be related to productivity rate but rather due to significant losses of that adult population during "wrecks" in some winters during this time period (JNCC, 2024)
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 Shag. Typically this species breeds on sea cliffs, rocks and stacks (Orta et al., 2021). Shag within this SPA have been recorded breeding on Gurrig Island, Mucklaghbeg, Inishtooskert, Illaunimmill, Illaunboe, Illaunturlogh, Mucklaghmore, and Illaunnabarnagh
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 diet of Shag is almost exclusively fish, taken chiefly near the sea bed or at intermediate depths, and principally of the families Ammodytidae (sandeels), Gadidae, Clupeidae, Cottidae, and Labridae, but a wide range of other species can be taken, perhaps opportunistically (Orta et al., 2021). Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Shag, which are 9km, 13km, 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 marine 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
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. Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Shag, which are 9km, 13km, and 46km respectively (see Power et al., 2021)

A045 Barnacle Goose *Branta leucopsis*

To restore the Favourable conservation condition of Barnacle Goose in Magharee 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 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, a population of 85 Barnacle Goose were estimated to be using Magharee Islands SPA (4 year mean of census counts for baseline period 1993 - 2003; see NPWS, 2013). More recent data showed a population of 22 Barnacle Goose used this SPA during the period 2013 - 2023 (4 year mean of census counts from the International Census of Greenland Barnacle Goose), with no Barnacle Goose recorded during the 2013, 2018 and 2023 censuses, and 89 geese recorded during the 2020 census. This represents a population decrease of 74% since the baseline period, in contrast to 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 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 *Plantago/Bellis/Festuca* 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 use. 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

A182 Common Gull *Larus canus*

To maintain the Favourable conservation condition of Common Gull in Magharee 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	It is likely that there has been a Common Gull colony on the Magharees since at least the early 19th century (O'Clery, 2007). Kennedy et al. (1954) noted the presence of a small colony on the Magharees and Ruttledge (1966) estimated 20 pairs. O'Clery (2007) notes that Illauntannig alone held a population of approximately 70 - 80 pairs between 1978 - 2007. The first full survey of these islands for breeding seabirds took place in 2006 - 2007 (O'Clery, 2007). An estimated 178 - 187 pairs of Common Gull bred across seven islands within this SPA in 2007 (O'Clery, 2007). The most recent complete survey of the islands in 2016 recorded 218 pairs across five islands, an increase of approximately 20% since 2007 (Burnell et al., 2023). The national population of Common Gull has increased by 89% between surveys in 1998 - 2002 and 2015 - 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. A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this species at the site and at the national level. Common Gull productivity in Scotland between 2000 and 2020 was below 0.6 chicks per breeding pair; in this time period the Scottish population of Common Gull was decreasing (Harris et al., 2024)
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 areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Common Gull. Common Gull breeding near marine environments typically nest on small inshore rocky stacks, islets and islands, grassy and rocky slopes, sand dunes, and the foreshore (Moskoff et al., 2021). Common Gull within this SPA have been recorded breeding on Gurrig Island, Mucklaghbeg, Inishtooskert, Illaunimmil, Illauntannig, Illaunboe, Reennafardarrig, Doonagaun and Illaunanoon. The largest population in 2007 and 2016 was on Illauntannig
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	Diet varies by location and season. Birds foraging in marine environments feed on fish and marine invertebrates (Moskoff et al., 2021). Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (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) as defined in 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. Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (see Power et al., 2021)

A193 Common Tern *Sterna hirundo*

To restore the Favourable conservation condition of Common Tern in Magharee 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	Ussher and Warren (1900) noted there were few Common Tern colonies on the coast of Co. Kerry and Kennedy et al. (1954) commented that there was no colony in Co. Kerry at that time. Ruttledge (1966) referred to a population of 70 pairs on Illaunturlogh. The Magharee Islands were surveyed as part of the all-Ireland tern surveys in 1984 and 1995 with 42 pairs recorded in 1984 on two islands (Whilde et al., 1985) and 58 pairs recorded in 1995 across three islands (Hannon et al., 1997). In 2006, a total of 78 - 90 pairs of Common Tern were recorded breeding on two islands (O'Clery, 2007). In 2007, there were 128 - 136 pairs estimated on four islands (O'Clery, 2007). The population declined to 33 pairs in 2016 (Burnell et al., 2023), a decrease of 43% since 1995. The national population of Common Tern has increased by 91% from 2,469 pairs in 1998 - 2002 to 4,728 pairs in 2015 - 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. 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). Common Tern within this SPA have been recorded breeding on Mucklaghbeg, Illauntannig, Illaunboe, Reennafardarrig, Doonagaun, Illaunturlogh and Illaunnabarnagh
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 Magharee 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	Ussher and Warren (1900) described the presence of breeding Arctic Tern on islands off Tralee Bay and Kennedy et al. (1954) noted 50 pairs breeding on Doonagaun and associated islands. The Magharee Islands were surveyed as part of the all-Ireland tern surveys in 1984 and 1995 with 47 pairs recorded in 1984 on two islands (Whilde et al., 1985) and 232 pairs recorded in 1995 across four islands (Hannon et al., 1997). In 2006, a total of 159 - 203 pairs of Arctic Tern were recorded on four islands (O'Clery, 2007). In 2007, there were 163 - 170 pairs across six islands (O'Clery, 2007). Burnell et al. (2023) noted that the population was restricted to two islands amounting to 58 pairs, a decrease of approximately 75% since 1995. An incomplete survey in 2023 recorded approximately 50 pairs on two islands (NPWS internal files)
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. Arctic Tern within this SPA have been recorded breeding on Gurrig Island, Mucklaghbeg, Illaunimmil, Illauntannig, Illaunboe, Reennafardarrig, Doonagaun, Illaunturlogh and Illaunnabarnagh. The largest population in 2007 and 2016 was on Illauntannig

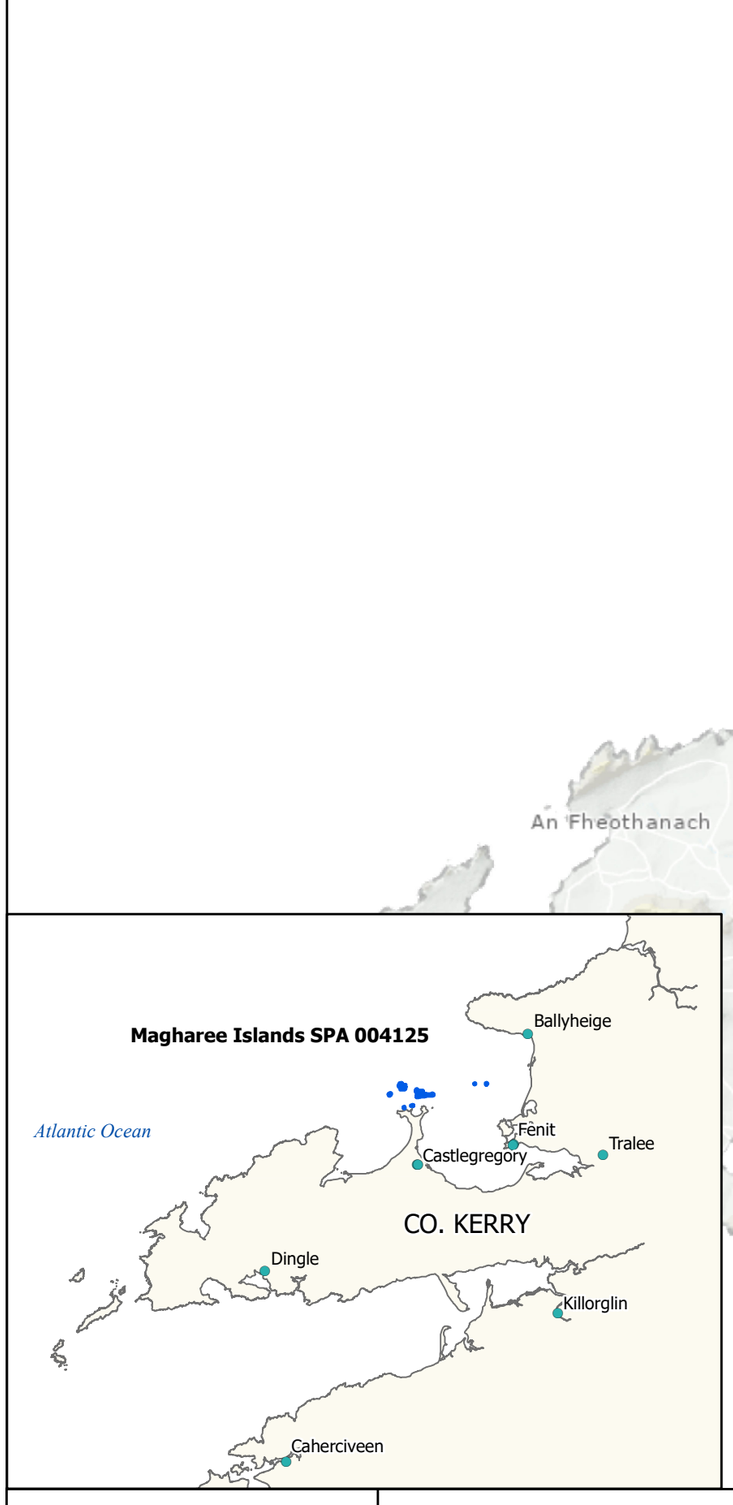
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Arctic Tern are largely piscivorous. The most frequent fish prey are small, schooling 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). A study of GPS-tagged Arctic Tern on Illauntannig (n=12) in 2023 identified outer Tralee Bay as the preferred feeding area, not more than 12km from the colony (Colhoun et al., 2024)
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 and Colhoun et al., 2024)

A195 Little Tern *Sterna albifrons*

To restore the Favourable conservation condition of Little Tern in Magharee 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	Ussher and Warren (1900) did not record any Little Tern colonies in Munster. Kennedy (1954) and Ruttledge (1966) noted that the only known instances of Little Tern breeding in Munster was in Co. Cork. The Magharee Islands were surveyed as part of two all-Ireland tern surveys with 10 pairs recorded in 1984 (Whilde et al., 1985) and 36 pairs recorded in 1995 (Hannon et al., 1997). In 2006, a total of 32 - 40 pairs of Little Tern were recorded and in 2007 there were 18 pairs recorded with birds nesting only on Illauntannig in both years (O'Clery, 2007). O'Clery (2007) reports a peak population of 50 pairs between the 1990s and 2007. The population declined to 6 pairs in 2016 and were found breeding on two islands (Burnell et al., 2023). An incomplete survey in 2023 recorded 26 pairs on Illauntannig (NPWS internal files)
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 of seabird population by Cook and Robinson (2010). Productivity is monitored as part of the conservation project at The Murrough SPA. In 2023, the productivity rate 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. Illauntannig appears to be the most important island for Little Tern within this 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	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. Human disturbance can impact on breeding success, as colonies are often sited on beaches used by the public (Ratcliffe et al., 2008)

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	The Little Tern has the smallest foraging range of seabirds breeding in Ireland (Woodward et al., 2019). 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



Legend

Magharee Islands SPA 004125

MAP 1:
MAGHAREE ISLANDS SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004125; version 3.01
CO. KERRY

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024

Magharee Islands SPA

Magharee Islands SAC

Tralee Bay and Magharees Peninsula, West to Cloghane SAC

Triskmore Mountain
Triskbeg Mountain
Glenderry
Causeway
Lixnaw
Ballyheige
Banna-Mountain
Abbeydorney
Kilflyn
N69
Ardfert
An Buaicín
Cé Bhréanainn
Más an Tiompáin
Binn na mBan
Piaras Mór
Reo
Cnoc Bréanainn
Clochán
Barr an Ghéaráin
Binn an Tuair
Stradbally Mountain
Stradbally
Castlegregory
Fenit
Tralee
N69
N86
Blennerville
N21
N22
N70
Knockmichael Mountain
Camp
MOUNTAINS
Sliabh
LIVE
Gob an Iolair
An Starraicín
Cnoc Bhaile Uí Shé
Barr Conarach
An Cnapán Mór
An Cnoc Maol Beag
Lack Mountain
Fybagh
Cnoc an Chairn
Anascaul
Inch
Daingean Uí Chúis
Lios Póil
N86
N70

Legend

- Magharee Islands SPA 004125
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC 002070
- Magharee Islands SAC 002261

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

MAP 2:
MAGHAREE ISLANDS SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004125; version 3.01
CO. KERRY

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024