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Conservation Objectives Series

Ireland's Eye SPA 004117

National Parks and Wildlife Service,
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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

004117	Ireland's Eye SPA
A017	Cormorant *Phalacrocorax carbo*
A184	Herring Gull *Larus argentatus*
A188	Kittiwake *Rissa tridactyla*
A199	Guillemot *Uria aalge*
A200	Razorbill *Alca torda*

Please note that this SPA overlaps North-West Irish Sea SPA (004236), Ireland's Eye SAC (002193), and Rockabill to Dalkey Island SAC (003000). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping 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 :	1973
Title :	A Preliminary Report on Areas of Scientific Interest in County Dublin
Author :	Goodwillie, R.N.; Fahy, E.
Series :	Unpublished Report
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 :	2021
Title :	Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Author :	Power, A.; McDonnell, P.; Tierney, T.D.
Series :	Published NPWS report

Other References

Year :	1974
Title :	Seabirds of Britain and Ireland
Author :	Cramp, S.; Bourne, W. R. P.; Saunders, D
Series :	Collins, London
Year :	1987
Title :	Recent changes in breeding seabird populations in counties Dublin and Wicklow
Author :	Merne, O.J.
Series :	Irish East Coast Bird Report, p. 68-77. Irish Wildbird Conservancy, Dublin
Year :	1991
Title :	The status of seabirds in Britain and Ireland
Author :	Lloyd, C., Tasker, M.L. and Partridge, K.
Series :	Poyser Monographs Volume: 50
Year :	1995
Title :	Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds
Author :	Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
Series :	JNCC, Peterborough
Year :	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 :	Breeding seabirds of Lambay, County Dublin
Author :	Merne, O.J.; Madden, B.
Series :	Irish Birds, 6(3), pp.345-358

Year :	2003
Title :	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
Author :	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
Series :	JNCC Report No. 329
Year :	2004
Title :	Seabird populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2005
Title :	Breeding 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 :	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 :	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 :	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 (*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 :	Black-legged Kittiwake (*Rissa tridactyla*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, S. A.; Robertson, G. J.; Baird, P. H.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	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 :	2020
Title :	Herring Gull (*Larus argentatus*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Weseloh, D. V.; Hebert, C. E.; Mallory, M. L.; Poole, A. F.; Ellis, J. C.; Pyle, P.; Patten, M. A.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA

Year :	2021
Title :	Common Murre (*Uria aalge*), version 2.0. In Birds of the World (S. M. Billerman, P. G. Rodewald, and B. K. Keeney, Editors)
Author :	Ainley, D. G.; Nettleship, D. N.; Storey, A. E.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	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 :	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 :	2024
Title :	Great Cormorant (*Phalacrocorax carbo*)
Author :	JNCC
Series :	https://jncc.gov.uk/our-work/great-cormorant-phalacrocorax-carbo/

Conservation Objectives for : Ireland's Eye SPA [004117]

A017 Cormorant *Phalacrocorax carbo*

To restore the Favourable conservation condition of Cormorant in Ireland's Eye 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	The Seabird Colony Register (1985-87) recorded 19-20 pairs of breeding Cormorant in Ireland's Eye SPA. Numbers increased rapidly to 306 AONs in 1999 and to 651 AONs in 2007 (Mitchell et al., 2004; Merne 1987; Trewby et al., 2007). Merne and Madden (1999) suggest that these increases on Ireland's Eye are associated with decreases on Lambay Island SPA between 1987 (1,027 AONs) and 1999 (675 AONs), with breeding birds suspected of moving between Ireland's Eye, Lambay Island SPA and Skerries Islands SPAs (Trewby et al., 2007). The breeding Cormorant estimate for 2015, at 424 AONs, equates to a decrease of 35% since 2007, but an increase of 39% compared to the 1999 count (Burnell et al., 2023). Due to the likely movements between these SPAs, the Cormorant population dynamics of this SPA needs to be viewed in the wider context of the County Dublin breeding population
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	Trewby et al. (2007) reported a range of 1.52-2.35 fledglings per pair, based on a subsample of the 2007 breeding population at Ireland's Eye SPA. Five subspecies of Great Cormorant are recognised with the nominate and Atlantic subspecies *P. c. carbo* breeding in both coastal and inland resorts in Ireland (Burnell et al., 2023). In the United Kingdom, the continental race *P. c. sinensis* also breeds at inland sites, largely in England, and differences in their productivity rates and overall population trends 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). Trewby et al. (2007) noted that the core Cormorant colony on Ireland's Eye is located on the sparsely vegetated islet of Thulla. During this period, a sub-colony on the north coast just to the east of Seal's Cave was also an intermittently active colony (see Trewby et al., 2007, for more detail)
Forage spatial distribution, extent, abundance and availability	Location and 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 which are captured by pursuit diving, typically over shallow (<10m) freshwater, estuarine and marine environments (Grémillet et al., 1998; Hatch et al., 2020). Woodward et al. (2019) reviewed the foraging ranges of seabird species from over 300 studies and provides 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	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). Additionally, some 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. Exposure to recreational activities may disrupt breeding birds conducting maintenance behaviours associated with the main breeding area of the SPA
Barriers to connectivity	Number; location; shape; area (hectares)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony, in order to forage, as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) provides 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)

A184 Herring Gull *Larus argentatus*

To restore the Favourable conservation condition of Herring Gull in Ireland's Eye 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	Herring Gull have been breeding at this site since at least 1969 when 1,250 pairs were recorded (Cramp et al., 1974). By 1986, the Herring Gull breeding population had dropped to 533 pairs and by 1999 the population was estimated to be 246 Apparent Occupied Territories (AOTs) (Lloyd et al., 1991; Merne, 1987; Mitchell et al., 2004). The decline continued, with 217 AOTs in 2007, before a tentative recovery was noted in 2015, when 318 AONs were estimated (Trewby et al., 2007; Burnell et al., 2023). Based on these metrics, the 2015 estimated population has declined by 75% since 1969 and by 40% since 1986, but increased by 47% since 2007
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	No contemporary data on Herring Gull breeding productivity on Ireland's Eye are available. Cook and Robinson (2010) undertook Population Viability Analyses (PVA) of a selection of breeding populations in the UK. Over their study period Herring Gull breeding success was estimated to be 0.75. Were this level to be maintained, Herring Gull populations were predicted to decline by 60% over 25 years. For the population to stabilise, breeding success would have to increase to 1.3-1.5 chicks per nest per year
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 Herring Gull. Typically, coastal Herring Gull colonies are located along rocky coastlines with cliffs, islets and offshore islands (Mitchell et al., 2004). In 2007, breeding Herring Gull (from this depleted population) were distributed along the north and east coast from The Steer to Thulla. Concentrations were noted on The Steer, around the Cormorant colony on the north cliffs and on the east cliffs the steep coastal slope adjacent to the stack, Samper Hole, Rowan Rocks and Thulla Rocks, as well as Thulla (see Trewby et al., 2007 for more detail)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Herring Gull is a generalist and opportunistic feeder and can forage over both terrestrial and aquatic habitats. Its diet includes fish, fish offal, bivalves, gastropods, crustaceans, squid, insects, other seabirds, small land birds, small mammals, terrestrial insects, earthworms, berries, carrion, and a wide variety of human refuse (Weseloh et al., 2020). Woodward et al. (2019) reviewed the foraging ranges of seabird species from over 300 studies including: direct tracking of birds; estimates based on flight speeds and time activity; survey observations; and speculative estimates. Woodward et al. (2019) provides estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Herring Gull foraging ranges from the nest site during the breeding season, which are 15km, 59km, and 92km 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; area (hectares)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) provides estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Herring Gull foraging ranges from the nest site during the breeding season, which are 15km, 59km, and 92km respectively (see Power et al., 2021)

A188 Kittiwake *Rissa tridactyla*

To restore the Favourable conservation condition of Kittiwake in Ireland's Eye 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	Kittiwake have been breeding at this site since at least 1969, when 941 pairs were recorded (Cramp et al., 1974). A follow up survey in 1986, which recorded 651 pairs, was deemed to be incomplete (Merne, 1987). Repeat surveys in 1999 and 2004 recorded 941 and 1,016 AONs respectively, with a subsequent reduction in numbers in 2007, estimated at 633 AONs (Mitchell et al., 2004; Trewby et al., 2007). In 2015, the population of breeding Kittiwake at Ireland's Eye SPA was estimated to be 455 AONs, which amount to declines of 52% since 1969 and 28% since 2007
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	No contemporary data on Kittiwake productivity breeding on Ireland's Eye are available. Coulson (2017) established, based on data from UK Kittiwake colonies during the period 1985-2015, that 0.80 fledglings per pair were needed to maintain the size of these colonies
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 establishes nest sites on cliff ledges of offshore islands, sea stacks, or along inaccessible areas of coastal mainland (Hatch et al., 2020)
Forage spatial distribution, extent, abundance and availability	Location and 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) provides 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; area (hectares)	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) provides 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 Ireland's Eye SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Individuals (IND)	Long term SPA population trend is stable or increasing	Guillemot have been breeding at this site since at least 1969 when 700 individuals were recorded (Cramp et al., 1974). A follow up survey in 1986 recorded 1,458 individuals but was deemed to be incomplete (Merne, 1987). Repeat surveys in 1999 and 2004 recorded 2,191 and 3,568 individual adults within the breeding areas of the colony respectively. A survey in 2007 saw a reduction in numbers, when an estimated 2,341 individuals were recorded (Mitchell et al., 2004; Trewby et al., 2007). In 2015, the number of individual adult Guillemot on the breeding ledges of Ireland's Eye SPA was estimated at 4,410 which equates to increases of 101% and 88% since 1999 and 2007 respectively
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	No contemporary data on Guillemot breeding productivity on Ireland's Eye are available. 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. The preferred nesting habitat are ledges on sea cliffs where pairs aggressively defend a small area of bare rock where they lay their single large egg (Burnell et al., 2023). Trewby et al. (2007) noted that sub-colonies of common Guillemot are distributed from the cliffs west of Seal's Cave on the north coast to the inlet north of Rowan Rocks on the east coast of Ireland's Eye
Forage spatial distribution, extent, abundance and availability	Location and 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 nearshore schooling fish, including Lesser Sandeel (*Ammodytes marinus*), European Sprat (*Sprattus sprattus*) and gadoids; this contrasts with a more diverse diet during non-breeding period, with euphausiids in particular being more important (Ainley et al., 2021; Burnell et al., 2023). 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, 72km, and 338km respectively (see Power et al., 2021)

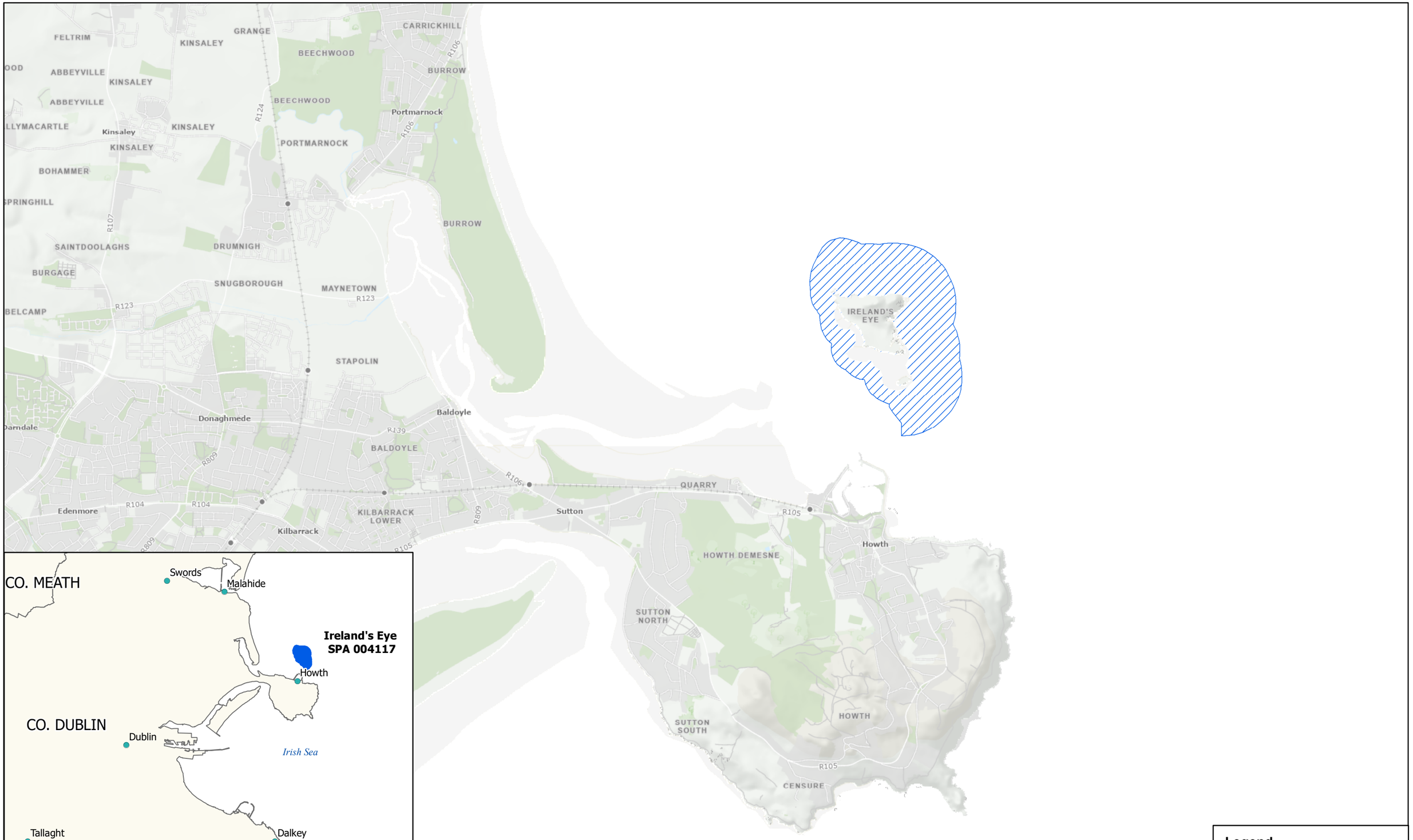
Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment 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; area (hectares)	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 Ireland's Eye 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	Razorbill have been breeding at this site since at least 1969, when 175 individuals were recorded (Cramp et al., 1974). A follow up survey in 1986 recorded 272 individuals (Merne, 1987). Repeat surveys in 1999 and 2004 recorded 522 and 818 individual adults within the breeding areas of the colony respectively. A survey in 2007 saw a reduction in numbers, when an estimated 546 individuals were recorded (Mitchell et al., 2004; Trewby et al., 2007). In 2015, the number of individual adults within the breeding colony of Ireland's Eye SPA was estimated at 1,600 which equates to increases of 207% and 193% since 1999 and 2007 respectively
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	No contemporary data on Razorbill breeding productivity on Ireland's Eye are available. 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 Razorbill. Razorbill breed in rocky coastal regions on steep mainland cliffs and rocky offshore islands (Lavers et al., 2020). Trewby et al. (2007) noted that similar to the Guillemot, Razorbill were distributed from the cliffs west of Seal's Cave on the north coast to the inlet north of Rowan Rocks on the east coast of Ireland's Eye
Forage spatial distribution, extent, abundance and availability	Location and 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 sandeel. Crustaceans and polychaetes may also be important in adult diets (Lavers et al., 2020). 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 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; area (hectares)	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) 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 Razorbill which are 61km, 89km, and 313km respectively



Legend

Ireland's Eye SPA 004117

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

MAP 1:
IRELAND'S EYE SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

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

SITE CODE:
SPA 004117; version 3
CO. DUBLIN

0 0.25 0.5 1 Kilometres

N

Map version 1
Date: May 2024

ailieborough
Kingscourt
N2
Castlebellingham
Ardee
N33
Dunleer
N52
Clogherhead
Collon
Termonfeckin
N3
Kells
Drogheda
Slane
Bettystown
Navan
Duleek
N51
Athboy
Balbriggan
M1
N2
Skerries
Trim
M3
Lusk
Dunshaughlin
Ashbourne
Donabate
Summerhill
Malahide
M2
Ireland's Eye SAC
N3
M4
Kilcock
N1
Maynooth
Ireland's Eye SPA
Leixlip
N4
Dublin
Celbridge
erry
Newcastle
N31
Clane
M50
N7
Sallins
Naas
M11
athangan
Bray
North-West Irish Sea SPA
Rockabill to Dalkey Island SAC

Legend

- Ireland's Eye SPA 004117
- North-West Irish Sea SPA 004236
- Ireland's Eye SAC 002193
- Rockabill to Dalkey Island SAC 003000

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MAP 2:
IRELAND'S EYE SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

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

SITE CODE:
SPA 004117; version 3
CO. DUBLIN

0 3 6 12 Kilometres

N

Map version 1
Date: May 2024