

# National Parks and Wildlife Service

## *Conservation Objectives Series*

Ardboline Island and Horse Island SPA 004135



**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*

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004135	Ardboline Island and Horse Island SPA
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A017	Cormorant <i>Phalacrocorax carbo</i>
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A045	Barnacle Goose <i>Branta leucopsis</i>
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**Please note that this SPA overlaps with Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (000627). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping site as appropriate.**



## Supporting documents, relevant reports & publications

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

### Other References

Year :	1973
Title :	Population Dynamics of Barnacle Geese, <i>Branta leucopsis</i> , in Ireland
Author :	Cabot, D.
Series :	Proceedings of the Royal Irish Academy. Section B: Biological, Geological, and Chemical Science, 73, 415–443
Year :	1991
Title :	The status of seabirds in Britain and Ireland
Author :	Lloyd, C.; Tasker, M.L.; Partridge, K.
Series :	Poyser Monographs Volume: 50
Year :	1995
Title :	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 :	1998
Title :	Flexible foraging techniques in breeding cormorants <i>Phalacrocorax carbo</i> and shags <i>Phalacrocorax aristotelis</i> : benthic or pelagic feeding?
Author :	Grémillet, D.; Argentin, G.; Schulte, B.; Culik, B.M.
Series :	Ibis, 140(1), pp.113-119

<b>Year :</b>	1999
<b>Title :</b>	Managing grassland for wild geese in Britain: a review
<b>Author :</b>	Vickery, J.; Gill, J.
<b>Series :</b>	Biological Conservation, 89(1), pp.93-106
<b>Year :</b>	2003
<b>Title :</b>	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
<b>Author :</b>	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
<b>Series :</b>	JNCC Report No. 329
<b>Year :</b>	2004
<b>Title :</b>	Seabird populations of Britain and Ireland
<b>Author :</b>	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
<b>Series :</b>	Poyser, London
<b>Year :</b>	2005
<b>Title :</b>	Breeding performance and timing of breeding of inland and coastal breeding Cormorants <i>Phalacrocorax carbo</i> in England and Wales
<b>Author :</b>	Newson, S.E.; Hughes, B.; Hearn, R.; Bregnballe, T.
<b>Series :</b>	Bird Study, 52:1, 10-17, DOI: 10.1080/00063650509461369
<b>Year :</b>	2011
<b>Title :</b>	A preliminary assessment of the potential impacts of Cormorant ( <i>Phalacrocorax carbo</i> ) predation on Salmonids in four selected river systems
<b>Author :</b>	Tierney, N.; Lusby, J.; Lauder, A.
<b>Series :</b>	Report Commissioned by Inland Fisheries Ireland and funded by the Salmon Conservation Fund
<b>Year :</b>	2019
<b>Title :</b>	Desk-based revision of seabird foraging ranges used for HRA screening
<b>Author :</b>	Woodward, I.; Thaxter, C.B.; Owen, E.; Cook, A.S.C.P.
<b>Series :</b>	BTO Research Report No. 724
<b>Year :</b>	2019
<b>Title :</b>	Report under Article 12 of the Birds Directive Period 2013-2018
<b>Author :</b>	EEA
<b>Series :</b>	European Environment Agency. European Topic Centre on Biological Diversity. Pp 1-9. <a href="https://cdr.eionet.europa.eu/Converters/run_conversion?file=ie/eu/art12/envxztxxq/IE_birds_reports_20191031-130157.xml&amp;conv=612&amp;source=remote">https://cdr.eionet.europa.eu/Converters/run_conversion?file=ie/eu/art12/envxztxxq/IE_birds_reports_20191031-130157.xml&amp;conv=612&amp;source=remote</a>
<b>Year :</b>	2020
<b>Title :</b>	Great Cormorant ( <i>Phalacrocorax carbo</i> ), version 1.0. In Birds of the World (S. M. Billerman, Editor)
<b>Author :</b>	Hatch, J.J.; Brown, K.M.; Hogan, G.G.; Morris, R.D.; Orta, J.; Garcia, E.F.J.; Jutglar, F.; Kirwan, G.M.; Boesman, P.F.D.
<b>Series :</b>	Cornell Lab of Ornithology, Ithaca, NY, USA
<b>Year :</b>	2021
<b>Title :</b>	Definition of Favourable Conservation Status for Great Cormorant, <i>Phalacrocorax carbo</i>
<b>Author :</b>	Newson, S.E.; Austin, G.
<b>Series :</b>	Natural England, pp.25. ISBN: 978-1-78354-723-4
<b>Year :</b>	2023
<b>Title :</b>	Seabirds Count: a census of breeding seabirds in Britain and Ireland (2015-2021)
<b>Author :</b>	Burnell, D.; Perkins, A.J.; Newton, S.F.; Bolton, M.; Tierney, T.D.; Dunn, T.E.
<b>Series :</b>	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

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**Year :** 2024  
**Title :** Great Cormorant (*Phalacrocorax carbo*)  
**Author :** JNCC  
**Series :** <https://jncc.gov.uk/our-work/great-cormorant-phalacrocorax-carbo/>

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## Conservation Objectives for : Ardboline Island and Horse Island SPA [004135]

### A017 Cormorant *Phalacrocorax carbo*

**To restore the Favourable conservation condition of Cormorant in Ardboline Island and Horse Island 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 survey of Ardboline and Horse Island in 1985 recorded 205 pairs of breeding Cormorant, the highest population estimate for this site (Lloyd et al., 1991). The following survey in 1999 yielded 179 pairs (Mitchell et al., 2004). The population declined in 2010 to 124 pairs, the lowest on record for this SPA (NPWS internal files). However, the most recent survey in 2016 recorded 191 pairs of breeding Cormorant (Burnell et al., 2023). The Cormorant population at this SPA has decreased by 7% between 1985 and 2016 but appears to be relatively stable. The national population of Cormorant has increased by 4% between 1985 - 1988 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 on Lambay Island SPA was 1.05 ( $\pm$ 0.11 SE) chicks fledged per AON in 2007 (69 pairs across three subplots). Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. In addition to the nominate Atlantic subspecies <i>P. c. carbo</i> which breeds in Ireland, the United Kingdom also holds the continental race <i>P. c. sinensis</i> , largely breeding at inland sites in England, and differences in productivity rates and overall population trends between these two subspecies have been noted (Newson and Austin 2021; Newson et al., 2005; Burnell et al., 2023). Cormorant colonies in the UK fledged approximately 1.84 chicks per nest per year between 1989 and 2019 (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 Cormorant. Typically, coastal Cormorant colonies are located on flat or rocky islets or sea stack tops, less often on cliffs (Walsh et al., 1995). Historically, Cormorant have been subjected to widespread persecution in Britain and Ireland due to their large size and piscivorous diet (Burnell et al., 2023), this may have influenced the breeding distribution of this species in certain areas. The Cormorant population in this SPA is found primarily on Ardboline Island but they have bred on Horse Island in the past

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	Cormorant diet consists predominantly of small benthic and pelagic fish captured by pursuit diving, typically over shallow (<10m) freshwater, estuarine, and marine environments (Grémillet et al., 1998; Hatch et al., 2020). Based on analysis of 255 diet samples from five sites across Ireland, Tierney et al. (2011) noted Ballan Wrasse <i>Labrus bergylta</i> to be the most important forage species in terms of frequency, followed by Perch <i>Perca fluviatilis</i> and Roach <i>Rutilus rutilus</i> with less frequent records of salmonids and European Eel <i>Anguilla anguilla</i> . Across all sites, 61% of the identifiable prey items were marine species. Woodward et al. (2019) reviewed the foraging ranges of seabird species and provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Cormorant foraging ranges from the nest site during the breeding season, which are 7km, 26km, and 35km 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	Cormorant 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, this species may engage in maintenance behaviours outside of the breeding colony but not in the water. Cormorant, after long periods in the water, may stand in areas away from the colony and engage in a behaviour known as wing-spreading. The main purpose of this behaviour is to dry plumage (Hatch et al., 2020) and may occur on sandbanks and small rocks and islets
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	Breeding Cormorant may require regular and efficient 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 Cormorant foraging ranges from the nest site during the breeding season, which are 7km, 26km, and 35km respectively (see Power et al., 2021)

## Conservation Objectives for : Ardboline Island and Horse Island SPA [004135]

### A045 Barnacle Goose *Branta leucopsis*

**To maintain the Favourable conservation condition of Barnacle Goose in Ardboline Island and Horse Island 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, 2,048 Barnacle Goose were estimated to be using this SPA, Inishmurray SPA and Ballintemple and Ballygilgan SPA (4 year mean of census counts for baseline period 1993 - 2003; see NPWS, 2013). More recent data showed a population of 4,538 Barnacle Goose used these SPAs during the period 2013 - 2023 (4 year mean of census counts from the International Census of Greenland Barnacle Goose). This represents a population increase of 122% since the baseline period, greater than the national trend
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas are likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

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







