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Conservation Objectives Series

Horn Head to Fanad Head SPA 004194

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

National Parks and Wildlife Service,
Department of Housing, Local Government and Heritage,

90 King Street North, Dublin 7, D07 N7CV, Ireland.

Web: www.npws.ie
E-mail: natureconservation@npws.gov.ie

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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***

004194	Horn Head to Fanad Head SPA
A009	Fulmar *Fulmarus glacialis*
A017	Cormorant *Phalacrocorax carbo*
A018	Shag *Phalacrocorax aristotelis*
A045	Barnacle Goose *Branta leucopsis*
A103	Peregrine *Falco peregrinus*
A188	Kittiwake *Rissa tridactyla*
A199	Guillemot *Uria aalge*
A200	Razorbill *Alca torda*
A346	Chough *Pyrrhocorax pyrrhocorax*
A395	Greenland White-fronted Goose *Anser albifrons flavirostris*

Please note that this SPA overlaps with Horn Head and Rinclevan SAC (000147), Lough Nagreany Dunes SAC (000164), Tranarossan and Melmore Lough SAC (000194), Sheephaven SAC (001190) and Ballyhoorisky Point to Fanad Head SAC (001975), and it adjoins Fanad Head SPA (004148) and Mulroy Bay SAC (002159). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjoining sites 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 :	2010
Title :	The seasonal distribution and foraging behaviour of Red-billed Choughs *Pyrrhocorax pyrrhocorax* in Counties Waterford and Cork, February 2008 to January 2009
Author :	Trewby, M.; Carroll; D.; Mugan, N.; O'Keeffe, D.; Newton, S.
Series :	Unpublished BirdWatch Ireland Report to National Parks & Wildlife Service, Kilcoole, Wicklow
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 :	2024
Title :	Status and Distribution of Chough in Ireland: Results of the National Survey 2021
Author :	Colhoun, K.; Rooney, E.; Collins, J.; Keogh, N.P.; Lauder, A.; Heardman, C.; Cummins, S.
Series :	Irish Wildlife Manuals No. 151
Year :	2024
Title :	Surveys of breeding seabirds in North Donegal in 2024: Tory Island, Inishbofin Group and Horn Head [Seabird census report]
Author :	Colhoun, K.; Trapp, S.
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 :	1965
Title :	The status of the Chough in Ireland
Author :	Cabot, D.
Series :	Irish Naturalists' Journal 15: 95-100
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 :	1983
Title :	The chough in Britain and Ireland
Author :	Bullock, I.; Drewett, D.; Mickleburg, S.
Series :	British Birds, 76: 377–401
Year :	1983
Title :	Survey of the Peregrine *Falco peregrinus* breeding population in the Republic of Ireland in 1981
Author :	Norriss, D.W.; Wilson, H.J.
Series :	Bird Study, 30:2, 91-101
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 :	1993
Title :	The second international chough survey in Ireland, 1992
Author :	Berrow, S.D.; Mackie, K.L.; O'Sullivan, O.; Shepherd, K.B.; Mellon, C.; Coveney, J.A.
Series :	Irish Birds, 5: 1-10
Year :	1993
Title :	The peregrine falcon. Second edition.
Author :	Ratcliffe, D.A.
Series :	T. & A.D. Poyser, London
Year :	1993
Title :	Seasonal variations in numbers and levels of activity in a communal roost of Choughs *Pyrrhocorax pyrrhocorax* in central Spain
Author :	Blanco, G.; Fargallo, J.A.; Cuevas, J.A.
Series :	Avocetta, 17: 41-44
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 :	1995
Title :	The 1991 survey and weather impacts on the Peregrine *Falco peregrinus* breeding population in the Republic of Ireland
Author :	Norriss, D.W.
Series :	Bird Study, 42:1, 20-30
Year :	1998
Title :	Flexible foraging techniques in breeding cormorants *Phalacrocorax carbo* and shags *Phalacrocorax aristotelis*: benthic or pelagic feeding?
Author :	Grémillet, D.; Argentin, G.; Schulte, B.; Culik, B.M.
Series :	Ibis, 140(1), pp.113-119
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 :	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 :	2002
Title :	Recovery of the Peregrine Falcon *Falco peregrinus* in Cumbria, UK, 1966–99
Author :	Horne, G; Fielding, A.H.
Series :	Bird Study, 49:3, 229-236
Year :	2003
Title :	The status and distribution of choughs *Pyrrhocorax pyrrhocorax* in the Republic of Ireland 2002/03
Author :	Gray, N.; Thomas, G.; Trewby, M.; Newton, S.F.
Series :	Irish Birds, 7, 147-156
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 :	Choughs *Pyrrhocorax pyrrhocorax* breeding in Wales select foraging habitat at different spatial scales
Author :	Whitehead, S.; Johnstone, I.; Wilson, J.
Series :	Bird Study, 52:2, 193-203
Year :	2005
Title :	Breeding performance and timing of breeding of inland and coastal breeding Cormorants *Phalacrocorax carbo* in England and Wales
Author :	Newson, S.E.; Hughes, B.; Hearn, R.; Bregnballe, T.
Series :	Bird Study, 52:1, 10-17, DOI: 10.1080/00063650509461369

Year :	2006
Title :	The breeding season foraging behaviour of choughs *Pyrrhocorax pyrrhocorax* in three Irish chough important bird areas
Author :	Trewby, M.; Gray, N.; Cummins, S.; Thomas, G.; Newton, S.
Series :	Unpublished BirdWatch Ireland Report, Kilcoole, Wicklow
Year :	2006
Title :	Linking territory quality and reproductive success in the chough (*Pyrrhocorax pyrrhocorax*): implications for conservation management of an endangered population
Author :	Kerbiriou, C.; Gourmelon, F.; Jiguet, F.; Le Viol, I.; Frédéric Bioret, F.; Julliard, R.
Series :	Ibis, 148 (2), pp.352-364
Year :	2007
Title :	A review of disturbance distances in selected bird species
Author :	Ruddock, M.; Whitfield, D.P.
Series :	A report from Natural Research (Projects) Ltd to Scottish Natural Heritage
Year :	2009
Title :	Raptors: a field guide to survey and monitoring (2nd Edition)
Author :	Hardey, J.; Crick, H.; Wernham, C.; Riley, H.; Etheridge, B.; Thompson, D.
Series :	The Stationery Office, Edinburgh
Year :	2009
Title :	The 2002 survey of the Peregrine *Falco peregrinus* breeding population in the Republic of Ireland
Author :	Madden, B.; Hunt, J.; Norriss, D.
Series :	Irish Birds 8: 543-548
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 :	2011
Title :	Aspects of the feeding ecology and breeding biology of the red-billed chough (*Pyrrhocorax pyrrhocorax*) in Ireland
Author :	Boylan, M.
Series :	PhD Thesis, National University of Ireland, Cork.
Year :	2011
Title :	A preliminary assessment of the potential impacts of Cormorant (*Phalacrocorax carbo*) predation on Salmonids in four selected river systems
Author :	Tierney, N.; Lusby, J.; Lauder, A.
Series :	Report Commissioned by Inland Fisheries Ireland and funded by the Salmon Conservation Fund
Year :	2014
Title :	A review of Greenland white-fronted geese in Ireland 1982/83 – 2011/12
Author :	Burke, B.; Egan, F.; Norriss, D.; Wilson, H.J.; Walsh, A.J.
Series :	Unpublished report
Year :	2015
Title :	Population status and factors affecting the productivity of Peregrine Falcon *Falco peregrinus* in Co. Wicklow, Ireland, 2008-2012
Author :	Burke, B.J.; Clarke, D.; Fitzpatrick, A.; Carnus, T.; McMahon, B.J.
Series :	Biology and Environment: Proceedings of the Royal Irish Academy, Vol 115, No. 2, 115-124

Year :	2016
Title :	Assessing connectivity with Special Protection Areas (SPAs)
Author :	Scottish Natural Heritage
Series :	Guidance Series Version 3 - June 2016
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 :	Breeding status of red-billed choughs *Pyrrhocorax pyrrhocorax* in the UK and Isle of Man in 2014
Author :	Hayhow, D.B.; Johnstone, I.; Moore, A.S.; Mucklow, C.; Stratford, A.; Šúr, M.; Eaton, M.A.
Series :	Bird Study, 65(4), 458-470
Year :	2019
Title :	Adverse effects of routine bovine health treatments containing triclabendazole and synthetic pyrethroids on the abundance of dipteran larvae in bovine faeces
Author :	Gilbert, G.; MacGillivray, F.S.; Robertson, H.L.; Jonsson, N.N.
Series :	Nature Scientific Reports 9, 4315
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 of the 2018/19 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A.; Norriss, D.
Series :	Unpublished report
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 :	Report of the 2019/20 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A.; Norriss, D.
Series :	Unpublished report
Year :	2020
Title :	Great Cormorant (*Phalacrocorax carbo*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	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.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Razorbill (*Alca torda*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Lavers, J.; Hipfner, J. M.; G. Chapdelaine, G.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA

Year :	2021
Title :	Report of the 2020/21 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A.; Norriss, D.; Kelly. S.
Series :	Unpublished report
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 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 :	Definition of Favourable Conservation Status for Great Cormorant, *Phalacrocorax carbo*
Author :	Newson, S.E.; Austin, G.
Series :	Natural England, pp.25. ISBN: 978-1-78354-723-4
Year :	2022
Title :	Report of the 2021/22 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A; Norriss, D.; Kelly, S.
Series :	Unpublished report
Year :	2022
Title :	Chough *Pyrrhocorax pyrrhocorax* counts at a Waterford coastal roost
Author :	McGrath, D.
Series :	Irish Birds 44: 103-107
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 :	Report of the 2022/23 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A; Norriss, D.; Kelly, S.
Series :	Unpublished report
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 :	Great Cormorant (*Phalacrocorax carbo*)
Author :	JNCC
Series :	https://jncc.gov.uk/our-work/great-cormorant-phalacrocorax-carbo/

A009 Fulmar *Fulmarus glacialis*

To restore the Favourable conservation condition of Fulmar in Horn Head to Fanad Head 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 breeding in Co. Donegal in 1912 (Kennedy et al., 1954). Kennedy et al. (1954) note that colonies at Horn Head and Fanad Head had been established at the time of publication. This SPA encompasses large stretches of the north Co. Donegal coastline; the Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. In 1987, an estimated 843 pairs nested on Horn Head (Lloyd et al., 1991). In 1999, the total SPA population was estimated at 1,974 pairs with 1,644 pairs recorded at Horn Head (Mitchell et al., 2004). During 2015 - 18,542 and 658 pairs were noted on Horn Head and across the total SPA respectively, an SPA decline of 67% (Burnell et al., 2023). A 2024 survey of Horn Head recorded 190 pairs (Colhoun and Trapp, 2024). However, Colhoun and Trapp (2024) indicate that the 2024 estimate could be an underestimate and they highlight the difficulty in surveying this site and comparing counts
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. Trewby et al. (2007) reported that the average productivity from Lambay Island SPA was 0.32 (± 0.05 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (246 pairs across three subplots). Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. An analysis of the breeding success of Fulmar in the United Kingdom over a 25 year period estimated a mean breeding success of 0.39 and speculated this would result in a population decline (Cook and Robinson, 2010). They estimated that a breeding success of 0.5 would allow populations of Fulmar to stabilise and potentially increase
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Fulmar. Typically, Fulmar nest near the tops of grassy cliffs on relatively wide ledges (Mitchell et al., 2004). Within this SPA, nesting Fulmar are found primarily on Horn Head but have also been recorded on Clonmass Isle, Clonmass Point, Breaghy Head and Saldanha Head
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)

A017 Cormorant *Phalacrocorax carbo*

To restore the Favourable conservation condition of Cormorant in Horn Head to Fanad Head 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	This SPA encompasses large stretches of the north Co. Donegal coastline. The Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. However, Cormorant do not breed on Horn Head so this species has not been surveyed regularly at this SPA. In 1999, an estimated 79 pairs of Cormorant bred at this SPA on Clonmass Isle and Saldanha Head (Mitchell et al., 2004). The population decreased to 62 pairs in 2018 on Saldanha Head (Burnell et al., 2023). The national population of Cormorant is estimated to have decreased by 8% 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 on Lambay Island SPA was 1.05 (± 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 *P. c. carbo* which breeds in Ireland, the United Kingdom also holds the continental race *P. c. sinensis*, 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. Within this SPA Cormorant have nested on Clonmass Isle and Saldanha Head

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 *Labrus bergylta* to be the most important forage species in terms of frequency, followed by Perch *Perca fluviatilis* and Roach *Rutilus rutilus* with less frequent records of salmonids and European Eel *Anguilla anguilla*. 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)

A018 Shag *Phalacrocorax aristotelis*

To restore the Favourable conservation condition of Shag in Horn Head to Fanad Head 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) describe Shag as numerous on the coast of Co. Donegal. This SPA encompasses large stretches of the north Co. Donegal coastline. The Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. In 1987, an estimated 191 pairs nested on Horn Head (Lloyd et al., 1991). The population on Horn Head in 1999 was 99 pairs but the total SPA population was 110 pairs (Mitchell et al., 2004). The population was similar in 2015 - 2018 with 68 pairs recorded on Horn Head and 98 in total for the SPA (Burnell et al., 2023). A survey of just Horn Head in 2024 recorded 33 pairs (Colhoun and Trapp, 2024) suggesting the population has declined further. The population on Horn Head has declined by 67% between surveys in 1999 and 2024 indicating that the SPA population has also declined
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). Within this SPA nesting Shag are found primarily on Horn Head but have also been recorded on Clonmass Isle, Breaghy Head and Saldanha Head
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)
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 maintain the Favourable conservation condition of Barnacle Goose in Horn Head to Fanad Head 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, 387 Barnacle Goose were estimated to be using this SPA and Inishbofin, Inishdooey and Inishbeg SPA (4 year mean of census counts for baseline period 1993 -2003; see NPWS, 2013). More recent data showed a population of 1,231 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 218% since the baseline period, significantly 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 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

A103 Peregrine *Falco peregrinus*

To maintain the Favourable conservation condition of Peregrine in Horn Head to Fanad Head SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number of occupied territories	Breeding population is stable/increasing	Peregrine may breed in their first year, but typically wait until two years old or later (Ratcliffe, 1993). Annual occupancy of available territories can vary. The breeding component of the population for the site is defined here as the total number of occupied territories, based on standard definitions (Hardey et al., 2009). The national population is considered stable (EEA, 2019). Baseline estimates at the time of designation indicated up to 5 occupied territories (NPWS internal files). The 2017 national survey recorded 5 occupied territories (NPWS internal files). Historically, Ussher and Warren (1900) recorded 2 to 3 pairs breeding in what is now the SPA. Thus the population in the SPA appears to be stable or increasing
Productivity rate	Number of fledged young per territorial pair	Sufficient to maintain the population size target	National/partial surveys (1981; 1993; 2002; 2017) have given estimates of productivity and breeding success for Peregrine (Norriss and Wilson, 1983; Norriss, 1995; Madden et al., 2009; NPWS internal files). Cold, wet springs can delay/halt breeding (Norriss and Wilson, 1983; Horne and Fielding, 2002) and affect productivity (Burke et al., 2015). In 2017, with a breeding success rate of 100%, at least 11 young fledged from 5 territories in the SPA. A lack of comprehensive published annual data precludes the identification of a minimum productivity rate for this species at this site and at the national level
Distribution: extent of occupied territories within site	Number and distribution of occupied territories across site	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	Distribution captures the number of occupied territories and areas of suitable nesting habitat available to be used by the population. Peregrine defend nesting territories, with mean nearest-neighbour distances between pairs in districts of Britain ranging from 2.1 - 9km (Ratcliffe, 1993). Norriss and Wilson (1983) had a mean nearest-neighbour distance of 4.2km across the coasts of counties Donegal (Inishowen), Mayo, and Clare. Optimal resilience depends on pairs utilising the SPA to the maximum extent possible. Uptake by breeding pairs varies annually, but the spatio-temporal patterns of use of the site by Peregrine should be maintained. Safe, suitable ledges, typically 50cm by 50cm (Ratcliffe, 1993) or crags along coastal cliffs should be available for nesting and levels of disturbance should not limit occupancy of known sites. Peregrine will re-use breeding ledges and in Britain they are also known to nest on the ground on heathery slopes or on steep sand banks (Hardey et al., 2009)

Forage spatial distribution, extent, abundance, and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat, and available prey biomass (i.e. small- to medium-sized birds, mammals) to support the population target	Open landscapes with plentiful supplies of small- to medium-sized birds provide suitable foraging habitat. Peregrine have a generalist diet, feeding largely on birds caught in flight, and require sufficient prey populations of small- to medium-sized birds, though other prey items including small mammals are also taken. Ratcliffe (1993) noted pigeons, grouse, waders (including Snipe, *Gallinago gallinago*) and passerines occurred in over 80% of diets at 14 study areas across Britain, though the numbers of territories on which these reported figures are based were not provided. At coastal sites in Scotland, auks, petrels, Fulmar (*Fulmarus glacialis*), Black-headed Gull (*Chroicocephalus ridibundus*) and Oystercatcher (*Haematopus ostralegus*) are also taken (Ratcliffe, 1993). Most prey items are caught within 2km of an eyrie, rarely beyond 6km, and hunting areas of neighbouring pairs can overlap (Hardey et al., 2009)
Disturbance to breeding sites	Intensity, timing, frequency, and duration	Disturbance occurs at levels that do not significantly impact upon the breeding population	Factors such as intensity, frequency, timing, location 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, productivity rate and number and distribution of occupied territories. Pairs in remote locations may be more sensitive to disturbance. Activities above a nest are more likely to cause disturbance than those below, and individual pair responses to disturbance may also vary. Safe viewing distances of nest sites are defined by Ruddock and Whitfield (2007). It is unknown whether breeding pairs in this SPA have been subject to unwanted human-related disturbance and/or targeted persecution

A188 Kittiwake *Rissa tridactyla*

To restore the Favourable conservation condition of Kittiwake in Horn Head to Fanad Head 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	This SPA encompasses large stretches of the north Co. Donegal coastline; the Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. Within the SPA it is understood that Kittiwake breed only at Horn Head. Ussher and Warren (1900) describe Horn Head as one of the largest Kittiwake colonies in Ireland while Kennedy et al. (1954) describes Horn Head as the single largest colony in the country. In 1987, an estimated 4,256 pairs nested here (Lloyd et al., 1991). The population declined to 3,853 pairs in 1999 (NPWS internal files) and to 1,820 pairs in 2015 - 2018 (Burnell et al., 2023). Although the most recent survey of Horn Head in 2024 saw the population recover to 3,683 pairs, a decline of 13% since 1987 is noted (Colhoun and Trapp, 2024). Similarily, the national population has decreased by 14% 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 rate from Lambay Island SPA was 0.65 (± 0.07 SE) chicks fledged per AON in 2007 (316 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. 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
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). The Kittiwake population in this SPA is restricted to Horn Head
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. euphausiids, 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 Horn Head to Fanad Head 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	This SPA encompasses large stretches of the north Co. Donegal coastline; the Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. Ussher and Warren (1900) describe Horn Head as the most significant colony in the north of Ireland and Kennedy et al. (1954) highlight it as a one of the most notable colonies in the country. It is understood that the SPA's breeding Guillemot population is restricted to Horn Head. In 1987, an estimated 4,806 individuals were recorded here (Lloyd et al., 1991). The population in 1999 peaked at 6,548 individuals (Mitchell et al., 2004). In 2015 - 2018 the population was estimated at 5,442 individuals (Burnell et al., 2023) and the most recent survey in 2024 recorded 4,967 individuals, an increase of 1% since 1987 indicating a stable population (Colhoun and Trapp, 2024). The national population has increased by 80% between surveys in 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 the mean Guillemot productivity from Lambay Island 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). The Guillemot population in this SPA is restricted to Horn Head
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)

A200 Razorbill *Alca torda*

To maintain the Favourable conservation condition of Razorbill in Horn Head to Fanad Head 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	This SPA encompasses large stretches of the north Co. Donegal coastline; the Horn Head section is particularly important for breeding seabirds which has been the focus of standalone surveys over the years. Ussher and Warren (1900), Kennedy et al. (1954) and Ruttledge (1966) highlight Horn Head as one of the most significant Razorbill colonies in Ireland. It is understood that the Razorbill population is restricted to the Horn Head area of this SPA. In 1987, an estimated 5,628 individuals were recorded here (Lloyd et al., 1991). The population in 1999 was 6,739 individuals (Mitchell et al., 2004). The population in 2015 - 2018 was similar with 6,182 individuals (Burnell et al., 2023) and the most recent survey in 2024 recorded 7,876 individuals, the peak count for this SPA and an increase of 40% since 1987 (Colhoun and Trapp, 2024). The national population has increased by 57% between surveys in 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 from Lambay Island SPA was 0.65 (± 0.03 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (270 pairs across six 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 Razorbill in the United Kingdom over a 25 year period determined that a breeding success of 0.55 would result in a slowly decreasing 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 the species. Razorbill breed in rocky coastal regions on steep mainland cliffs and rocky offshore islands (Lavers et al., 2020). The Razorbill population in this SPA is restricted to Horn Head
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 Razorbill comprises of schooling fish including herring and sandeels. Crustaceans and polychaetes may also be important in adult diets (Lavers 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 Razorbill which are 61km, 89km, and 313km 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 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 Razorbill 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 Razorbill performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003). 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 Razorbill which are 61km, 89km, and 313km respectively

A346 Chough *Pyrrhocorax pyrrhocorax*

To restore the Favourable conservation condition of Chough in Horn Head to Fanad Head SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number of breeding pairs	Breeding population is increasing	A review of 1992 and 2002/03 national survey data, including count units and survey methods applied, was undertaken (NPWS internal files). The range of population estimates for the SPA are set out using 'confirmed and probable' breeding pairs only and 'all breeding pair' categories for each national survey since 1992, with 8 - 19 in 1992; 23 - 29 in 2002/03 and 3 - 5 in 2021. Applying stricter 2021 survey criteria (Hayhow et al., 2018; Colhoun et al., 2024) which exclude records with no breeding evidence (NBE) as per Colhoun et al. (2024), retrospectively to 1992 and 2002/03 records updates these original estimates to 6 - 16 (1992), 23 - 28 pairs (2002/03), and 3 - 5 pairs (2021)
Population trend	Percentage change	Population trend stable or increasing	The breeding component of the population, as opposed to non-breeding flock birds, is considered a more reliable metric to reflect population change (Trewby et al., 2006). Using available data from the 1992 (Berrow et al., 1993), 2002/03 (Gray et al., 2003) and 2021 (Colhoun et al., 2024) national surveys, the population trend for the site is declining in the short term (i.e. 2002/03 - 2021) and declining in the longer term (1992 - 2021) based on assessments of change in the numbers of known 'confirmed' and 'probable' pair records only; and including all 'possible' breeding pair records for the site, applying 2021 criteria (Colhoun et al., 2024). For the county, the population is decreasing, with pair totals of 120 in 1963 (Cabot, 1965); 109 - 112 in 1983 (Bullock et al., 1983); 101 in 1992 (Berrow et al., 1993); 129 in 2002/03 (Gray et al., 2003); and 79 (excluding NBEs) in 2021 (Colhoun et al., 2024)
Productivity rate	Number of fledged young per confirmed pair	Sufficient to maintain population size target	Most of the population nest along coastal cliffs or in sea caves. In most instances, due to the inaccessible nature of nesting locations, estimates of breeding productivity and success are based on numbers of fledged young seen with adults post-fledging, unless records are for man-made/artificial sites e.g. cattle sheds, old buildings and castles etc. Some studies have provided estimates of productivity and/or success, (e.g. Berrow et al., 1993; Gray et al., 2003; Boylan, 2011; Trewby et al., 2006) and for west County Donegal, a figure of 3.0 fledglings per successful pair was estimated by Trewby et al (2006). However, this estimate is based on one year's data, and may not be sufficiently representative for the SPA, and wider. Overall, there is a lack of robust representative Irish data to determine a more quantitative target for breeding productivity

Foraging habitat: quality and quantity	Hectares (ha)	Maintain sufficient quality and quantity of coastal grassland and other relevant habitats to support the population targets	Studies in Ireland (e.g. Trewby et al., 2006), Wales (e.g. Whitehead et al., 2005) and elsewhere (e.g. Kerbiriou et al., 2006) have shown that breeding Chough spend most of their time foraging near nest sites (April - June inclusive). Coastal pairs tend to commute along the coast from breeding sites, rather than inland (Trewby et al., 2006). Proximity of suitably-sized feeding areas to nest sites is likely to positively support breeding success (Kerbiriou et al., 2006). Pairs, including in west County Donegal, spent 80% of foraging time within 350m of the coast (Trewby et al., 2006). Grazed habitats with short swards of <5cm are typically preferred and areas of bare ground, where soils are easier to probe e.g. paths, along with earth banks and stone banks. Maritime vegetation on cliffs, especially in spring, is also favoured. Thus, sufficient foraging habitat within 350m of the coastline, where Chough are known to breed, is essential to support breeding pairs
Food availability: prey biomass	Quantity per unit area	Maintain adequate levels of prey biomass (including preferred invertebrate prey items such as leatherjackets, dung beetles, etc.)	Chough feed largely on invertebrates (e.g. ants, spiders, worms, insect larvae such as crane fly larvae, leatherjackets and dung beetles), at or near the soil surface where prey items are more accessible. In warmer weather, Chough can be seen picking off active surface insects, e.g. spiders, including from heather plants (Trewby et al., 2010). The dosing of livestock with veterinary parasiticide treatments (including anthelmintics) has knock-on consequences with respect to invertebrate density in grasslands on which Chough depend (Gilbert et al., 2019)
Distribution of roosting sites	Spatial distribution	The distribution of preferred roosts is maintained	Post-breeding, Chough are highly social, forming mobile flocks that can travel several kilometres to feed (McGrath, 2022). Family groups form 'nursery' flocks in July, returning to nest sites to roost, but by summer's end, these flocks begin to converge pre-dusk, along with non-breeding sub-adults, at communal nocturnal roost sites, leaving post-dawn (Trewby et al., 2010; Blanco et al., 1993). Roosts tend to be close to good foraging habitat like grazed dune systems, with peak attendance in late summer/early autumn, post-breeding. Dooros Point to Pigeon Cove is a known roost for this SPA (a max of 41 birds recorded in August 2004; Trewby et al., 2006). For the county, the north Inishowen Peninsula holds one of the largest communal roosts in Ireland (> 100 individuals) (Colhoun et al., 2024)
Disturbance	Intensity, timing, frequency and duration	Disturbance occurs at levels that do not significantly impact upon Chough in the SPA	Factors such as intensity, frequency, timing, duration of a (direct or indirect) disturbance source and location (e.g. if access to preferred food sources is restricted), must be taken into account to determine the potential impact upon the targets for population size, population trend, productivity rate and distribution of roosting sites. Further, site fidelity (e.g. pairs to nest sites while breeding, or flocks to roost sites at other times), weather (e.g. prolonged cold spells) and predation/competition should also be factored in. Coastal breeding pairs spend up to 80% of their time within 350m of the nest site (Trewby et al., 2006). Impacts are likely to be highest near nest sites (e.g. on coastal cliffs where available foraging habitats are more limited in total area) and at roost sites

A395 Greenland White-fronted Goose *Anser albifrons flavirostris*

To restore the Favourable conservation condition of Greenland White-fronted Goose in Horn Head to Fanad Head 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 Greenland White-fronted Goose declined by 13% between 1985 and 2018 (EEA, 2019). It is understood that a single flock of Greenland White-fronted Goose use the Horn Head to Fanad Head SPA, known as the Dunfanaghy flock as the lands around New Lake, Dunfanaghy have been the main areas used by the birds (Burke et al., 2014). During the baseline assessments to inform SPA designation, a flock of 231 Greenland White-fronted Goose were estimated to be using this SPA (5 year mean of peak counts for the period 1994/95 - 1998/99; NPWS, 2013). A flock of 112 Greenland White-fronted Goose were reported to be using the SPA in recent years (5 year mean of peak counts for the period 2018/19 - 2022/23; Fox et al., 2019, 2020, 2021, 2022 and 2023). This represents an estimated population decline of 52% since the baseline period, significantly 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 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 grazer, feeding on a wide range of vegetation. Key forage materials include roots, tubers (such as potatoes), shoots (such as winter wheat), stolons, rhizomes, leaves (such as grasses), and seed such as (spilled) grain. Key habitats include peat bogs (including raised bogs and blanket bogs), grasslands (such as wet grassland, callows, semi-improved grassland, and intensive grassland), arable stubble, winter cereal fields, coastal grasslands, and occasionally salt marsh. In general, the foraging distance of wintering Greenland White-fronted Goose from night roosts is estimated at 5km - 8km (Scottish Natural Heritage, 2016), although this will vary depending on site and landscape
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. Overnight roosting habitat mainly consists of permanent waterbodies, such as lakes, estuaries, bays, and other open waterbodies. When roosting in waterbodies, this species can roost on above-water features such as sandbanks. 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

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MAP 1:
HORN HEAD TO FANAD HEAD SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

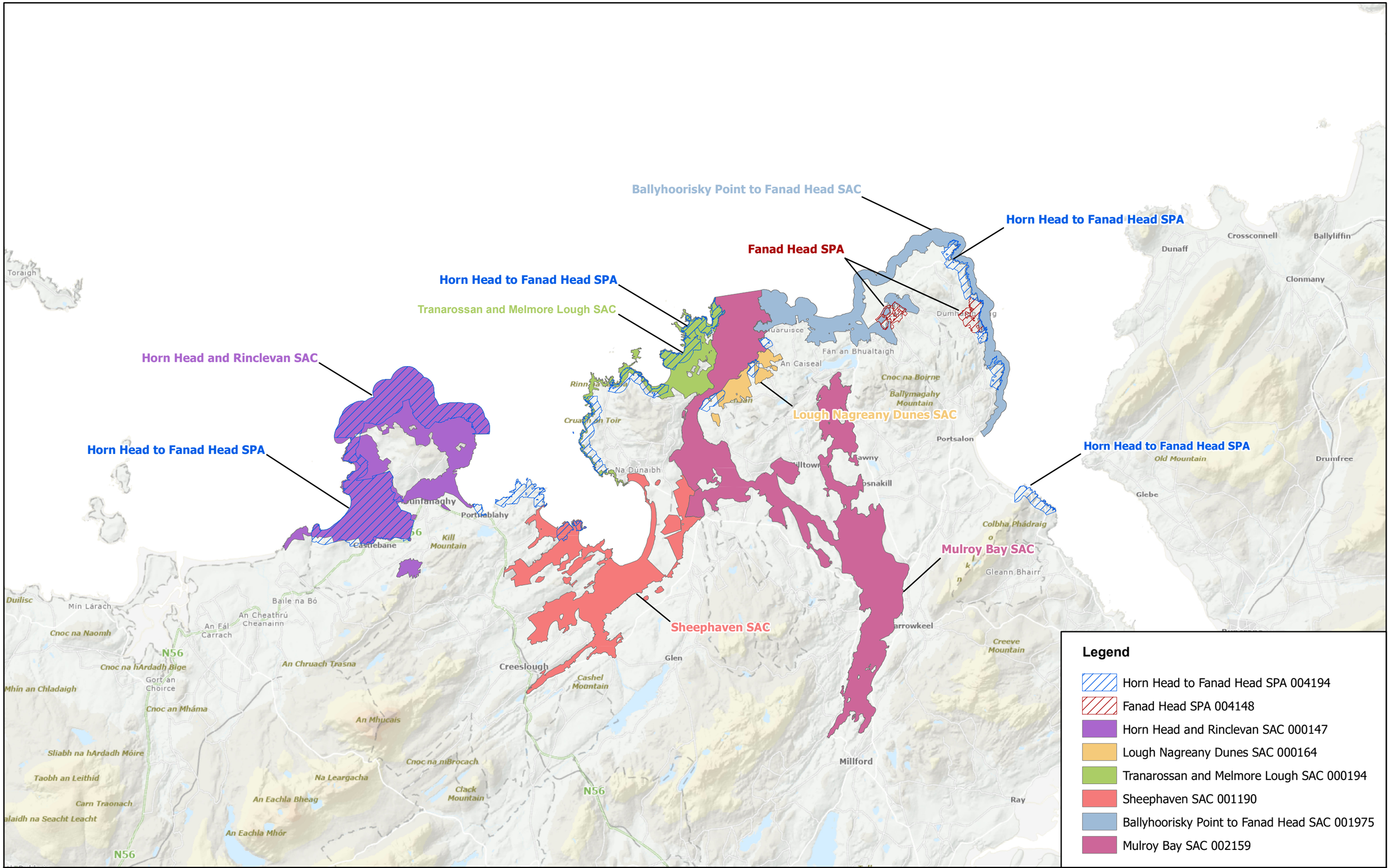
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004194; version 3
CO. DONEGAL

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024



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MAP 2:
HORN HEAD TO FANAD HEAD SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

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

SITE CODE:
SPA 004194; version 3
CO. DONEGAL

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024