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Conservation Objectives Series

Lough Conn and Lough Cullin SPA 004228



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			
004228	Lough Conn and Lough Cullin SPA		
A061	Tufted Duck Aythya fuligula		
A065	Common Scoter Melanitta nigra		
A182	Common Gull Larus canus		
A395	Greenland White-fronted Goose Anser albifrons flavirostris		
A999	Wetlands		

Please note that this SPA overlaps with River Moy SAC (002298). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping site(s) as appropriate.

Supporting documents, relevant reports & publications

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

NPWS Documents

Year :	2013
Title :	The breeding status of common scoter Melanitta nigra in Ireland, 2012
Author :	Hunt, J.; Heffernan, M.L.; McLoughlin, D.; Benson, C.; Huxley, C.
Series :	Irish Wildlife Manual No. 66
Year :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Published Report
Year :	2021
Year : Title :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Year : Title : Author :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network Power, A.; McDonnell, P.; Tierney, T.D.
Year : Title : Author : Series :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network Power, A.; McDonnell, P.; Tierney, T.D. Published NPWS report
Year : Title : Author : Series : Year :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network Power, A.; McDonnell, P.; Tierney, T.D. Published NPWS report 2022
Year : Title : Author : Series : Year : Title :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network Power, A.; McDonnell, P.; Tierney, T.D. Published NPWS report 2022 The status of breeding common scoter in Ireland, 2020
Year : Title : Author : Series : Year : Title : Author :	2021 Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network Power, A.; McDonnell, P.; Tierney, T.D. Published NPWS report 2022 The status of breeding common scoter in Ireland, 2020 Heffernan M.L.; Hunt, J.

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 :	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 status of the common scoter <i>Melanitta nigra</i> in Ireland. Report on the 1995 All-Ireland common scoter Survey		
Author :	Gittings, T.		
Series :	Unpublished Report for the Irish Wildbird Conservancy		
Series : Year :	Unpublished Report for the Irish Wildbird Conservancy 2001		
Series : Year : Title :	Unpublished Report for the Irish Wildbird Conservancy 2001 The Biology of the Common Scoter <i>Melanitta nigra</i> (L.) breeding in Irish Loughs – population, behavioural and feeding ecology		
Series : Year : Title : Author :	Unpublished Report for the Irish Wildbird Conservancy 2001 The Biology of the Common Scoter <i>Melanitta nigra</i> (L.) breeding in Irish Loughs – population, behavioural and feeding ecology Tierney, D.		
Series : Year : Title : Author : Series :	Unpublished Report for the Irish Wildbird Conservancy 2001 The Biology of the Common Scoter <i>Melanitta nigra</i> (L.) breeding in Irish Loughs – population, behavioural and feeding ecology Tierney, D. Unpublished PhD thesis, Department of Zoology, National University of Ireland, Galway		
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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 :	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 :	2016		
Title :	Assessing connectivity with Special Protection Areas (SPAs)		
Author :	Scottish Natural Heritage		
Series :	Guidance Series Version 3 - June 2016		
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 :	Common Scoter (<i>Melanitta nigra</i>), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D.A. Christie, and E. de Juana, Editors)		
Author :	Carboneras, C.; Kirwan, G.M.		
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 Gull (Larus canus), version 1.1. In Birds of the World (S. M. Billerman, Editor)		
Author :	Moskoff, W.; Bevier, L.R.; Rasmussen, P.C.		
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA		
Year :	2022		
Title :	Irish wetland bird survey: I-WeBS national and site trends report 1994/95 – 2019/20		
Author :	Kennedy, J.; Burke, B.; Fitzgerald, N.; Kelly, S.B.A.; Walsh, A.J; Lewis, L.J.		
Series :	https://birdwatchireland.ie/app/uploads/2022/04/iwebs_trends_report.html		

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 :	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 :	2024		
Title :	Seabird Population Trends and Causes of Change: 1986–2023, the annual report of the Seabird Monitoring Programme		
Author :	Harris, S.J.; Baker, H.; Balmer, D.E.; Bolton, M.; Burton, N.H.K.; Caulfield, E.; Clarke, J.A.E.; Dunn, T.E.; Evans, T.J.; Hereward, H.R.F.; Humphreys, E.M.; Money, S.; O'Hanlon, N.J.		
Series :	BTO Research Report 771		

A061 Tufted Duck *Aythya fuligula*

To maintain the Favourable conservation condition of Tufted Duck in Lough Conn and Lough Cullin 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 Tufted Duck in Ireland has declined by 18% from 1994/95 - 2019/20, as monitored via the Irish Wetland Bird Survey (I-WeBS) (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 428 Tufted Duck were estimated to be using this SPA (4 year mean peak counts for the period 1995/96 -1999/2000; see NPWS, 2013). A population of 837 Tufted Duck were estimated to be using the Lough Conn and Lough Cullin SPA in recent years (5 year mean of peak counts from I- WeBS monitoring for the period 2013/14 - 2017/18). This represents an estimated population increase of 96% since the baseline period, in contrast to 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
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 omnivorous and forages primarily in open freshwater or brackish waterbodies up to c.15m depth. Molluscs are the main food source but the species also consumes fish, insects, amphibians and various plant materials (leaves, shoots, tubers, seeds). Tufted Duck feed primarily by diving, but to a lesser extent will also feed at the surface of waterbodies, wade in shallows, and forage onshore (e.g. for cereal grain). Utilised habitats include lakes, rivers, ponds, reservoirs, marshes, estuaries, lagoons, and (less so) coastal areas. In winter, individual Tufted Duck can forage alone or as part of large aggregations

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	When roosting overnight, the species uses a range of waterbodies, as noted for foraging habitat. Roosting is a critical ecological requirement for the wintering population. 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

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A065 Common Scoter *Melanitta nigra*

To restore the Favourable conservation condition of Common Scoter in Lough Conn and Lough Cullin SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population trend	Percentage change in number of potential breeding pairs	Long term trend is stable or increasing	The national breeding population of Common Scoter in Ireland declined from 101 - 111 potential breeding pairs in 1995 (Gittings, 1995) to 50 potential breeding pairs in 2020 (Heffernan and Hunt, 2022), a decline of 50 - 55%. The breeding population on Loughs Conn and Cullin was estimated to be broadly stable at circa 30 pairs between 1968 and 1995 (Tierney, 2001). Baseline surveys in 1995 to inform SPA designation recorded an estimated 31 potential breeding pairs in Lough Conn and Lough Cullin SPA (Gittings, 1995; NPWS, 2013). Repeat surveys in 2012 and 2020 recorded just a single potential breeding pair in the SPA on both occasions (Hunt et al., 2013; Heffernan and Hunt, 2022). This represents a population decline of 97% between 1995 and 2020. The percentage decline of the SPA population is significantly greater than the national decline and is in contrast to population trends recorded at other Common Scoter breeding sites, such as the Lough Corrib SPA
Productivity rate	Number of young fledged per potential breeding pair	Sufficient productivity to maintain the population trend as stable or increasing	Productivity is a measure of breeding output and a key determinant in whether a population can maintain itself. It is defined here as the total number of young that are successfully reared to fledge (i.e. become independent of their parents) divided by the total number of potential breeding pairs (or breeding females; including failed pairs/females). In 2012 and 2020 it was determined that the single breeding pair present in the SPA in those years did not manage to breed successfully, thus breeding success and productivity was zero in both years (Hunt et al., 2013; Heffernan and Hunt, 2022). Research in Scotland suggests productivity of 0.6 is required for population growth (see Heffernan and Hunt, 2022), though this is likely specific to the Scottish population. While limited, the results from 2012 and 2020 suggest that breeding productivity at Lough Conn and Lough Cullin SPA was insufficient for population maintenance or growth
Distribution of nesting habitat	Spatial distribution	No significant loss of distribution in the long term, other than that occurring due to natural patterns of variation	Common Scoter nest on land among low-lying vegetation such as heather, shrubs or tall herbaceous plants. With the decline in the breeding population, the distribution of breeding pairs has contracted between 1995 and 2020 (Gittings, 1995; Heffernan and Hunt, 2022)
Extent and condition of nesting habitat	Hectares of high quality nesting habitat	Sufficient area of high quality habitat to support the population target	Common Scoter nest on land among low-lying vegetation such as heather, shrubs or tall herbaceous plants. With the decline in the breeding population, the distribution of breeding pairs has contracted between 1995 and 2020 (Gittings, 1995; Heffernan and Hunt, 2022)

Disturbance at breeding 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 breeding population will ultimately affect the achievement of targets for population trend and/or spatial distribution of nesting and foraging habitat. 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. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality (in adults and chicks) or reduced breeding fitness of adults (if energy expenditure is greater than energy intake), and can thus negatively impact population trends. Disturbance is likely to have greatest impact at nesting sites and feeding areas for young, for example, increasing the mortality risk to eggs and young from predation, inclement weather and starvation
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the breeding population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the breeding population's access to this SPA or movement within 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
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	During the breeding season Common Scoter forage primarily in freshwater bodies, such as lakes. At this time, the species feeds primarily on molluscs by diving (typically to 1m - 3.7m depth), but also preys upon aquatic insects (especially chironomid larvae), worms, crustaceans, small fish, fish eggs and some plant materials (e.g. seeds, roots and tubers). Surface-dwelling, nutrient-rich prey items such as insects and plant seeds are likely to be an essential food source for ducklings in the early growth periods during which they cannot forage by diving (Carboneras and Kirwan, 2020). In Lough Conn and Lough Cullin SPA, eutrophication of the lakes, deterioration in water quality and changes in the lakes' fish populations appear to coincide with the decline of the breeding Common Scoter population (Heffernan and Hunt, 2022). It is possible these changes impacted upon the area of suitable foraging habitat and the forage biomass available to Common Scoter adults and/or ducklings

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A182 Common Gull *Larus canus*

To maintain the Favourable conservation condition of Common Gull in Lough Conn and Lough Cullin 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	Approximately 30 pairs of Common Gull were recorded breeding in Lough Conn in 1894 and breeding birds were noted on Lough Cullin in the same year (Ussher and Warren, 1900). In 1977 an estimated 70 individuals were recorded in this SPA, indicating the presence of approximately 35 pairs of Common Gull (NPWS internal files). A population of 40 pairs of Common Gull were recorded in the SPA in 2000 (Mitchell et al., 2024) and the population in 2017 was similar with an estimated 38 pairs present in the SPA (NPWS internal files). The most recent population estimate in 2020 recorded 34 pairs (NPWS internal files). All population estimates for this site have ranged between 30 and 40 pairs which indicates a stable population. The national population has increased by 89% between 1998 - 2002 and 2015 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this species at the site and at the national level. Common Gull productivity in Scotland between 2000 and 2020 was below 0.6 chicks per breeding pair; in this time period the Scottish population of Common Gull was decreasing (Harris et al., 2024)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio- temporal patterns of use of the habitats by Common Gull. Common Gull breeding inland can nest in a variety of habitats such as grassy/heather moorland, near lakes, pools, in bogs, on open ground away from water, and cultivated grain fields (Moskoff et al., 2021). Historically, Common Gull have bred on multiple islands throughout this SPA
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Common Gull feeding in inland environments typically feed on earthworms and insects such as fly larvae (Moskoff et al., 2021). Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (see Power et al., 2021)
Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution

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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	Inland breeding gulls may use freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other 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	Inland breeding gulls require regular and efficient access to freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (see Power et al., 2021)

A395 Greenland White-fronted Goose Anser albifrons flavirostris

To restore the Favourable conservation condition of Greenland White-fronted Goose in Lough Conn and Lough Cullin 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 has declined by 13% between 1985 and 2018 (EEA, 2019). It is understood that a single flock of Greenland White-fronted Goose uses the Lough Conn and Lough Cullin SPA and wider area including the Ox Mountains (see Burke et al., 2014). During the baseline assessments to inform SPA designation, this flock was estimated to number 124 Greenland White-fronted Goose (5 year mean of peak counts for period 1994/95 - 1998/99; see Burke et al., 2014). More recently, the flock was estimated to number just 38 Greenland White-fronted Goose (5 year mean of peak counts 2018/19 - 2022/23; see Fox et al., 2019, 2020, 2021, 2022 and 2023). This represents an estimated population decline of 69% for this flock 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 to 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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A999 Wetlands

To maintain the Favourable conservation condition of Wetland habitats in Lough Conn and Lough Cullin SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas. This is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Wetland habitat area	Hectares	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant loss to the wetland habitat within the SPA would likely negatively impact the regularly- occurring migratory waterbirds that utilise this wetland habitat. Such loss of wetland habitat would likely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occurring migratory waterbird species
Wetland habitat quality and functioning	Quality and function of the wetland habitat	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant impact on the quality, functioning and accessibility of the wetland habitat within the SPA would likely negatively impact the regularly- occurring migratory waterbirds that utilise this wetland habitat. Impacts on wetland quality, functioning and accessibility would likely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occurring migratory waterbird species



