ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

Skelligs SPA 004007

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

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Citation:

NPWS (2025) Conservation Objectives: Skelligs SPA 004007. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Series Editors: Maria Long and Colin Heaslip
ISSN 2009-4086

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***

004007	Skelligs SPA
A009	Fulmar *Fulmarus glacialis*
A013	Manx Shearwater *Puffinus puffinus*
A014	Storm Petrel *Hydrobates pelagicus*
A016	Gannet *Morus bassanus*
A188	Kittiwake *Rissa tridactyla*
A199	Guillemot *Uria aalge*
A204	Puffin *Fratercula arctica*

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 :	2019
Title :	The status of Ireland's breeding seabirds: Birds Directive article 12 reporting 2013 – 2018
Author :	Cummins, S.; Lauder, C.; Lauder, A.; Tierney, T. D.
Series :	Irish Wildlife Manual No. 114
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 :	2023
Title :	2023 National Census of Northern Gannet (*Morus bassanus*) colonies in the Republic of Ireland
Author :	Murphy, E.; Tierney, T.D.; Walsh, A.; Power, A.; Jessopp, M.
Series :	Unpublished NPWS report
Year :	2023
Title :	Breeding Puffin Survey of Sceilg Mhichíl
Author :	NPWS
Series :	Unpublished NPWS report
Year :	2024
Title :	A summary of seabird monitoring of Sceilg Mhichíl 2020 - 2023
Author :	Tierney, T.D.; Power, B.; Walsh, A.
Series :	Unpublished NPWS report

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 :	1914
Title :	Fulmars, Gannets, and Other Sea-Birds on the Skelligs
Author :	Barrington, R. M.
Series :	The Irish Naturalist
Year :	1966
Title :	Ireland's Birds: their distribution and migrations
Author :	Ruttledge, R.F.
Series :	Published by HF & G Witherby, London

Year :	1974
Title :	Seabirds of Britain and Ireland
Author :	Cramp, S.; Bourne, W.R.P.; Saunders, D.
Series :	Collins, London
Year :	1974
Title :	The birds of the south west Irish islands
Author :	Evans, P.G.H.; Lovegrove, R.R.
Series :	Irish Bird Report 1973: 33 – 64
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 :	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 :	1999
Title :	Diet of the northern fulmar *Fulmarus glacialis*: reliance on commercial fisheries?
Author :	Phillips, R.A.; Petersen, M.K.; Lilliendahl, K.; Solmundsson, J.; Hamer, K.C.; Camphuysen, C.J.; Zonfrillo, B.
Series :	Marine Biology, 135 (1), pp.159-170
Year :	2003
Title :	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
Author :	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
Series :	JNCC Report No. 329
Year :	2004
Title :	Seabird populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2005
Title :	Breeding seabirds of The Skelligs, County Kerry
Author :	Merne, O.J.M.; Walsh, A.
Series :	Irish Birds 7: 461 - 474
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 :	2013
Title :	Space Partitioning Without Territoriality in Gannets
Author :	Wakefield, E. D.; et al.
Series :	Science, 341 (6141). 68 - 70

Year :	2015
Title :	Census of Gannet *Morus bassanus* colonies in Ireland in 2013 - 2014
Author :	Newton, S.F.; Harris, M.P.; Murray, S.
Series :	Irish Birds, 10 (2)
Year :	2017
Title :	Productivity of the Black-legged Kittiwake *Rissa tridactyla* required to maintain numbers
Author :	Coulson, J.C.
Series :	Bird Study 64: 84-89
Year :	2018
Title :	Developing and assessing methods to census and monitor burrow-nesting seabirds in Ireland
Author :	Arneill, G.E.
Series :	PhD thesis, University College Cork
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 :	2020
Title :	Black-legged Kittiwake (*Rissa tridactyla*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, S. A.; Robertson, G. J.; Baird, P. H.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Atlantic Puffin (*Fratercula arctica*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Lowther, P. E.; Diamond, A. W.; Kress, S. W.; Robertson, G. J.; Russell, K.; Nettleship, D. N.; Kirwan, G. M.; Christie, D. A.; Sharpe, C. J.; Garcia, E. F. J.; Boesman, P. F. D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Northern Gannet (*Morus bassanus*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Mowbray, T. B.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	Common Murre (*Uria aalge*), version 2.0. In Birds of the World (S. M. Billerman, P. G. Rodewald, and B. K. Keeney, Editors)
Author :	Ainley, D. G.; Nettleship, D. N.; Storey, A. E.
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 :	Manx Shearwater *Puffinus puffinus*
Author :	Lee, D.S.; Haney, J.C.; Carboneras, C.; Jutglar, F.; Kirwan, G.M.
Series :	Birds of the World (N. D. Sly, Editor) Version: 1.1

Year :	2023
Title :	Atlantic puffin tagging report 2023, Skellig Michael
Author :	Jessopp, M.; Clairbaux, M.; Dedieu, A.; Darby, J.
Series :	School of Biological, Earth and Environmental Sciences, University College Cork
Year :	2024
Title :	Atlantic Puffin (*Fratercula arctica*)
Author :	JNCC
Series :	https://jncc.gov.uk/our-work/atlantic-puffin-fratercula-arctica/
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

A009 Fulmar *Fulmarus glacialis*

To restore the Favourable conservation condition of Fulmar in Skelligs SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Apparently Occupied Sites (AOS)	Long term SPA population trend is stable or increasing	Fulmar were first recorded as a breeding bird in Ireland in 1911, and on Great Skellig it was first recorded breeding in 1913 with approximately 12 pairs recorded (Barrington, 1914). Breeding pairs increased to 130 by 1943 and 588 pairs by 1973 (Evans and Lovegrove, 1974). Fulmar were first recorded breeding on Little Skellig in 1966 (Evans and Lovegrove, 1974). Great Skellig has been monitored almost annually since 1990 for this species (Merne and Walsh, 2005; Tierney et al., 2024) but not Little Skellig. In 2002, 830 pairs were recorded across both islands (Merne and Walsh, 2005; NPWS internal files) and by 2015 the population had increased to 918 pairs (NPWS internal files). A 2024 survey across both islands produced an estimate of 759 pairs, a decrease of 9% since 2002 (NPWS internal files). The national population has increased by 89% over the period 1985 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	Tierney et al. (2024) reported that the average productivity from Great Skellig was 0.56 (± 0.04 SE) chicks fledged per Apparently Occupied Sites (AOS) between 2021 and 2023 inclusive. Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. An analysis of the breeding success of Fulmar in the United Kingdom over a 25 year period estimated a mean breeding success of 0.39 and speculated this would result in a population decline (Cook and Robinson, 2010). They estimated that a breeding success of 0.5 would allow populations of Fulmar to stabilise and potentially increase. This threshold indicates that the current productivity rate for Fulmar at this SPA is sufficient to sustain a stable breeding population
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Fulmar. Typically, Fulmar nest near the tops of grassy cliffs on relatively wide ledges (Mitchell et al., 2004). Nesting Fulmar are concentrated primarily on Great Skellig in 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	The colonisation of Ireland and Britain by Fulmar over the last two centuries has been largely attributed to their close association with fisheries, but contemporary dietary studies indicate that they also feed on a wide variety of prey, including sandeels, crustaceans, and squid (Phillips et al., 1999). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Fulmar foraging ranges from the nest site during the breeding season, which are 135km, 542km, and 2,736km respectively (see Power et al., 2021)

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

A013 Manx Shearwater *Puffinus puffinus*

To maintain the Favourable conservation condition of Manx Shearwater in Skelligs 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	Manx Shearwater are nocturnal and nest underground on islands which leads to difficulties in surveying and generating accurate population estimates. Survey methods and analytical methods have changed between surveys and are likely to change in the future (Burnell et al., 2023). Therefore, caution is required when comparing population estimates between surveys. The Skelligs have been known to host a significant colony since at least the 19th century (Ussher and Warren, 1900) with breeding birds reportedly on both islands. However, there have been no records of breeding Manx Shearwater on Little Skellig since the 19th century. Early abundance estimates from Great Skellig during the 1950s and 1970s ranged from 3,000 - 5,000 pairs (Ruttledge, 1966; Merne and Walsh, 2005). Based upon a tape playback method, a survey carried out in 2002 estimated 902 breeding pairs (NPWS internal files). The most recent survey in 2021 estimated 573 pairs (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	An analysis of monitoring data from 2021, 2023, and 2024 from Great Skellig produced an estimate of 0.54 presumed fledged chicks per active nest (Tierney et al., 2024). In 2023, a productivity rate of 0.60 across three UK colonies was reported (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	Manx Shearwater nest in burrows and under boulders. Colonies are typically found on steep grassy slopes on offshore islands where there is reduced predation risk (Lee et al., 2023). Manx Shearwater breed entirely on Great Skellig in 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	Manx Shearwater feed primarily on clupeiform fish such as Sprat (*Sprattus sprattus*) and Herring (*Clupea harengus*); squid and other marine invertebrates may also form part of their diet (Lee et al., 2023). 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 foraging ranges from the nest site during the breeding season, which are 136km, 1,347km, and 2,890km 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). Manx Shearwater are known to aggregate on the water to form large rafts in the vicinity of 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 several studies, Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of foraging ranges from the nest site during the breeding season, which are 136km, 1,347km, and 2,890km respectively (see Power et al., 2021)

A014 Storm Petrel *Hydrobates pelagicus*

To maintain the Favourable conservation condition of Storm Petrel in Skelligs 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. The Skelligs have been known to host a significant colony since at least the 19th century (Ussher and Warren, 1900). Early abundance estimates from Great Skellig during the 1950s and 1960s ranged from 1,000 - 4,000 pairs (Ruttledge, 1966; Merne and Walsh, 2005). Later it was considered that up to 10,000 pairs was more likely (Evans and Lovegrove, 1974). An estimated 9,994 pairs were recorded in this SPA in 2002 (Mitchell et al., 2004) and the most recent survey in 2020 - 2021 estimated 7,657 pairs (Burnell et al., 2023; Tierney et al., 2024)
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 Great Skellig 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 Storm 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). On Great Skellig, Storm Petrel are known to site their nests across both natural habitat (rocks, crevices and burrows) and in the island's built heritage, e.g. monastic 'Beehive Huts', stone steps and within the walls between the harbour and the upper lighthouse (Tierney et al., 2024)
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)

A016 Gannet *Morus bassanus*

To restore the Favourable conservation condition of Gannet in Skelligs 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	The Gannet colony on Little Skellig has been known since about 1700 (Ruttledge, 1966) and was the only known colony in Ireland until breeding was recorded on Bull Rock in the mid 19th century (Ussher and Warren, 1900). In 1850, the population was estimated to be 500 pairs (Ussher and Warren, 1900), and increased to several thousand pairs by the end of that century (Barrington, 1914). By the mid 20th century, 10,000 breeding pairs were estimated (Ruttledge, 1966). This increased to 22,500 and 29,683 pairs in 1984 and 2004 (Lloyd et al., 1991; Mitchell et al., 2004). The population increased again in 2014 to 35,294 pairs, the highest count on record for this SPA (Newton et al., 2015; Burnell et al., 2023). The most recent survey in 2023 estimated a population of 26,958 pairs, a decline of 24% since 2014 which is most likely due to an outbreak of Highly Pathogenic Avian Influenza in 2022 (Murphy et al., 2023). This SPA accounts for approximately 60% of the national population of Gannet
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 of 0.65 young fledged per pairs has been suggested as a threshold level necessary to sustain a population (Mowbray, 2020). Cook and Robinson (2010) undertook Population Viability Analyses (PVA) of a selection of breeding populations in the UK. Over their study period Gannet productivity at monitored nests was 0.69 chicks per pair. In the same time period the population of Gannet increased suggesting the productivity was suitable to at least maintain the population. Similarly a productivity of 0.69 (n=191) was recorded on Ireland's Eye in 2007. At this time the population of Gannet was increasing on Ireland's Eye
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	Gannet breed on offshore islands and occasionally on mainland coastal cliffs (Mowbray, 2020). Colonies are typically located on cliff ledges or steep slopes (Mowbray, 2020). All of Ireland's six colonies are located on marine islands (Cummins et al., 2019). Gannet breed entirely on Little Skellig in 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	The diet of Gannet is mainly comprised of surface schooling fish, 2.5 - 30.5cm in length; main fish species taken include mackerel and herring (Mowbray, 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 Gannet foraging ranges from the nest site during the breeding season, which are 120km, 315km, and 709km respectively (see Power et al., 2021). A tracking study of Gannet breeding on Little Skellig (n = 9) showed that birds foraged mainly to the north of the colony in both inshore and offshore areas with some birds travelling as far as the northern coast of Co. Galway (Wakefield et al., 2013)

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)
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) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Gannet foraging ranges from the nest site during the breeding season, which are 120km, 315km, and 709km respectively (see Power et al., 2021)

A188 Kittiwake *Rissa tridactyla*

To restore the Favourable conservation condition of Kittiwake in Skelligs 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	A large colony of Kittiwake was noted on the Skelligs in the 19th century (Ussher and Warren, 1900). In 1969, an estimated 1,120 pairs bred on Little Skellig with a further 950 pairs recorded on Great Skellig, a combined total of 2,070 pairs (Cramp et al., 1974). Great Skellig has been monitored almost annually since 2006 for this species (Tierney et al., 2024), but not Little Skellig. The population for both islands declined to 944 pairs in 2002 (Mitchell et al., 2004) and the population was similar in the next full survey in 2015 with 973 pairs recorded (NPWS internal files). The most recent population estimate of 895 pairs in 2024 represents a short-term decline of 5% since 1999 - 2002 and a long term decline of 57% since 1969 (NPWS internal files). The population has declined on both islands but the decline on Little Skellig has been the most significant. The national population has decreased by 36% between 1999 - 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	Tierney et al. (2024) reported that the average productivity from Great Skellig was 0.49 (± 0.15 SE) chicks fledged per pair between 2021 and 2023 inclusive. 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. Coulson (2017) established, based on data from UK Kittiwake colonies during the period 1985 - 2015, that 0.8 fledglings per pair were needed to maintain the size of these colonies. Coulson (2017) also noted that this level of productivity is not a fixed value and changes if the adult mortality rate changes. This threshold indicates that the current productivity rate for Kittiwake at this SPA is not sufficient to sustain a stable breeding population
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 Kittiwake. Typically, this species is a cliff-nester on ledges of offshore islands, sea stacks, or inaccessible areas of coastal mainland (Hatch et al., 2020). In 2024 the estimated Kittiwake abundances across Little Skellig and Great Skellig was 395 and 500 pairs respectively (NPWS internal files)
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	Kittiwake is a surface feeding seabird and primarily piscivorous (e.g. sandeels, herring, gadoids), with some invertebrates (e.g. euphausids, amphipods) in the diet also recorded (Hatch et al., 2020). Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Kittiwake foraging ranges from the nest site during the breeding season, which are 55km, 156km, and 770km 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)
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 (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Kittiwake foraging ranges from the nest site during the breeding season, which are 55km, 156km, and 770km respectively (see Power et al., 2021)

A199 Guillemot *Uria aalge*

To maintain the Favourable conservation condition of Guillemot in Skelligs SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Individuals (IND)	Long term SPA population trend is stable or increasing	Guillemot have been recorded breeding on the Skelligs since the 19th century (Ussher and Warren, 1900) and it was highlighted by Ruttledge (1966) as a notable site for this species. Great Skellig has been monitored almost annually since 1990 for this species (Merne and Walsh, 2005; Tierney et al., 2024), but not Little Skellig. In 2002, an estimated 2,466 individuals were recorded on the two islands (NPWS internal files). This increased to 4,285 individuals in 2015 (Burnell et al., 2023). The most recent survey of the two islands, conducted in 2024, recorded 3,328 individuals (NPWS internal files). This equates to a calculated increase of 35% since 2002. The national population estimate of Guillemot has increased by 28% 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 the mean Guillemot productivity from this SPA was 0.74 (± 0.06 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (355 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. An analysis of the breeding success of Guillemot in the United Kingdom over a 25 year period determined that a breeding success of 0.66 would result in an increasing population (Cook and Robinson, 2010)
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 Guillemot. Ledges on sea cliffs and sloping island surfaces are the preferred habitat for this species (Ainley et al., 2021). In 2024, 1,678 and 1,650 individual Guillemot were recorded on Little Skellig and Great Skellig respectively
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 Guillemot consists of micronektonic prey, 2 - 25cm in length (mainly 6 - 10cm), including fish, euphausiids, large copepods, and squid. In summer, when adults are provisioning chicks, prey is predominantly fish. This contrasts with a more diverse diet during the non-breeding period, with euphausiids in particular being more important (Ainley et al., 2021). Based on several studies, Woodward et al. (2019) provides 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 Guillemot, which are 33km, 73km, and 338km respectively (see Power et al., 2021)

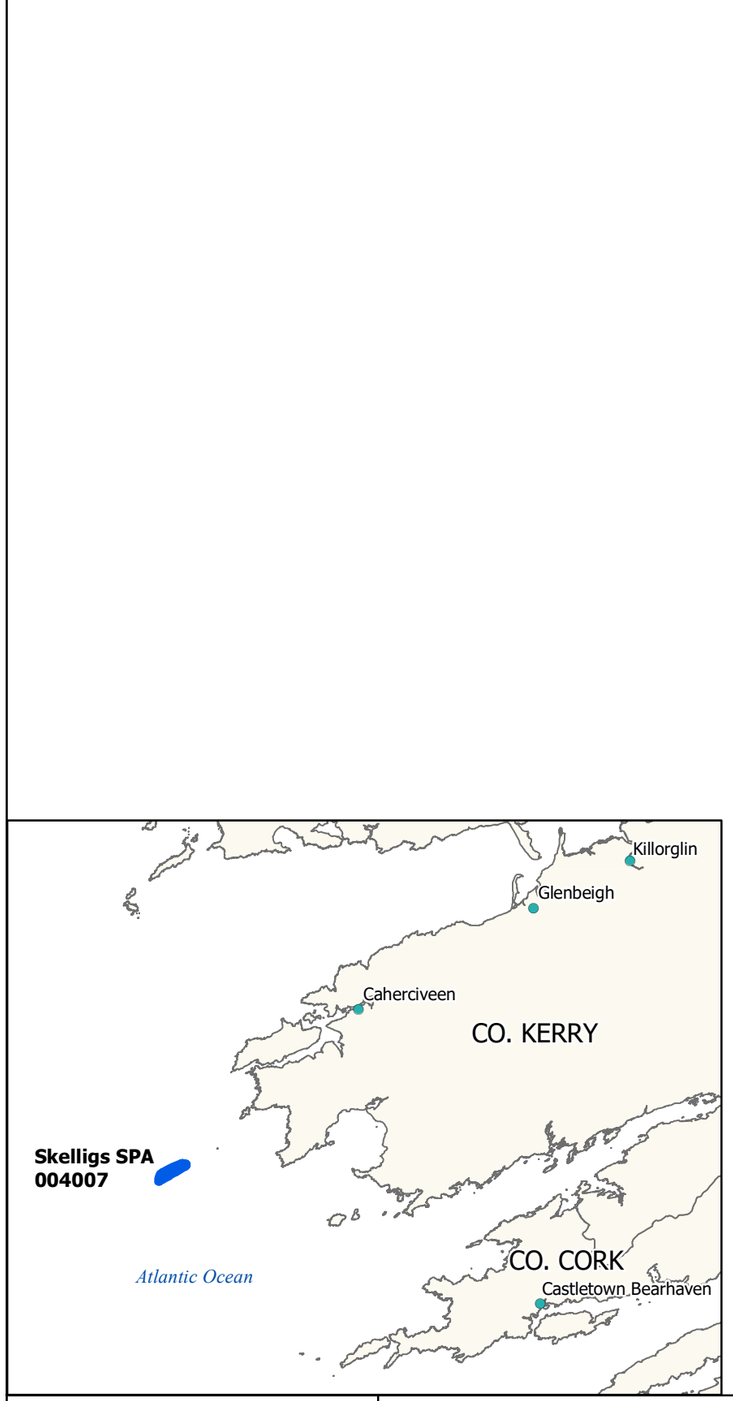
Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment 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). Studies in the UK found the highest densities of Guillemot performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Studies in the UK found the highest densities of Guillemot performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003). Based on several studies, Woodward et al. (2019) provides 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 Guillemot, which are 33km, 73km, and 338km respectively (see Power et al., 2021)

A204 Puffin *Fratercula arctica*

To maintain the Favourable conservation condition of Puffin in Skelligs SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Individuals (IND)	Long term SPA population trend is stable or increasing	As Puffin nesting burrows are often sited on steeply sloping ground largely inaccessible to surveyors, counts of the number of individual birds associated with the area is a survey method often used, though it is less accurate than counting occupied burrows. Counts of birds on land, sea, and air are ideally undertaken during the evening, early in the season (see Arneill, 2018; Walsh et al., 1995). A large Puffin colony was noted on the Skelligs in the 19th century (Ussher and Warren, 1900). Ruttledge (1966) reported 5,000 pairs on Great Skellig in 1965. Individual counts between 1990 and 2002 ranged from 3,055 - 6,000 (Merne and Walsh, 2005). In 2019 an estimated 6,808 individuals were recorded at Great Skellig (Burnell et al., 2023). The most recent estimate of approximately 8,000 from an April 2023 survey indicates the population may be increasing (NPWS, 2023). The national population has declined by 26% between 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	On Great Skellig in 2021 and 2023 an average of 0.63 and 0.73 chicks were fledged per breeding pair (Tierney et al., 2024). 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. In Wales, an average of 0.71 chicks were fledged per apparently occupied burrow between 1986 and 2019 (JNCC, 2024). In this time period the Welsh population of Puffin increased (Burnell et al., 2023)
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 the species. Puffin are a highly colonial species with pairs typically nesting underground in burrows dug in the soil of offshore islands. If such habitat is in short supply, Puffin can nest among boulder screes, or at low densities in cracks in sheer cliffs (Mitchell et al., 2004). Across the islands of this SPA, Puffin are considered to breed exclusively on Great Skellig
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 Puffin predominantly consists of small to mid-sized (5 - 15cm) schooling midwater fish including Sprat (*Sprattus sprattus*), sandeel (*Ammodytes* spp.), and Herring (*Clupea harengus*) (Lowther et al., 2020). 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 Puffin, which are 62km, 137km, and 383km respectively (see Power et al., 2021). GPS-tagged Puffin on Great Skellig travelled a mean maximum distance from the colony of 33.2km in 2021 (n=10) compared to 5.6km in 2023 (n=8) (Jessopp et al., 2023). In 2021, Puffin tended to travel to inshore areas of Co. Kerry and Co. Cork, predominantly to the south-east. In 2023, Puffin stayed offshore around the Skelligs. In a follow up study in 2024 Puffin foraged in broadly similar areas to 2021 and 2023 (Jessopp et al., 2023)

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	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). Studies in the UK found that the highest densities of Puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony, in order to forage as well as to engage in other maintenance behaviours. Studies in the UK found that the highest densities of Puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003). 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 Puffin, which are 62km, 137km, and 383km respectively (see Power et al., 2021)



Legend

Skelligs SPA 004007

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

MAP 1:
SKELLIGS SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

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

SITE CODE:
SPA 004007; version 3
CO. KERRY

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024