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Conservation Objectives Series

Tory Island SPA 004073

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***

004073	Tory Island SPA
A009	Fulmar *Fulmarus glacialis*
A122	Corncrake *Crex crex*
A200	Razorbill *Alca torda*
A204	Puffin *Fratercula arctica*

Please note that this SPA overlaps with Tory Island Coast SAC (002259). 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 :	2007
Title :	Seabird Productivity at East and South coast colonies in Ireland in 2007: Site accounts
Author :	Trewby, M.; Burt E.; Newton, S.
Series :	Unpublished report to NPWS
Year :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Published Report
Year :	2021
Title :	Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Author :	Power, A.; McDonnell, P.; Tierney, T.D.
Series :	Published NPWS report
Year :	2024
Title :	Surveys of breeding seabirds in North Donegal in 2024: Tory Island, Inishbofin Group and Horn Head [Seabird census report]
Author :	Colhoun, K.; Trapp, S.
Series :	Unpublished report to NPWS

Other References

Year :	1900
Title :	The Birds of Ireland: An Account of the Distribution, Migrations and Habits of Birds as Observed in Ireland, with All Additions to the Irish List
Author :	Ussher, R.J.; Warren, R.
Series :	Gurney and Jackson
Year :	1911
Title :	The fulmar petrel breeding in Ireland
Author :	Ussher, R.J.
Series :	The Irish Naturalist, 20(9), pp.149-152
Year :	1954
Title :	The Birds of Ireland. Their Migrations and Habits. Assessed by G.R. Humphreys
Author :	Kennedy, P.G.; Ruttledge R.F.; Scroope, C.F.
Series :	London: Oliver and Boyd
Year :	1991
Title :	The status of seabirds in Britain and Ireland
Author :	Lloyd, C.; Tasker, M.L.; Partridge, K.
Series :	Poyser Monographs Volume: 50
Year :	1995
Title :	Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds
Author :	Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
Series :	JNCC, Peterborough

Year :	1996
Title :	The ecology of the Corncrake, with special reference to the effect of mowing on breeding production
Author :	Tyler, G.
Series :	PhD thesis, University College Cork
Year :	1997
Title :	Populations, ecology and threats to the Corncrake *Crex crex* in Europe
Author :	Green, R. E.; Rocamora, G.; Schäffer, N.
Series :	Vogelwelt, 118, 117-134
Year :	1999
Title :	Diet of the northern fulmar *Fulmarus glacialis*: reliance on commercial fisheries?
Author :	Phillips, R.A.; Petersen, M.K.; Lilliendahl, K.; Solmundsson, J.; Hamer, K.C.; Camphuysen, C.J.; Zonfrillo, B.
Series :	Marine Biology, 135 (1), pp.159-170
Year :	1999
Title :	The Corncrake (*Crex Crex*) in Ireland
Author :	Mc Devitt, A. M.; Casey, C.
Series :	Proceedings International Corncrake Workshop 1998, Hilpoltstein/Germany. Eds. Schaffer & Mamme, U. (eds.)
Year :	2001
Title :	The effects of flooding lowland wet grassland on soil macroinvertebrate prey of breeding wading birds
Author :	Ausden, M.; Sutherland, W.; James R.
Series :	Journal of Applied Ecology 38: 320–338
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 :	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 :	2018
Title :	Developing and assessing methods to census and monitor burrow-nesting seabirds in Ireland
Author :	Arneill, G.E.
Series :	PhD thesis, University College Cork
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 :	Use of microsatellite-based paternity assignment to establish where Corn Crake *Crex crex* chicks are at risk from mechanized mowing
Author :	Green, R. E.; Brekke, P.; Ward, H.; Slaymaker, M.; van der Velde, M.; Komdeur, J.; Dugdale, H. L.
Series :	Ibis, 161 (4), 890-894
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 :	Atlantic Puffin (*Fratercula arctica*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Lowther, P. E.; Diamond, A. W.; Kress, S. W.; Robertson, G. J.; Russell, K.; Nettleship, D. N.; Kirwan, G. M.; Christie, D. A.; Sharpe, C. J.; Garcia, E. F. J.; Boesman, P. F. D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Diet of corncrakes *Crex crex* and prey availability in relation to meadow management
Author :	Arbeiter, S.; Flinks, H.; Grünwald, J.; Tanneberger, F.
Series :	Ardea, 108 (1), 55-64
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 :	Atlantic Puffin (*Fratercula arctica*)
Author :	JNCC
Series :	https://jncc.gov.uk/our-work/atlantic-puffin-fratercula-arctica/

Conservation Objectives for : Tory Island SPA [004073]

A009 Fulmar *Fulmarus glacialis*

To maintain the Favourable conservation condition of Fulmar in Tory Island SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Apparently Occupied Sites (AOS)	Long term SPA population trend is stable or increasing	Fulmar were first recorded as a breeding bird in Ireland in 1911 in Co. Mayo (Ussher, 1911). It is likely that Tory Island was colonised shortly after given the significant rate at which the Fulmar population and range has expanded in Ireland since. Tory Island was noted as a breeding colony for Fulmar by Kennedy et al. (1954). A breeding population of 246 pairs was recorded in this SPA in 1985 (Lloyd et al., 1991). The population increased to 641 pairs by 1999 (Mitchell et al., 2004) before decreasing somewhat to 507 pairs in 2015 (Burnell et al., 2023). The most recent population estimate of 656 pairs in 2024 is the peak count for this SPA and represents an increase of 167% since 1985 (Colhoun and Trapp, 2024). Note that the 2024 survey incorporated data collected by UAV and therefore caution is required when comparing this survey's findings with previous ones. Similarly, the national Fulmar estimated population has increased by 89% over the period 1985 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. Trewby et al. (2007) reported that the average productivity from Lambay Island SPA was 0.32 (± 0.05 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (246 pairs across three subplots). Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. An analysis of the breeding success of Fulmar in the United Kingdom over a 25 year period estimated a mean breeding success of 0.39 and speculated this would result in a population decline (Cook and Robinson, 2010). They estimated that a breeding success of 0.5 would allow populations of Fulmar to stabilise and potentially increase
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Fulmar. Typically, Fulmar nest near the tops of grassy cliffs on relatively wide ledges (Mitchell et al., 2004). Nesting Fulmar are principally located along the cliffs on the eastern half of Tory Island (see Colhoun and Trapp, 2024)
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The colonisation of Ireland and Britain by Fulmar over the last two centuries has been largely attributed to their close association with fisheries, but contemporary dietary studies indicate that they also feed on a wide variety of prey, including sandeels, crustaceans, and squid (Phillips et al., 1999). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Fulmar foraging ranges from the nest site during the breeding season, which are 135km, 542km, and 2,736km respectively (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening). Work carried out in the UK found that the highest densities of Fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Work carried out in the UK found that the highest densities of Fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2003). Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of Fulmar foraging ranges from the nest site during the breeding season, which are 135km, 542km, and 2,736km respectively (see Power et al., 2021)

A122 Corncrake *Crex crex*

To maintain the Favourable conservation condition of Corncrake in Tory Island SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number of calling males	Maintain the numbers of calling males at an average of at least 20 per year in any consecutive 5-year period	The breeding season of this migratory bird is mid-April to mid-September. The measure of 'calling males' is as per previous (Green et al., 1997) and recently adapted Corncrake census methods (NPWS internal files). Determination of the SPA population size involves recording calling males within suitable/known areas between 20 May - 10 July (BST 11:00 - 03:00hrs), though calling males outside this period/time are also recorded as potential breeding sites. Where multiple birds occur in close proximity, survey visits are increased to track movements of individuals and refine records. For the period 2020-24, this island SPA held an average of 19 males with likely interchange with nearby SPAs. Agricultural practices incompatible with their breeding ecology is considered the main cause of sub-optimal breeding habitats in this SPA (NPWS internal files). For the baseline period 2003-07, numbers fluctuated from 18-34, but with a long-term average (2003-12) of 18 (NPWS, 2013; NPWS internal files)
Population trend	Percentage change in number of calling males	Long-term population trend is stable or increasing	The national population of breeding Corncrake for the period 2003-07 ranged from 131-162 calling males, with an average of 150, fewer than Republic of Ireland total of 165 calling males in 1993 (McDevitt and Casey, 1999) and lower than all-Ireland figures in Green et al. (1997) of 174. More recent figures for the period 2019-23 indicate that the population has risen to an average of c.182 calling males (151-218). The national population trend seems to be increasing since 2003-07. For the SPA, the average of 19 calling males for the period 2020-24 indicates a decrease of 24% from the baseline period but broadly stable compared to the longer-term average of 18 for 2003-12. SPA totals include any calling males located outside the SPA but ≤250m from the boundary. For the Corncrake SPA network overall, the population trend is considered broadly stable, with an average of 102 calling males for the period (2019-23), on par with an average of 99 for the network for the period (2003-07)
Spatial utilisation by breeding pairs	Percentage	Maintain the spatial utilisation of the SPA by breeding pairs at at least 50-75%	Core areas used by breeding Corncrake can be broadly defined by calculating the portion that lies within 250m of all confirmed calling males, albeit independent flightless chicks will range further (Green et al., 2019). Optimal resilience for the population relies on birds utilising suitable habitat to the maximum extent, with the population well dispersed across the SPA and not confined to isolated locations. The target range is informed by 2016-23 census data for the SPA, and includes estimated usage figures for the SPA where numbers of calling males in any given year were ≥ the SPA baseline figures presented in NPWS (2013). The target area is informed by typical home ranges (Tyler, 1996) and baseline population density. The mean estimated spatial distribution of Corncrake for this SPA was 76.98% for the period 2019-23. Meeting other targets, including that for the 'extent and condition of nesting and foraging habitat', should help achieve the spatial utilisation target

Extent and condition of nesting and foraging habitat	Hectares; condition assessment	At least maintain the extent and quality of this resource to support the targets relating to population size, population trend and spatial utilisation	Given its extended breeding season, the provision of tall-herb species via the creation of early and late cover areas (ELCs) in spring/autumn is beneficial to Corncrake. A ground-nesting rail, it prefers tall, well structured grass vegetation (≥20cm) in hay, arable or silage fields, rough pastures, and in stands of herbaceous species such as Yellow Iris (*Iris pseudacorus*) and Nettle (*Urtica dioica*) (e.g. Green et al., 1997; Tyler, 1996; NPWS internal files). ELCs support adults by providing invertebrate prey species (NPWS internal files) and nesting habitat when meadows are unsuitable, thereby improving breeding success (e.g. via nest concealment allowing better protection from predators) and by allowing breeding to start earlier or end later. Wildlife-friendly mowing provides Corncrake with continuous cover by maintaining low-mowing speeds to allow adults/young chicks escape to edges of fields rather than centres i.e. into safety of field margins/neighbouring fields
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available prey biomass to support the population targets	Nesting Corncrake are most at risk to habitat loss due to activities related to grass/crop harvesting and continuous grazing, particularly by sheep. Omnivorous in its diet, it feeds mainly on arthropods, molluscs, worms and seeds (Tyler, 1996; Arbeiter et al., 2020). The availability of earthworms and molluscs in moist habitats may explain why moist unfertilised grassland is good Corncrake habitat, as well as the suitability of the vegetation structure of some marsh vegetation (Green et al., 1997). Insects and molluscs may be vital for Corncrake in floodplain habitats, as areas with long winter floods have a lower abundance of earthworms (Ausden et al., 2001). Suitable and well-connected forage areas, with an open sward structure, ≥20cm in height, offer optimum concealment and cover to adults and young birds, which are flightless for up to 40 days post-hatching. Restoring / maintaining inter-connected mosaics of forage/refuge areas across the SPA and wider hinterland is fundamental
Disturbance to breeding sites	Level of impact	Disturbance occurs at levels that do not significantly impact upon breeding Corncrake	Factors such as intensity, frequency, timing and duration of a potentially disturbing activity (e.g. grass/crop harvesting; recreational activities; summer grazing; development requiring planning permission) must be taken into account to determine the potential impact upon the targets which relate to population demographics (i.e. population size, population trend) and the spatial utilisation of the SPA by breeding Corncrakes. Agricultural activities and associated land-use in/adjacent to the SPA may cause disturbance to breeding sites and may directly impact breeding success, by confining Corncrake to limited locations; thereby increasing mortality risk and resource competition. Late summer harvesting of grass (post 15 Aug) using wildlife-friendly mowing and the retention of refuge areas significantly lowers risk to flightless chicks/moulting adults

A200 Razorbill *Alca torda*

To maintain the Favourable conservation condition of Razorbill in Tory Island 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	Ussher and Warren (1900) highlight the presence of a Razorbill colony on Tory Island and Kennedy et al. (1954) describe the population as declining with very low breeding numbers in 1948. A population of 614 individuals was recorded in this SPA in 1985 (Lloyd et al., 1991). The population increased to 1,002 individuals by 1999 (Mitchell et al., 2004) before decreasing somewhat to 951 individuals in 2015 (Burnell et al., 2023). The most recent population estimate of 1,544 individuals in 2024 is the peak count for this SPA and represents an increase of 151% since 1985 (Colhoun and Trapp, 2024). Note that the 2024 survey incorporated data collected by UAV and therefore caution is required when comparing this survey's findings with previous ones. The national Razorbill population increased by 57% between 1985 - 1988 and 2015 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. Trewby et al. (2007) reported that the average productivity from Lambay Island SPA was 0.65 (± 0.03 SE) chicks fledged per Apparently Occupied Sites (AOS) in 2007 (270 pairs across six subplots). Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. An analysis of the breeding success of Razorbill in the United Kingdom over a 25 year period determined that a breeding success of 0.55 would result in a slowly decreasing population (Cook and Robinson, 2010)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. This will affect the spatio-temporal patterns of use of the habitats by the species. Razorbill breed in rocky coastal regions on steep mainland cliffs and rocky offshore islands (Lavers et al., 2020). Nesting Razorbill are principally located along the cliffs on the eastern half of Tory Island (see Colhoun and Trapp, 2024)
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of Razorbill comprises of schooling fish including herring and sandeels. Crustaceans and polychaetes may also be important in adult diets (Lavers et al., 2020). Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Razorbill which are 61km, 89km, and 313km respectively

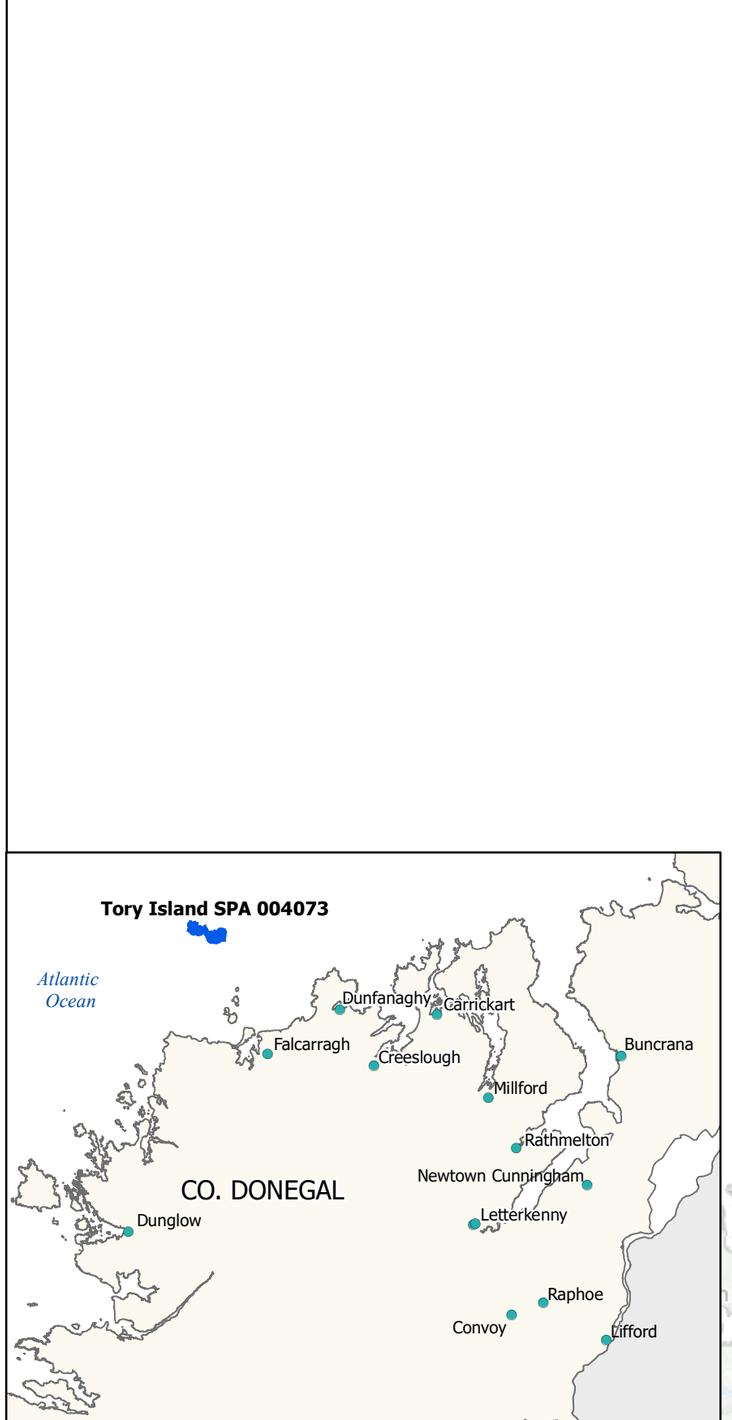
Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening), as defined in McSorley et al. (2003). Studies in the UK found the highest densities of Razorbill performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Studies in the UK found the highest densities of Razorbill performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003). Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Razorbill which are 61km, 89km, and 313km respectively

A204 Puffin *Fratercula arctica*

To restore the Favourable conservation condition of Puffin in Tory Island 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	As Puffin burrows are often sited on steeply sloping ground largely inaccessible to surveyors, counts of the number of individual birds associated with the area is a survey method often used, though it is less accurate than counting the number of occupied burrows during the breeding season. These counts of birds on land, sea, and air are ideally undertaken during the evening, early in the season (see Arneill, 2018; Walsh et al., 1995). Ussher and Warren (1900) and Kennedy et al. (1954) highlighted the presence of a notable colony on Tory Island. A population of 650 individuals was recorded in this SPA in 1985 (Lloyd et al., 1991). The population increased to 1,402 individuals by 1999 (Mitchell et al., 2004) before decreasing significantly to 277 individuals in 2024 which represents a decrease of 57% since 1985 (Colhoun and Trapp, 2024)
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. Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. In Wales, an average of 0.71 chicks were fledged per apparently occupied burrow between 1986 and 2019 (JNCC, 2024). In this time period the Welsh population of Puffin increased (Burnell et al., 2023). European Otter *Lutra lutra* have been observed predating Puffin, which may in part account for the recorded Puffin decline and apparent redistribution at this SPA (Colhoun and Trapp, 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 the species. Puffin are a highly colonial species with pairs typically nesting underground in burrows dug in the soil of offshore islands. If such habitat is in short supply, Puffin can nest among boulder screes, or at low densities in cracks in sheer cliffs (Mitchell et al., 2004). In 2024 most Puffin were observed on the eastern coast of Tory Island (Colhoun and Trapp, 2024)
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of Puffin predominantly consists of small to mid-sized (5 - 15cm) schooling midwater fish including Sprat (*Sprattus sprattus*), sandeel (*Ammodytes* spp.), and Herring (*Clupea harengus*) (Lowther et al., 2020). Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Puffin, which are 62km, 137km, and 383km 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	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 that the highest densities of Puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony, in order to forage as well as to engage in other maintenance behaviours. Studies in the UK found that the highest densities of Puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003). Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Puffin, which are 62km, 137km, and 383km respectively (see Power et al., 2021)



Legend

Tory Island SPA 004073

MAP 1:
TORY ISLAND SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

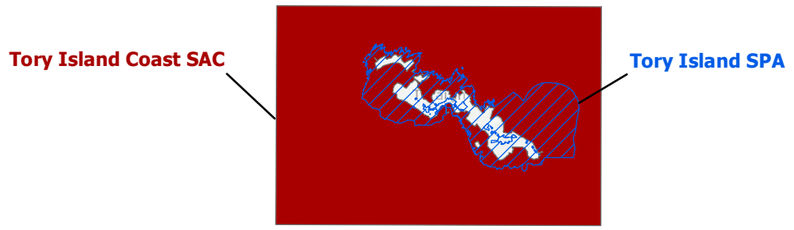
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004073; version 3
CO. DONEGAL

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024



Legend

- Tory Island SPA 004073
- Tory Island Coast SAC 002259

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

MAP 2:
TORY ISLAND SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

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

SITE CODE:
SPA 004073; version 3
CO. DONEGAL

0 1.25 2.5 5 Kilometres

N

Map version 1
Date: July 2024