

National Parks and Wildlife Service

Conservation Objectives Series

Connemara Bog Complex SPA 004181



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

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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

004181 Connemara Bog Complex SPA

A017 Cormorant *Phalacrocorax carbo*

A098 Merlin *Falco columbarius*

A140 Golden Plover *Pluvialis apricaria*

A182 Common Gull *Larus canus*

Please note that this SPA overlaps with Connemara Bog Complex SAC (002034) and is adjacent to Maumturk Mountains SAC (002008) and Kilkieran Bay and Islands SAC (002111). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent 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 :	2004
Title :	Upland Bird Survey 2004
Author :	Cummins, S.; Swann, M.; Newton, S.
Series :	BirdWatch Ireland report to the National Parks and Wildlife Service
Year :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Unpublished report
Year :	2022
Title :	Survey of breeding merlin in the special protection area network 2018
Author :	Lusby, J., O'Brien, I., Lauder, A., Wilson-Parr, R., Breen, D., Cummins, S.; Tierney, D.
Series :	Irish Wildlife Manual No. 139
Year :	In prep
Title :	Status and distribution of breeding golden plover and dunlin in Connaught in 2022
Author :	Colhoun, K.; Dowling, R.; Farrell, I.; Konstantinidis, T.; Latimer, J.; Ní Cheallaigh, S.; Sardá Serra, M.; Collins, J.
Series :	Irish Wildlife Manual

Other References

Year :	1985
Title :	A survey of upland breeding birds in west Galway, Éire
Author :	Haworth, P.F.
Series :	A Report to the World Wildlife Fund Project
Year :	1989
Title :	Important bird areas in Europe
Author :	Grimmet, R. F. A.; Jones, T. A. Eds.
Series :	International Council for Bird Preservation (Techn. Publ. no. 3), Cambridge, UK
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 :	2000
Title :	Time budgets and foraging of breeding golden plover <i>Pluvialis apricaria</i>
Author :	Whittingham M.J.; Percival S.M.; Brown A.F.
Series :	Journal of Applied Ecology 37, 632-646
Year :	2005
Title :	Merlins of the Wicklow mountains
Author :	McElheron, A.
Series :	Currach Press, Dublin

Year :	2010
Title :	Breeding biology of merlins <i>Falco columbarius</i> in Ireland, 1986-1992
Author :	Norriss, D.W.; Hara, B.; Hennigan, J.; McElheron, A.; McLaughlin, D.J.; Swan, V; Walsh, A.
Series :	Irish Birds, 9:23-30
Year :	2011
Title :	Assessing the effectiveness of monitoring methods for merlin <i>Falco columbarius</i> in Ireland: the pilot merlin survey 2010
Author :	Lusby, J.; Fernández-Bellon, D.; Norriss, D.; Lauder, A.
Series :	Irish Birds 9, 143 – 154
Year :	2011
Title :	The feeding ecology of merlin <i>Falco columbarius</i> during the breeding season in Ireland, and an assessment of current diet analysis methods
Author :	Fernández-Bellon, D.; Lusby, J.
Series :	Irish Birds 9, 159-164
Year :	2017
Title :	Breeding ecology and habitat selection of merlin <i>Falco columbarius</i> in forested landscapes
Author :	Lusby, J.; Corkery, I.; McGuinness, S.; Fernández-Bellon, D.; Toal, L.; Norriss, D.; Breen, D.; O'Donail, A.; Clarke, D.; Irwin, S.; Quinn, J.L.; O'Halloran, J.
Series :	Bird Study 64, 445-454
Year :	2019
Title :	Desk-based revision of seabird foraging ranges used for HRA screening
Author :	Woodward, I.; Thaxter, C. B.; Owen, E.; Cook, A. S. C. P.
Series :	BTO Research Report No. 724.
Year :	2020
Title :	Great Cormorant (<i>Phalacrocorax carbo</i>), 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

Conservation Objectives for : Connemara Bog Complex SPA [004181]

A017 Cormorant *Phalacrocorax carbo*

To restore the favourable conservation condition of cormorant in Connemara Bog Complex 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 population is stable or increasing	Up until at least 2016, Lough Scannive, part of Connemara Bog Complex SPA, held a long standing (at least since the late 1960s) cormorant colony, which was of national importance when identified as an Important Bird Area by Grimmet and Jones (1989). This colony was estimated to consist of 218 pairs in 1985 (Lloyd et al., 1991). Since then the population has declined steadily: 160 pairs in 2001; 136 pairs in 2010 and 71 pairs in 2016 (Mitchell et. al., 2004; NPWS unpublished data). Cormorant no longer breeds at this lough. However, in recent years cormorant began to colonise another lough towards the east of this SPA. The attribute 'Apparently Occupied Nests', which equates to the number of breeding pairs, is based on standard survey methods (see Walsh et al., 1995)
Productivity rate	Number of fledged young per AON	Sufficient to maintain a stable or increasing population	A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this relatively long-lived species at this site and indeed for cormorant at the national level. Walsh et. al. (1995) sets out two methods to estimate the productivity rate for this species
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	Cormorant is a colonial breeding seabird which has nested both on the ground and in trees on island loughs within this SPA
Prey biomass available	Kilogrammes	Sufficient extent of biomass of available prey items across the site to help support the population	The cormorant's diet is almost entirely benthic and/or pelagic fish (mostly <20cm) which are captured via pursuit diving, usually over shallow waters (<20m) in freshwater, estuarine and full marine environments (Hatch et al., 2020). The diet of the Lough Scannive population consisted primarily of marine fish species principally Ballon Wrasse <i>Labrus bergylta</i> (Tierney et al., 2011). During the breeding season, cormorant can forage over waters up to 35km away from the colony (Woodward et al., 2019)
Disturbance at the breeding site	Level of impact	Disturbance occurs at levels that do not significantly impact on cormorant at the breeding site	Cormorant have nested on the ground and in trees on island loughs within this SPA
Disturbance at freshwater and marine areas immediately adjacent to the colony	Level of impact	Disturbance occurs at levels that do not significantly impact on breeding cormorant	The cormorant's diet is almost entirely benthic and/or pelagic fish (mostly <20cm) which are captured via pursuit diving usually over shallow waters (<20m) in freshwater, estuarine and full marine environments (Hatch et al., 2020). The diet of the Lough Scannive population consisted primarily of marine fish species principally Ballon Wrasse <i>Labrus bergylta</i> (Tierney et al., 2011). Cormorant loaf and engage in other maintenance behaviours on rocks and other features close to the colony. During the breeding season, cormorant can forage over waters up to 35km away from the colony (Woodward et al., 2019)
Barriers to connectivity	Number, location, shape, area (hectares)	No significant increase	During the breeding season, cormorant can forage over waters up to 35km away from the colony (Woodward et al., 2019). It is likely that the cormorant population within this SPA forages, at times, away from the colony lough at other freshwater loughs and in nearby marine waters

Conservation Objectives for : Connemara Bog Complex SPA [004181]

A098 Merlin *Falco columbarius*

To restore the favourable conservation condition of merlin in Connemara Bog Complex 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 increasing	Early season visits improve detectability of merlin, a challenging species to survey (Norris et al., 2010; Lusby et al., 2011a, 2017). After Lusby et al. (2017), occupied territories are defined according to highest levels of breeding evidence i.e. all confirmed breeding pairs and any occupied territories during the survey breeding season (1 Apr - 15 Jul) and sites with recent signs of occupation e.g. plucking posts with fresh kills on repeat visits. A 2018 SPA survey (Lusby et al., 2022) had 'at least six breeding pairs and one additional territory' based on comprehensive coverage. A 2022 follow-up confirmed six pairs. Partial surveys of the SPA in 2005-10, that informed designation, had six to eight pairs (NPWS, 2013). A bird survey of Connemara bogs (larger than the SPA) by Haworth (1985, 1986) had seven territories occupied in both years, 12 in 1985, 10 in 1986, as not all are occupied each year (Norris et al., 2010). A total of 12-19 territories within the SPA in 1985/86
Productivity rate	Number of fledged young per breeding attempt with known outcome	Sufficient to meet the population size target	Various Irish studies have provided estimates of productivity and breeding success for merlin (e.g. Norris et al., 2010; Lusby et al., 2017; Lusby et al., 2022) though general information on life history such as natal dispersal, first year and adult survival are lacking in the Irish context. For this SPA, monitoring of breeding merlin has been more consistent in latter years (since 2009) with inter-annual variation in overall productivity at SPA level and below. A review of available data in Connemara (for the SPA and wider) shows productivity rates of 2.66 in 1985, 1.37 in 1986 (Haworth, 1985; 1986), 1.88 for the period 2005-2014 (Lusby et al., 2017), 3.4 in 2018 (Lusby et al., 2022) and 2.8 in 2022 (Breen and Lusby, unpublished data). Published national figures for 1982-2014 are 2.1 young per breeding attempt (n = 265) (Lusby et al., 2017)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	Formerly ground-nesting in heather, merlin is now largely tree-nesting in Ireland, often utilising old crows' nests (McElheron, 2005; Norris et al., 2010; Lusby et al., 2017). However, at this SPA, most pairs nest on densely-vegetated islands on inland lakes (Haworth, 1985; 1986), with a few historical records of ground-nesting in dense heather on islands (Haworth, 1986). Other options (including copses and shelter belts) in or near the SPA are also used as nest sites. Adjacent to the eastern part of the SPA, extensive forestry plantation has also likely held breeding pairs (NPWS, unpublished data). For this SPA, a sufficiency of available nest sites (e.g. including mature trees) on the vegetated islands of inland lakes that are proximate to suitable open foraging habitats, and distributed across the SPA, is needed to support the breeding population. Breeding territories are concentrated in the mid and west SPA most recently, with vacancies notable in the most easterly section

Extent and condition of suitable open habitats for foraging	Hectares; condition assessment; prey biomass	Sufficient availability of suitable foraging habitat across the SPA to support targets relating to population size, productivity rate and distribution	The sporadic occupancy of territories by merlin, and failures of some pairs to lay clutches, is noted for other raptor species where females in poorer territories have difficulty attaining condition to breed (Norriss et al., 2010). Lusby et al. (2017) showed that the proportion of 'open suitable habitat' i.e. moors and heathland, peat bogs and semi-natural grasslands (using CORINE LandCover) within 5km of nest sites was positively related to breeding success. Preferred prey include open country small passerines and moths; woodland birds feature in April (Fernández-Bellon & Lusby, 2011b). Open foraging habitats include wet and dry heaths, Molinia-dominated meadows and blanket bog; semi-open habitats i.e. woodland copses. The total extent of 'suitable foraging habitat' in this SPA has not been estimated. Key aspects to consider with respect to any assessment of the condition of these habitats for merlin include prey biomass, structure, soil integrity, overall connectivity and coherence
Disturbance at breeding sites	Level of impact	Disturbance occurs at levels that do not significantly impact upon breeding merlin	The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets that relate to population demographics (i.e. population, productivity rate) and the extent of suitable habitat occupied by breeding pairs. Factors such as location (e.g. proximity to nest site), intensity, frequency, timing and duration of a potentially disturbing activity (direct/indirect) need to be taken into account to determine its significance on breeding merlin. Lusby et al. (2022) has described the pressures within the SPA network which include turf-cutting, burning, agricultural intensification and afforestation. Commercial forests are outside but adjacent to the SPA's north-eastern boundary; thus, it is likely to be supporting some nesting pairs that may use it for foraging purposes. Merlin will often select the tallest trees in which to nest, thereby potentially increasing nest vulnerability to felling operations (Norriss et al., 2010)

Conservation Objectives for : Connemara Bog Complex SPA [004181]

A140 Golden Plover *Pluvialis apricaria*

To restore the favourable conservation condition of golden plover in Connemara Bog Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population trend	Percentage change in number of Apparently Occupied Territories (AOTs)	Long term trend is stable or increasing	The national breeding population of golden plover in Ireland is estimated to have declined by 82-84% between 1972 and 2019 (see NPWS, 2019). Apparently Occupied Territory (AOT) is a standard breeding bird survey metric used to represent breeding pairs. In 2004, baseline surveys to inform SPA designation recorded a minimum of 27 golden plover AOTs in this SPA (Cummins et al., 2004; NPWS, 2013). Surveys of 36 randomly selected 1km squares in the SPA in 2013-2015 recorded a total of 45 AOTs (NPWS, unpublished data). In 2022, a repeat survey of the 2013-2015 areas recorded a total of 39 golden plover AOTs (Colhoun et al., in press). Due to differences in coverage and methods, it is not possible to draw accurate comparisons between results of baseline and more recent surveys. However, when the results from 2013-2015 surveys are compared to those from 2022, it suggests the breeding population has declined 13% in the short term
Productivity rate	Number of young fledged per Apparently Occupied Territory (AOT)	Sufficient productivity to maintain the population trend as stable or increasing	Productivity is a measure of breeding output and a key demographic parameter. It is defined here as the total number of chicks that are successfully reared to fledge (i.e. become independent of their parents) divided by the total number of AOT/breeding pairs (including failed pairs) in a given breeding season. Breeding productivity is a key determinant in whether a population can maintain itself. There is currently no information on the productivity rate of golden plover within this SPA. A lack of comprehensive data precludes the identification of a minimum productivity rate for the golden plover population of this SPA or indeed for the national breeding population
Distribution of breeding habitat	Spatial distribution	No significant loss of distribution in the long term, other than that occurring due to natural patterns of variation	Golden plover breed in open habitats - primarily blanket bog and other peatland habitats in Ireland - where they nest on the ground, in short or tussocky vegetation. Suitable breeding habitat is defined as habitat in which golden plover can successfully nest and rear young. Of 36 1km squares containing suitable breeding habitat that were surveyed across the SPA (12 in each of the three SPA polygons) in 2013-2015 and again in 2022, breeding golden plover were recorded in 23 (64%) of surveyed squares in 2013-2015 (NPWS, unpublished data) and in 25 (69%) in 2022 (Colhoun et al., in press). This suggests that the distribution may be stable in the recent decade. The western and central polygons held more breeding golden plover in 2013-2015 and 2022 than the eastern polygon
Extent and condition of breeding habitat	Hectares of high quality breeding habitat	Sufficient area of high quality habitat to support the population target	Golden plover breed in open habitats - primarily blanket bog and other peatland habitats in Ireland - where they nest on the ground, in short or tussocky vegetation. High quality breeding habitat is considered as habitat in which golden plover can successfully nest and rear young

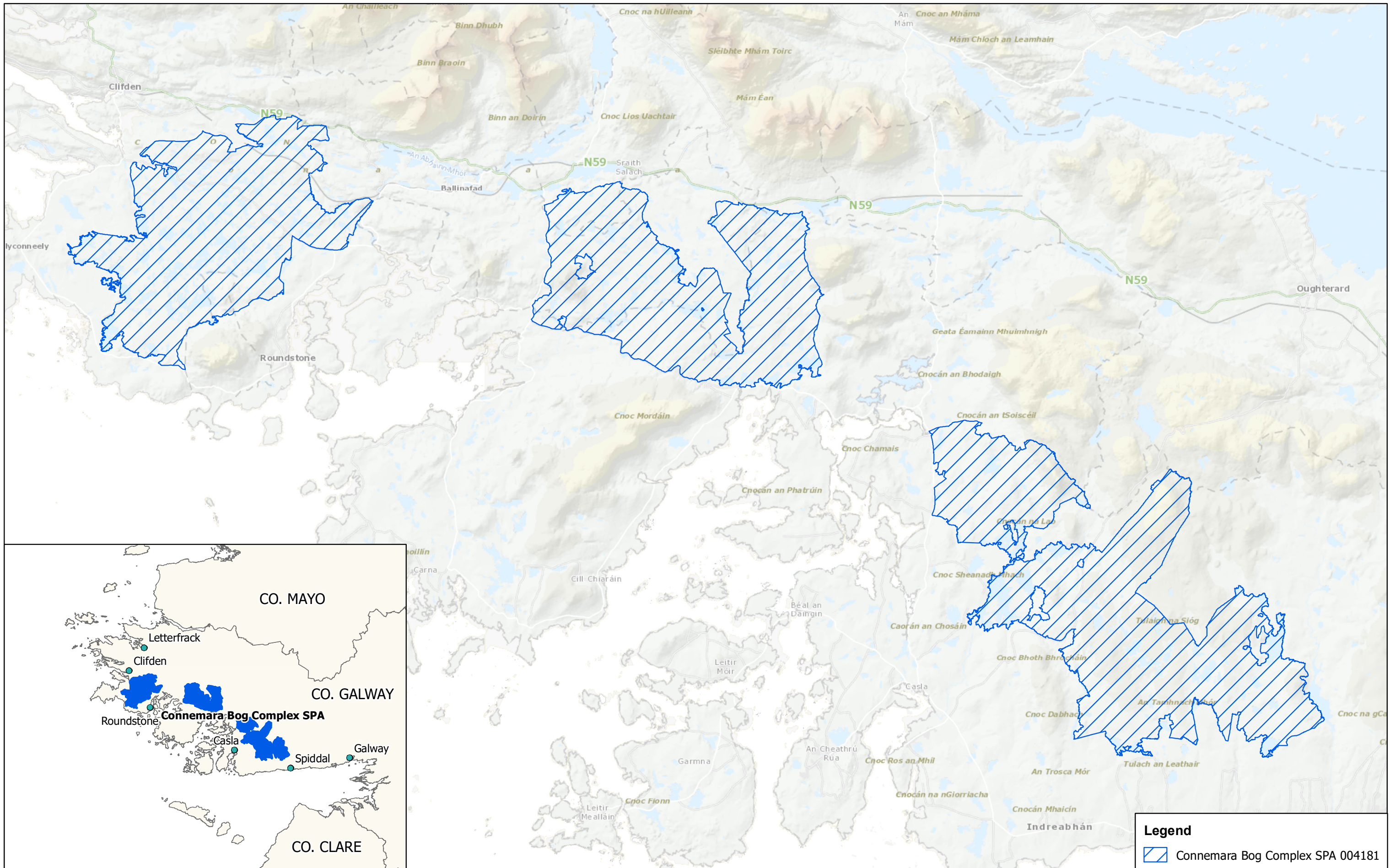
Disturbance at breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact upon population target	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population trend and/or spatial distribution. 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, for example, increasing the mortality risk to eggs and chicks 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 (which consists of three discrete polygons) 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	Golden plover forage exclusively at ground level and rely primarily on a wide variety of surface and sub-surface dwelling invertebrate prey. Coleoptera, Oligochaeta, and Diptera (<i>Bibionidae</i> and <i>Tipulidae</i>) are known important prey for the species. The species is reliant on open habitats, primarily breeding in blanket bogs and other peatland habitats in Ireland. During the breeding season, golden plover also utilize a range of surrounding habitats for foraging, including grasslands, lake shores and other wetlands. While golden plover primarily forage diurnally, the species is also known to feed nocturnally on clear and moonlit nights. Quantitative information on foraging ranges of breeding golden plover in Ireland is unavailable but studies elsewhere have shown breeding adults to forage up to 4km from the nest (Whittingham et al., 2000). Whittingham et al. (2000) reported moorland breeding golden plover foraged 1.1 to 1.7 km from their nests during the incubation period

Conservation Objectives for : Connemara Bog Complex SPA [004181]


A182 Common Gull *Larus canus*

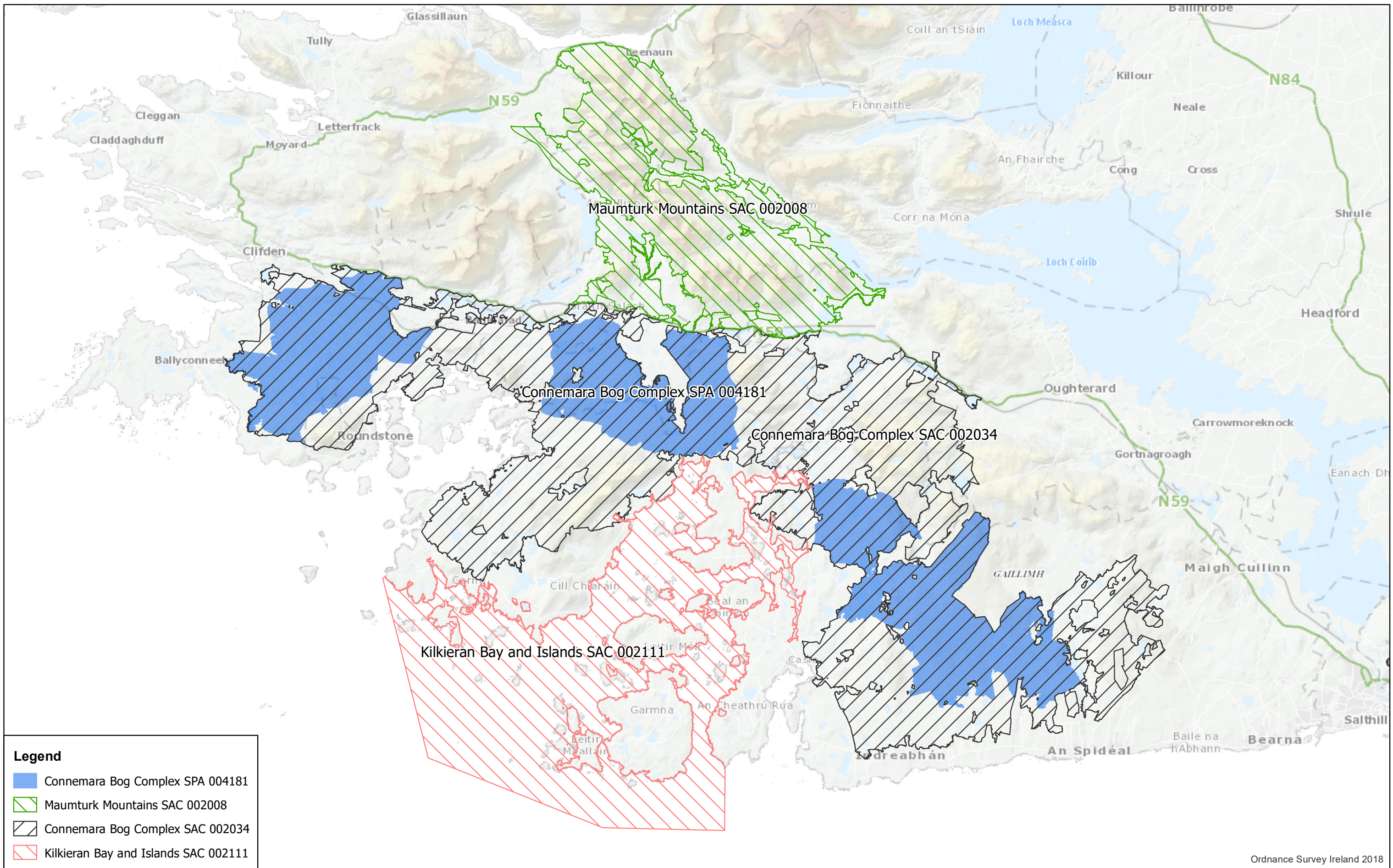
To maintain the favourable conservation condition of common gull in Connemara Bog Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	No significant decline	Common gull breeds across Connemara Bog Complex SPA and the adjacent wider countryside's loughs in varying numbers. The most recent SPA population estimate of 105 pairs from 11 sites is based on 2016 and 2017 surveys (NPWS unpublished data). This equates to a noteworthy increase from previous estimates from 2001 and 2010 (36 and 40 pairs respectively). The attribute 'Apparently Occupied Nests', which equates to the number of breeding pairs, is based on standard survey methods (see Walsh et al., 1995)
Productivity rate	Number of fledged young per AON	Sufficient to maintain population	A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this relatively long-lived species at this site and indeed for common gull at the national level. Walsh et. al (1995) sets out two methods to estimate the productivity rate for this species
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	Common gull is a ground nesting bird and breeds colonially but also in isolated pairs
Prey biomass available	Kilogrammes	No significant decline	The diet of the common gull is broad and is likely to vary with season and location. It includes invertebrates and fish as well as offal and birds' eggs. Foraging habitat includes terrestrial, freshwater and marine areas. During the breeding season, common gull can forage up to 50km away from the colony (Woodward et al., 2019)
Disturbance at the breeding site	Level of impact	Disturbance occurs at levels that do not significantly impact on common gull at the breeding site	Common gull is a ground nesting bird and breeds colonially but also in isolated pairs
Disturbance at areas ecologically connected to the colony	Level of impact	Disturbance occurs at levels that do not significantly impact on breeding common gull	During the breeding season, common gull can forage over up to 50km away from the colony (Woodward et al., 2019). It is likely that, at times, the common gull population associated with this SPA forage away from the colony lough, at other freshwater loughs and in both nearby marine waters and terrestrial area
Barriers to connectivity	Number, location, shape, area (hectares)	No significant increase	During the breeding season, common gull can forage over up to 50km away from the colony (Woodward et al., 2019). It is likely that the common gull population associated with this SPA forage, at times, away from the colony lough at other freshwater loughs and in both nearby marine waters and terrestrial areas



Legend

 Connemara Bog Complex SPA 004181



Legend

- Connemara Bog Complex SPA 004181
- Maumturk Mountains SAC 002008
- Connemara Bog Complex SAC 002034
- Kilkieran Bay and Islands SAC 002111

Ordnance Survey Ireland 2018

**An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreacht**
Department of Housing,
Local Government and Heritage

**MAP 2:
CONNEMARA BOG COMPLEX SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES**

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

**SITE CODE:
SPA 004181; version 3.02
CO GALWAY**

0 2 4 8 Kilometres

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.
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Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaíthe. Suirbhéarachtá Ordonáis na hÉireann Ceadúnas Uimh OSI-NMA-014. © Suirbhéarachtá Ordonáis na hÉireann Rialtas na hÉireann

**Map version 1
Date: January 2023**