

# National Parks and Wildlife Service

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## *Conservation Objectives Series*

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Lough Derg, North-east Shore SAC 002241



An Roinn Cultúir,  
Oidhreacht agus Gaeltachta  
Department of Culture,  
Heritage and the Gaeltacht

**National Parks and Wildlife Service,  
Department of Culture, Heritage and the Gaeltacht,  
90 King Street North, Dublin 7, D07 N7CV, Ireland.**

**Web: [www.npws.ie](http://www.npws.ie)  
E-mail: [nature.conservation@chg.gov.ie](mailto:nature.conservation@chg.gov.ie)**

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## Introduction

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

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

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

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

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

### Notes/Guidelines:

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

## Qualifying Interests

\* indicates a priority habitat under the Habitats Directive

002241	Lough Derg, North-east Shore SAC
5130	* <i>Ranunculus acris</i> formations on heaths or calcareous grasslands
7210	Calcareous fens with <i>Cladonia</i> and species of the <i>Caricion davallianae</i> E
7230	Alkaline fens
8240	Limestone pavementsE
91E0	Alluvial forests with <i>Populus alba</i> and <i>Salix alba</i> (Alno-Padion, Alnion incanae, <i>Salicion albae</i> )E
91J0	* <i>Fragaria vesca</i> woods of the British IslesE

Please note that this SAC overlaps with Lough Derg (Shannon) SPA (004058) and Middle Shannon Callows SPA (004096) and is adjacent to River Shannon Callows SAC (000216) and Barroughter Bog SAC (000231). 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](http://www.npws.ie/Publications)

### NPWS Documents

<b>Year :</b>	2008
<b>Title :</b>	National survey of native woodlands 2003-2008
<b>Author :</b>	Perrin, P.M.; Martin, J.; Barron, S.; O'Neill, F.H.; McNutt, K.E.; Delaney, A.
<b>Series :</b>	Unpublished report to NPWS
<b>Year :</b>	2009
<b>Title :</b>	Ireland Red List No. 2: Non-marine molluscs
<b>Author :</b>	Byrne, A.; Moorkens, E.A.; Anderson, R.; Killeen, I.J.; Regan, E.C.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2010
<b>Title :</b>	A provisional inventory of ancient and long-established woodland in Ireland
<b>Author :</b>	Perrin, P.M.; Daly, O.H.
<b>Series :</b>	Irish Wildlife Manuals, No. 46
<b>Year :</b>	2010
<b>Title :</b>	Ireland Red List No. 4: Butterflies
<b>Author :</b>	Regan, E.C.; Nelson, B.; Aldwell, B.; Bertrand, C.; Bond, K.; Harding, J.; Nash, D.; Nixon, D.; Wilson, C.J.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2012
<b>Title :</b>	The conservation status of juniper formations in Ireland
<b>Author :</b>	Cooper, F.; Stone, R.E.; McEvoy, P.; Wilkins, T.; Reid, N.
<b>Series :</b>	Irish Wildlife Manuals, No. 63
<b>Year :</b>	2012
<b>Title :</b>	Ireland Red List No. 8: Bryophytes
<b>Author :</b>	Lockhart, N.; Hodgetts, N.; Holyoak, D.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2013
<b>Title :</b>	National survey of limestone pavement and associated habitats in Ireland
<b>Author :</b>	Wilson, S.; Fernandez, F.
<b>Series :</b>	Irish Wildlife Manuals, No. 73
<b>Year :</b>	2013
<b>Title :</b>	Results of a monitoring survey of old sessile oak woods and alluvial forests
<b>Author :</b>	O'Neill, F.H.; Barron, S.J.
<b>Series :</b>	Irish Wildlife Manuals, No. 71
<b>Year :</b>	2013
<b>Title :</b>	Results of a monitoring survey of yew woodland
<b>Author :</b>	Cross, J.; Lynn, D.
<b>Series :</b>	Irish Wildlife Manuals, No. 72
<b>Year :</b>	2013
<b>Title :</b>	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation assessments

**Year :** 2013  
**Title :** Conservation status assessments for three fen habitat types - 7230, 7210 and 7140  
**Author :** Kimberley, S.  
**Series :** Unpublished report to NPWS

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**Year :** 2014  
**Title :** Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland, Version 2.0  
**Author :** Perrin, P.M.; Barron, S.J.; Roche, J.R.; O'Hanrahan, B.  
**Series :** Irish Wildlife Manuals, No. 79

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**Year :** 2016  
**Title :** Ireland Red List No. 10: Vascular Plants  
**Author :** Wyse Jackson, M.; FitzPatrick, Ú.; Cole, E.; Jebb, M.; McFerran, D.; Sheehy Skeffington, M.; Wright, M.  
**Series :** Ireland Red List Series, NPWS

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**Year :** 2018  
**Title :** The Irish Juniper Monitoring Survey 2017  
**Author :** O'Neill, F.H.; Martin, J.R.  
**Series :** Irish Wildlife Manuals, No. 101

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**Year :** 2018  
**Title :** The Irish Juniper Monitoring Survey 2017 - Appendices  
**Author :** O'Neill, F.H.; Martin, J.R.  
**Series :** Irish Wildlife Manuals, No. 101

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**Year :** in prep.  
**Title :** The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats  
**Author :** Daly, O.H.; O'Neill, F.H.; Barron, S.J.  
**Series :** Irish Wildlife Manuals

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## Other References

**Year :** 2002  
**Title :** Reversing the habitat fragmentation of British woodlands  
**Author :** Peterken, G.  
**Series :** WWF-UK, London

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**Year :** 2002  
**Title :** Native Woodland Scheme Management Plan: Kylesnamelly, County Galway  
**Author :** Flanagan, J.; Browne, A.  
**Series :** Unpublished report to Coillte Teoranta

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**Year :** 2002  
**Title :** Native Woodland Scheme Management Plan: Portumna Forest Park, County Galway  
**Author :** Flanagan, J.; Browne, A.  
**Series :** Unpublished report to Coillte Teoranta

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**Year :** 2003  
**Title :** Biological flora of the British Isles: *Taxus baccata* L.  
**Author :** Thomas, P.A.; Polwart, A.  
**Series :** Journal of Ecology, 91: 489-524

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**Year :** 2004  
**Title :** Common Standards Monitoring guidance for lowland wetland habitats  
**Author :** JNCC  
**Series :** Joint Nature Conservation Committee, Peterborough

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**Year :** 2011  
**Title :** Review and revision of empirical critical loads and dose-response relationships. Proceedings of an expert workshop, Noordwijkerhout, 23-25 June 2010  
**Author :** Bobbink, R.; Hettelingh, J.P.  
**Series :** RIVM report 680359002, Coordination Centre for Effects, National Institute for Public Health and the Environment (RIVM)

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**Year :** 2013  
**Title :** Interpretation manual of European Union habitats- Eur 28  
**Author :** European Commission- DG Environment  
**Series :** European Commission

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**Year :** 2016  
**Title :** Irish Vegetation Classification: Technical Progress Report No. 2  
**Author :** Perrin, P.  
**Series :** Report submitted to National Biodiversity Data Centre

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**Year :** 2018  
**Title :** Irish Vegetation Classification: Technical Progress Report No. 4  
**Author :** Perrin, P.  
**Series :** Report submitted to National Biodiversity Data Centre

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## Spatial data sources

<b>Year :</b>	2018
<b>Title :</b>	Irish Juniper Monitoring Survey 2017. Version 1
<b>GIS Operations :</b>	Clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	5130 (map 3)
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<b>Year :</b>	Revision 2010
<b>Title :</b>	National Survey of Native Woodlands 2003-2008. Version 1
<b>GIS Operations :</b>	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	91E0, 91J0 (map 4)
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**5130 Juniperus communis formations on heaths or calcareous grasslands**

**To restore the favourable conservation condition of *Juniperus communis* formations on heaths or calcareous grasslands in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:**

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	As part of the Irish Juniper Monitoring Survey 2017 (O'Neill and Martin, 2018), <i>Juniperus communis</i> formations on heaths or calcareous grasslands was surveyed and mapped in the sub-site Forest Pk Lavins Caravan (site code GY31) to give an area of 1.12ha in the sub-site. Cooper et al. (2012) had identified areas of juniper vegetation at three sub-sites in the SAC: Kilgarvan Quay (site code TP02), Cornalack (TP03) and Portumna (GY01); the latter (GY01) was resurveyed by NPWS field staff in 2015 (NPWS internal files) and the formation falls partly within the SAC boundary. Two further areas of the habitat were surveyed at Forest Park-Harbour View and Forest Park-Bonaveen Callow by NPWS field staff in 2015 (NPWS internal files). It is important to note that further unsurveyed areas of the habitat may be present within Lough Derg, North-east Shore SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 3	Distribution is based on O'Neill and Martin (2018), Cooper et al. (2012) and NPWS internal files. Map 3 shows point locations of the juniper formations at Forest Pk Lavins Caravan (GY31) (O'Neill and Martin, 2018), Kilgarvan Quay (TP02), Cornalack (TP03) (Cooper et al., 2012), Portumna (GY01), Forest Park-Harbour view and Forest Park-Bonaveen Callow (NPWS internal files). It is important to note that further unsurveyed areas of the habitat may be present within the SAC
Juniper formation size	Number and proximity of juniper plants	At least 50 juniper plants present with each plant separated by no more than 20m	Attribute and target based on O'Neill and Martin (2018). A juniper formation is defined by O'Neill and Martin (2018) as any cluster of ≥50 juniper plants where no plant is more than 20m from another. In practice, this means that juniper plants should achieve a minimum density of 25 plants per hectare to qualify as a formation. O'Neill and Martin (2018) estimated that the population in the Forest Pk Lavins Caravan (GY31) sub-site falls within the interval class of 301-1,000 plants. Cooper et al. (2012) estimated that the populations in the sub-sites Kilgarvan Quay (TP02) and Cornalack (TP03) fall within an interval class of 101-300 plants (TP02: >100 plants; TP03: c.200 plants)
Vegetation structure: female fruiting plants	Percentage in a representative number of 5m x 5m monitoring stops or in an <i>ad hoc</i> count of 50 plants	Fruiting females comprise at least 10% of juniper plants rooted in plot in at least 50% of stops or in an <i>ad hoc</i> count of 50 plants	Attribute and target based on Cooper et al. (2012) and O'Neill and Martin (2018). In the Forest Pk Lavins Caravan (GY31) sub-site, it was estimated that 72% of juniper plants were fruiting when surveyed by O'Neill and Martin (2018). No fruiting plants were recorded by Cooper et al. (2012) in the Cornalack sub-site (TP03)
Vegetation structure: seedling recruitment	Presence in a representative number of 5m x 5m monitoring stops	At least one seedling recorded in at least one monitoring stop	Attribute and target based on O'Neill and Martin (2018). Juniper seedlings are defined as plants less than 15cm high that are still flexible and single-stemmed, or with only two branches at most. In the Forest Pk Lavins Caravan (GY31) sub-site, no seedlings were recorded by O'Neill and Martin (2018). Seedlings were not recorded by Cooper et al. (2012) in the Kilgarvan Quay (TP02) and Cornalack (TP03) sub-sites

Vegetation structure: live juniper	Percentage in a representative number of 5m x 5m monitoring stops or across the site as a whole	At least 90% of juniper plants rooted in plot alive in at least 75% of stops or across the site as a whole	Attribute and target based on Cooper et al. (2012) and O'Neill and Martin (2018). No dead plants were recorded in the Forest Pk Lavins Caravan (GY31) sub-site by O'Neill and Martin (2018). No dead plants were recorded by Cooper et al. (2012) in the Kilgarvan Quay (TP02) and Cornalack (TP03) sub-sites
Vegetation composition: negative indicator species	Percentage in a representative number of 5m x 5m monitoring stops	Total cover of negative indicator species to be less than 10% in at least 50% of stops	Attribute and target based on O'Neill and Martin (2018) where the list of negative indicator species is also presented
Physical structure: germination niches	Percentage in a representative number of 5m x 5m monitoring stops	At least 5% bare soil and/or at least 5% bare rock in at least 50% of stops	Attribute and target based on O'Neill and Martin (2018). Bare soil is important as a germination micro-site and bare rock can also contribute, particularly at the soil-rock interface and in limestone pavement grikes. No germination niches were recorded at the Forest Pk Lavins Caravan (GY31) sub-site by O'Neill and Martin (2018). No bare ground was recorded by Cooper et al. (2012) in the Kilgarvan Quay (TP02) and Cornalack (TP03) sub-sites
Formation structure: browning/die-back of plants	Percentage of juniper cover in a representative number of 5m x 5m monitoring stops	Browning or dead juniper branches (excluding fully dead plants) comprise no more than 20% of total juniper cover in plot in at least 75% of stops	Attribute and target based on O'Neill and Martin (2018)
Formation structure: evidence of browsing and bark stripping	Occurrence across a representative number of 5m x 5m monitoring stops	Recent browsing of juniper plants and bark stripping and trampling due to browsers evident in no more than 50% of stops	Attribute and target based on O'Neill and Martin (2018). This attribute concerns bark stripping by animals. Bark stripping or damage from abrasion by rock is not included here. It should be noted, however, that distinguishing between the two may be difficult. No signs of grazing were noted in the Forest Pk Lavins Caravan (GY31) sub-site by O'Neill and Martin (2018)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). Tall upright juniper ( <i>Juniperus communis</i> ) shrubs occur in this SAC; this is a distinctive feature as the species is typically found growing in prostrate form in Ireland (O'Neill and Martin, 2018; NPWS internal files)

## Conservation Objectives for : Lough Derg, North-east Shore SAC [002241]

### 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae

To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae\* in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae* has not been mapped in detail for Lough Derg, North-east Shore SAC and thus the total current area of the qualifying priority habitat in the SAC is unknown. <i>Cladium</i> fen (habitat code 7210) occurs occasionally along lake margins in the SAC in association with the Annex I habitat Alkaline fens (habitat code 7230) and swamp vegetation also. The habitat is particularly well-developed at the sheltered bays of Lough Derg around the Portumna Forest Park area and immediately north of Kilgarvan Quay (NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for Habitat area above
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time
Ecosystem function: hydrology - groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels
Ecosystem function: hydrology - surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the fen groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats
Ecosystem function: water quality	Water chemistry measures	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should also be relatively calcium-rich
Vegetation composition: typical species	Percentage cover at a representative number of 2m x 2m monitoring stops	Maintain adequate cover of typical species, including brown mosses and vascular plants	For lists of typical plant species, see the Article 17 conservation status assessment for <i>Cladium</i> fens (NPWS, 2013) and the Article 17 fen habitats supporting document (Kimberley, 2013). Typical species recorded in the habitat in the SAC include great fen-sedge ( <i>Cladium mariscus</i> ) and black bog-rush ( <i>Schoenus nigricans</i> ) (NPWS internal files)
Vegetation composition: native negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable impacts such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. See JNCC (2004) and Kimberley (2013)
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances

Vegetation composition: trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Attribute and target based on Perrin et al. (2014). Scrub and trees will tend to invade if fen conditions become drier
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	Attribute and target based on Perrin et al. (2014). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion of peatlands
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.)

## Conservation Objectives for : Lough Derg, North-east Shore SAC [002241]

### 7230 Alkaline fens

To maintain the favourable conservation condition of Alkaline fens in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Alkaline fen has not been mapped in detail for Lough Derg, North-east Shore SAC and thus the total current area of the qualifying habitat in the SAC is unknown. The habitat occurs frequently along lake margins in the SAC, often in association with the Annex I habitat Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae (7210*), common reed ( <i>Phragmites australis</i> ) beds and other swamp vegetation. The habitat is particularly well-represented at the edge of Portumna Forest Park (NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for Habitat area above
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). See also Bobbink and Hettelingh (2011)
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time
Ecosystem function: hydrology - groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels
Ecosystem function: hydrology - surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the alkaline fen groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats
Ecosystem function: water quality	Water chemistry measures	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should also be relatively calcium-rich
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of alkaline fen vegetation communities present in the SAC is currently unknown. Information on the vegetation communities associated with alkaline fens in the uplands is presented in Perrin et al. (2014). See also the Irish Vegetation Classification (Perrin, 2018; <a href="http://www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification">www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification</a> )
Vegetation composition: brown mosses	Percentage cover at a representative number of 2m x 2m monitoring stops	Maintain adequate cover of typical brown moss species	Typical brown moss species include <i>Bryum pseudotriquetrum</i> , <i>Calliergonella cuspidata</i> , <i>Calliergon giganteum</i> , <i>Campyllum stellatum</i> , <i>Cratoneuron filicinum</i> , <i>Ctenidium molluscum</i> , <i>Fissidens adianthoides</i> , <i>Palustriella commutata</i> , <i>Scorpidium cossonii</i> , <i>S. revolvens</i> and <i>S. scorpioides</i> . Many brown moss species are present in the alkaline fen in Lough Derg, North-east Shore SAC, including <i>Campyllum stellatum</i> , <i>Calliergonella cuspidata</i> , <i>Ctenidium molluscum</i> and <i>Fissidens adianthoides</i> (NPWS internal files)

Vegetation composition: typical vascular plants	Percentage cover at a representative number of 2m x 2m monitoring stops	Maintain adequate cover of typical vascular plant species	For lists of typical plant species see the Article 17 conservation status assessment for alkaline fens (NPWS, 2013) and the fen habitats supporting document (Kimberley, 2013). See also Perrin et al. (2014) and JNCC (2004). In this SAC, black bog-rush ( <i>Schoenus nigricans</i> ) typically dominates the habitat, along with a rich vascular plant flora including other typical species such as purple moor-grass ( <i>Molinia caerulea</i> ), carnation sedge ( <i>Carex panicea</i> ), devil's-bit scabious ( <i>Succisa pratensis</i> ) and meadow thistle ( <i>Cirsium dissectum</i> ) (NPWS internal files)
Vegetation composition: native negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable impacts such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may include graminoids such as reed canary-grass ( <i>Phalaris arundinacea</i> ) and reed sweet-grass ( <i>Glyceria maxima</i> ), tall herbs such as great willowherb ( <i>Epilobium hirsutum</i> ), bracken ( <i>Pteridium aquilinum</i> ), bramble ( <i>Rubus fruticosus</i> ) and common nettle ( <i>Urtica dioica</i> ), and bryophytes such as <i>Brachythecium rutabulum</i> and <i>Kindbergia praelonga</i>
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Attribute and target based on Perrin et al. (2014). Scrub and trees will tend to invade if fen conditions become drier
Vegetation composition: soft rush and common reed cover	Percentage cover in local vicinity of a representative number of monitoring stops	Total cover of soft rush ( <i>Juncus effusus</i> ) and common reed ( <i>Phragmites australis</i> ) less than 10%	Attribute and target based on Perrin et al. (2014)
Vegetation structure: litter	Percentage cover in local vicinity of a representative number of monitoring stops	Total cover of litter not more than 25%	Attribute and target based on JNCC (2004). More than 25% litter cover may indicate insufficient removal of biomass by grazing and/or undesirable water table levels
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground not more than 10%	Attribute and target based on Perrin et al. (2014). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for peatlands
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%	Attribute and target based on Perrin et al. (2014)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). Lough Derg, North-east Shore SAC contains the only known population of the FPO listed and Critically Endangered Irish fleabane ( <i>Inula salicina</i> ) (Wyse Jackson et al., 2016) which occurs in the alkaline fen habitat along the lakeshore (NPWS internal files)

## Conservation Objectives for : Lough Derg, North-east Shore SAC [002241]

### 8240 Limestone pavements

To restore the favourable conservation condition of Limestone pavements\* in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	The exact total area of Limestone pavements* in Lough Derg, North-east Shore SAC is currently unknown. Small amounts of limestone outcrops occur around the edges of Lough Derg, particularly at Portumna and Cornalack, and also at Kyleneamelly, where there are large blocks and smaller boulders of limestone scattered along the woodland floor by the lakeshore, intermixed with wet marshy inlets (NPWS internal files). While there is no limestone pavement with the typical clint and grike formation in the SAC, the type that does occur is akin to the 'shattered pavement' type containing loose limestone rubble (European Commission, 2013). The limestone outcrops in the SAC occur in association with the Annex I habitats <i>Juniperus communis</i> formations (5130), <i>Taxus baccata</i> woods (91J0*) and Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (91E0*). Conservation objectives for all these habitats should be used in conjunction with each other as appropriate
Habitat distribution	Occurrence	No decline	See the notes for Habitat area above. This habitat is split into exposed pavement and wooded pavement
Vegetation composition: positive indicator species	Number at a representative number of monitoring stops	At least seven positive indicator species present	Positive indicator species for exposed and wooded pavement are listed in Wilson and Fernandez (2013). Typical species of wooded pavement recorded at Kyleneamelly include ivy ( <i>Hedera helix</i> ), bramble ( <i>Rubus fruticosus</i> ), violets ( <i>Viola</i> spp.) and enchanter's-nightshade ( <i>Circaea lutetiana</i> ). Typical species recorded on the limestone rubble/pavement at Cornalack include juniper ( <i>Juniperus communis</i> ), yew ( <i>Taxus baccata</i> ), burnet rose ( <i>Rosa spinosissima</i> ), bloody crane's-bill ( <i>Geranium sanguineum</i> ), herb-robert ( <i>G. robertianum</i> ), wild thyme ( <i>Thymus polytrichus</i> ), blue moor-grass ( <i>Sesleria caerulea</i> ), dog violet ( <i>Viola riviniana</i> ) and rusty-back spleenwort ( <i>Asplenium ceterach</i> ) (NPWS internal files)
Vegetation composition: bryophyte layer	Percentage at a representative number of monitoring stops	Bryophyte cover at least 50% on wooded pavement	Attribute and target based on Wilson and Fernandez (2013)
Vegetation composition: negative indicator species	Percentage at a representative number of monitoring stops	Collective cover of negative indicator species on exposed pavement not more than 1%	Negative indicator species are listed in Wilson and Fernandez (2013). Negative indicator species for wooded pavement overlap with non-native species (below)
Vegetation composition: non-native species	Percentage at a representative number of monitoring stops	Cover of non-native species not more than 1% on exposed pavement; on wooded pavement not more than 10% with no regeneration	Attribute and target based on Wilson and Fernandez (2013). Cotoneaster ( <i>Cotoneaster</i> sp.) has been recorded in the habitat in the SAC (NPWS internal files). Parts of the habitat have been planted with conifers; however, Portumna and Kyleneamelly are managed for restoration by Coillte which involves removal of exotic species (Flanagan and Browne, 2002; NPWS internal files)
Vegetation composition: scrub	Percentage at a representative number of monitoring stops	Scrub cover no more than 25% of exposed pavement	Attribute and target based on Wilson and Fernandez (2013)
Vegetation composition: bracken cover	Percentage at a representative number of monitoring stops	Bracken ( <i>Pteridium aquilinum</i> ) cover no more than 10% on exposed pavement	Attribute and target based on Wilson and Fernandez (2013)
Vegetation structure: woodland canopy	Percentage at a representative number of monitoring stops	Canopy cover on wooded pavement at least 30%	Attribute and target based on Wilson and Fernandez (2013)

Vegetation structure: dead wood	Occurrence in a representative number of monitoring stops	Sufficient quantity of dead wood on wooded pavement to provide habitat for saproxylic organisms	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Physical structure: disturbance	Occurrence in a representative number of monitoring stops	No evidence of grazing pressure on wooded pavement	Attribute and target based on Wilson and Fernandez (2013)
Indicators of local distinctiveness	Occurrence	Indicators of local distinctiveness are maintained	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.) and other rare or localised species, as well as archaeological and geological features, which often support distinctive species



## Conservation Objectives for : Lough Derg, North-east Shore SAC [002241]

### 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)\* in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes. See map 4	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)* in Lough Derg, North-east Shore SAC is known to occur on the lakeshore at Kyleneilly, in parts of Portumna Forest Park and around Bounla Island (NPWS internal files). As part of the National Survey of Native Woodlands (NSNW), Perrin et al. (2008) surveyed and mapped the habitat within the sub-sites Bounla Island (NSNW site code 1950), including the island and adjacent lakeshore, and Rinmaher Wood (1614), which is within Portumna Forest Park. The area of alluvial woodland mapped by Perrin et al. (2008) is 11.15ha. As part of the Native Woodland Scheme (NWS), the habitat was surveyed and mapped at Kyleneilly (Flanagan and Browne, 2002), comprising 6.57ha. Map 4 shows the surveyed areas classified as 91E0* (17.72ha). Note that further unsurveyed areas of the habitat may be present within the SAC, particularly along low-lying areas of the lakeshore
Habitat distribution	Occurrence	No decline. The surveyed woodland areas at Bounla Island (NSNW site code 1950), Rinmaher (NSNW site code 1614) and Kyleneilly are shown on map 4	Distribution based on Perrin et al. (2008) and Flanagan and Browne (2002). It is important to note that further unsurveyed areas may be present within the SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	The target areas for individual woodlands aim to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). In some cases, topographical constraints may restrict expansion
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	The target aims for a diverse structure with a canopy containing mature trees, shrub layer with semi-mature trees and shrubs, and well-developed field layer (herbs and dwarf shrubs) and ground layer (bryophytes). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	Described in Perrin et al. (2008) and NPWS internal files. See also the Irish Vegetation Classification (Perrin, 2016; <a href="http://www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification">www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification</a> )
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	The target species for 91E0* are alder ( <i>Alnus glutinosa</i> ), ash ( <i>Fraxinus excelsior</i> ) and willows ( <i>Salix</i> spp.). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	Periodic flooding is essential to maintain alluvial woodlands along river and lake floodplains, but not for woodland around springs/seepage areas

Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood at least 20cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem. Dead wood comprises old senescent trees, standing dead trees, fallen dead wood (including large branches) and rotten stumps of any tree species. Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Woodland structure: veteran trees	Number per hectare	No decline	Veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	Includes ancient or long-established woodlands (see Perrin and Daly, 2010), archaeological and geological features as well as red listed and other rare or localised species
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent	There are five indicators of overgrazing within 91E0*: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, severe recent bark stripping, and trampling (Daly et al., in prep.). In this SAC, grazing/browsing by deer is limiting regeneration in this habitat (NPWS internal files)
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	The target species for 91E0* are alder ( <i>Alnus glutinosa</i> ), ash ( <i>Fraxinus excelsior</i> ) and willows ( <i>Salix</i> spp.) (Daly et al., in prep.; O'Neill and Barron, 2013)
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present	A variety of typical native species should be present, depending on woodland type. The target species for 91E0* are alder ( <i>Alnus glutinosa</i> ), ash ( <i>Fraxinus excelsior</i> ) and willows ( <i>Salix</i> spp.). Positive indicator species for 91E0* are listed in Daly et al. (in prep.) and O'Neill and Barron (2013)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	Negative indicator species (i.e. any non-native species, including herbaceous species) absent or under control. Some of the areas at Kylesnamelly and Portumna Forest Park were planted with exotic conifers such as Norway spruce ( <i>Picea abies</i> ). However, these sites are managed by Coillte through the Native Woodland Conservation Scheme, which involves removal of exotic species (Flanagan and Browne, 2002)
Vegetation composition: problematic native species	Percentage	Cover of common nettle ( <i>Urtica dioica</i> ) less than 75%	Common nettle ( <i>Urtica dioica</i> ) is a positive indicator species for 91E0* but, in some cases, it may become excessively dominant. Increased light and nutrient enrichment are factors which favour proliferation of common nettle (Daly et al., in prep.)

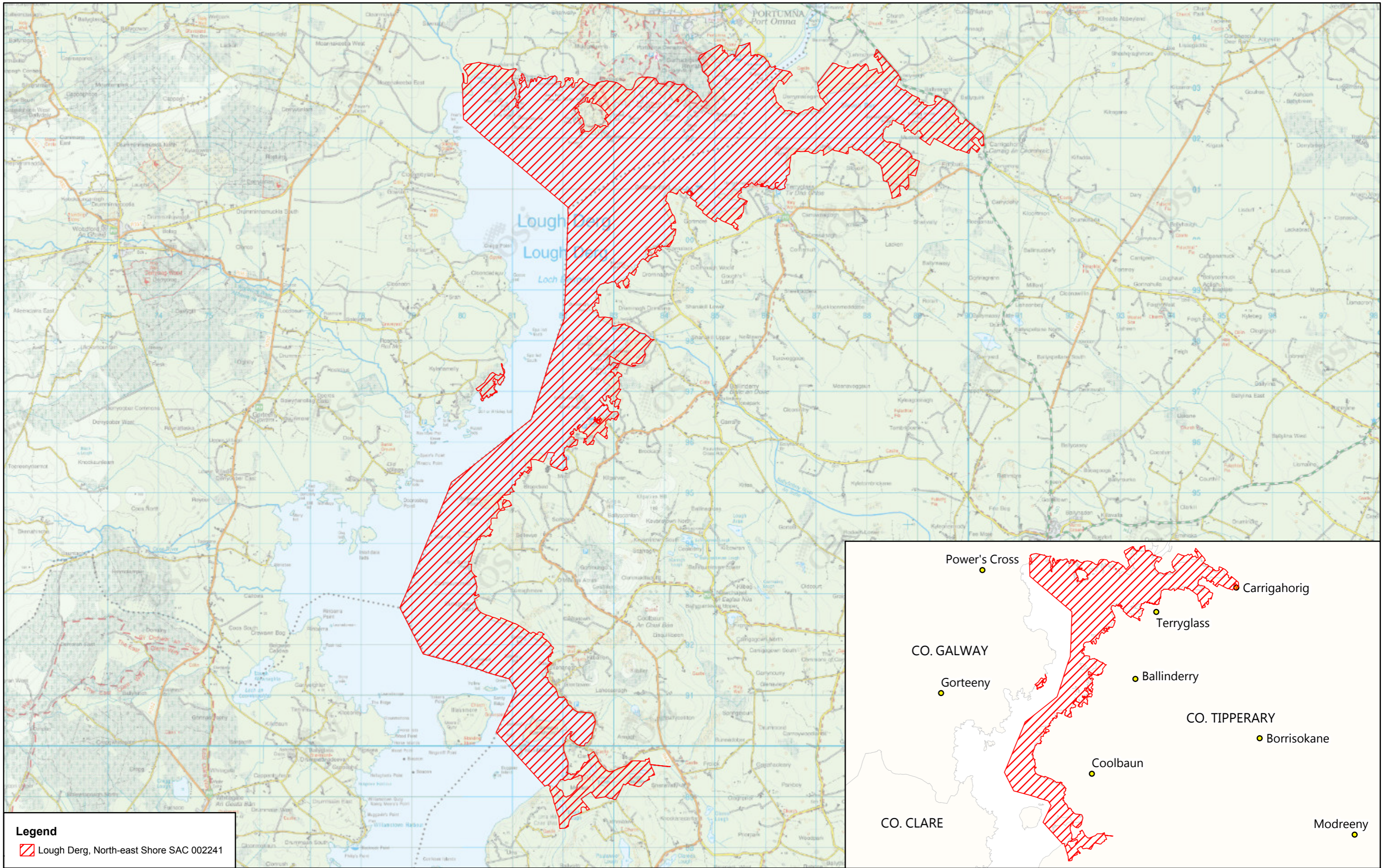
## Conservation Objectives for : Lough Derg, North-east Shore SAC [002241]

### 91J0 *Taxus baccata* woods of the British Isles

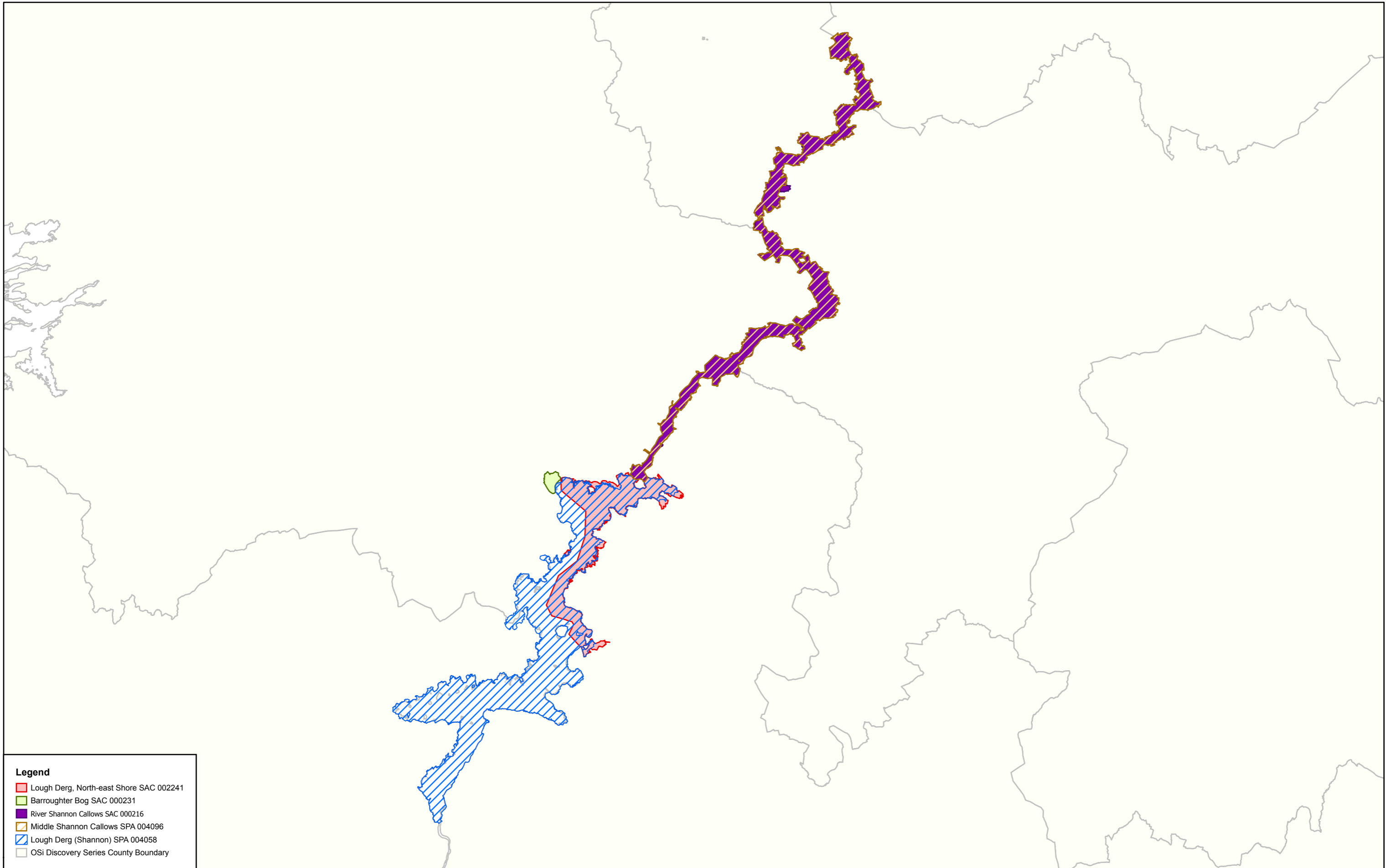
To maintain the favourable conservation condition of *Taxus baccata* woods of the British Isles\* in Lough Derg, North-east Shore SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes. See map 4	<i>Taxus baccata</i> woods of the British Isles* in Lough Derg, North-east Shore SAC occurs on the east shore of Lough Derg at Cornalack, where it occurs in association with <i>Juniperus communis</i> formations (5130) on shattered Limestone pavement (8240*) and partly within a disused quarry. As part of the National Survey of Native Woodlands (NSNW), Cornalack (NSNW site code 1963) was surveyed by Perrin et al. (2008). Cornalack has also been included in national monitoring surveys (Cross and Lynn, 2013; Daly et al., in prep.). The minimum area of yew ( <i>Taxus baccata</i> ) woodland in the SAC is estimated to be 2.24ha (Daly et al., in prep.). Map 4 shows the surveyed area classified as 91J0* (2.24ha). There is a yew-rich stand of mixed high forest at Kyleneilly on the west shore of Lough Derg within the SAC, but this is not true yew woodland (Cross and Lynn, 2013). It is important to note that further unsurveyed areas of the habitat may be present within the SAC
Habitat distribution	Occurrence	No decline. The surveyed yew woodland at Cornalack is shown on map 4	Distribution based on Daly et al. (in prep.). Note that further unsurveyed areas of the habitat may be present within the SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	The target areas for individual woodlands aim to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). In some cases, topographical constraints may restrict expansion. The area of yew ( <i>Taxus baccata</i> ) woodland at Cornalack within the SAC boundary is estimated to be 2.24ha (Daly et al., in prep.)
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 10m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	The target aims for a diverse structure with a canopy containing mature trees, shrub layer with semi-mature trees and shrubs, and well-developed field layer (herbs and dwarf shrubs) and ground layer (bryophytes). Assessment criteria are described in Daly et al. (in prep.) and Cross and Lynn (2013). The mature yew stand at Cornalack reaches 8-12m in height. Ash ( <i>Fraxinus excelsior</i> ) is constant in the canopy and holly ( <i>Ilex aquifolium</i> ) is the principal understorey species with some rowan ( <i>Sorbus aucuparia</i> ) and occasional purging buckthorn ( <i>Rhamnus cathartica</i> ) and spindle ( <i>Euonymus europaeus</i> ). Ivy ( <i>Hedera helix</i> ) is the principal species of the herb layer with small amounts of other species. Bryophyte cover ranges from 50-80% (Cross and Lynn, 2013)
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	See Perrin et al. (2008), Cross and Lynn (2013), Daly et al. (in prep.) and NPWS internal files for further details. See also the Irish Vegetation Classification (Perrin, 2016; <a href="http://www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification">www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification</a> )
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes of yew ( <i>Taxus baccata</i> ) and other native tree species occur in adequate proportions to ensure survival of woodland canopy	Yew ( <i>Taxus baccata</i> ) regenerates poorly under its own canopy, but can regenerate under a canopy of other species or in the open if competition from the field layer is not too strong. The Cornalack site is unusual in that abundant yew regeneration is occurring within an adjacent juniper ( <i>Juniperus communis</i> ) formation (Cross and Lynn, 2013)

Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood at least 20cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem. Dead wood comprises old senescent trees, standing dead trees, fallen dead wood (including large branches) and rotten stumps of any tree species. Assessment criteria are described in Daly et al. (in prep.) and Cross and Lynn (2013)
Woodland structure: veteran trees	Number per hectare	No decline	Veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	Includes ancient or long-established woodlands (see Perrin and Daly, 2010), archaeological and geological features as well as red-listed and other rare or localised species
Woodland structure: indicators of overgrazing	Occurrence	All four indicators of overgrazing absent	Yew ( <i>Taxus baccata</i> ) is highly susceptible to browsing and bark stripping (Thomas and Polwart, 2003). There are four indicators of overgrazing within 91J0*: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, and severe recent bark stripping (Daly et al., in prep.). No signs of grazing were observed at Cornalack by Cross and Lynn (2013)
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; yew ( <i>Taxus baccata</i> ) cover at least 50% of canopy	Species reported in Perrin et al. (2008), Cross and Lynn (2013), Daly et al. (in prep.) and NPWS internal files
Vegetation composition: typical species	Occurrence	Yew ( <i>Taxus baccata</i> ) present; at least 6 positive indicator species for 91J0* woodlands present	A variety of typical native species should be present. Yew ( <i>Taxus baccata</i> ) is the only target species for 91J0*. Positive indicator species for 91J0* are listed in Daly et al. (in prep.) and Cross and Lynn (2013)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	Negative indicator species (i.e. any non-native species, including herbaceous species) absent or under control. In this SAC, small-leaved cotoneaster ( <i>Cotoneaster microphyllus</i> ) has been recorded at Cornalack (NPWS internal files)



**Legend**  
 Lough Derg, North-east Shore SAC 002241



**Legend**

- Lough Derg, North-east Shore SAC 002241
- Barroughter Bog SAC 000231
- River Shannon Callows SAC 000216
- Middle Shannon Callows SPA 004096
- Lough Derg (Shannon) SPA 004058
- OSi Discovery Series County Boundary

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**MAP 2:**  
**LOUGH DERG, NORTH-EAST SHORE SAC**  
**CONSERVATION OBJECTIVES ADJACENT**  
**ADJOINING AND OVERLAPPING DESIGNATIONS**

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

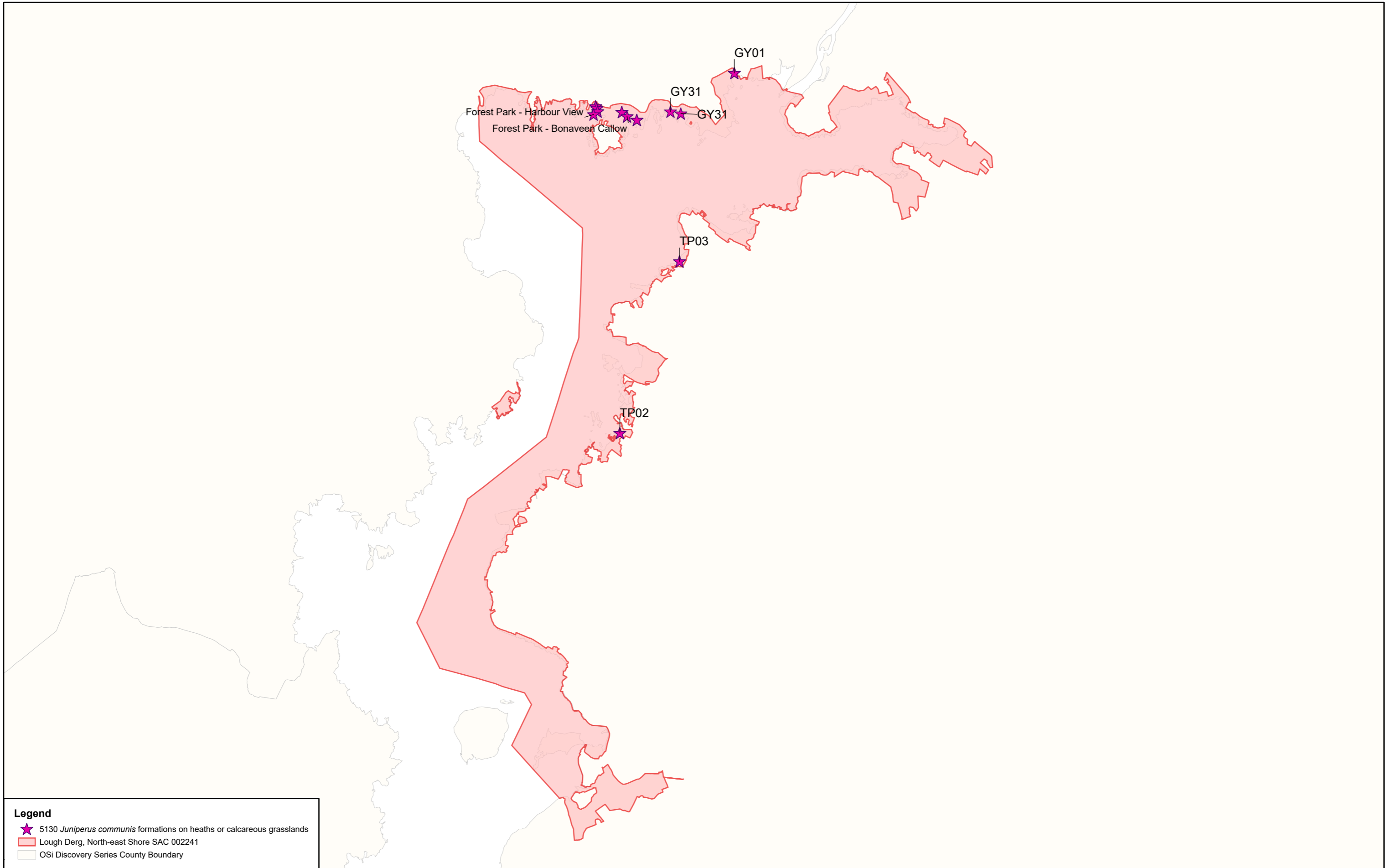
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CO. WESTMEATH, CO. OFFALY, CO. TIPPERARY, CO. CLARE

0    3    6    9    12    15 Kilometers

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
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**Map Version 1**  
**Date: Oct 2018**



**Legend**

- ★ 5130 *Juniperus communis* formations on heaths or calcareous grasslands
- ▭ Lough Derg, North-east Shore SAC 002241
- ▭ OSi Discovery Series County Boundary

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**MAP 3:  
LOUGH DERG, NORTH-EAST SHORE SAC  
CONSERVATION OBJECTIVES ADJACENT  
JUNIPER**

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

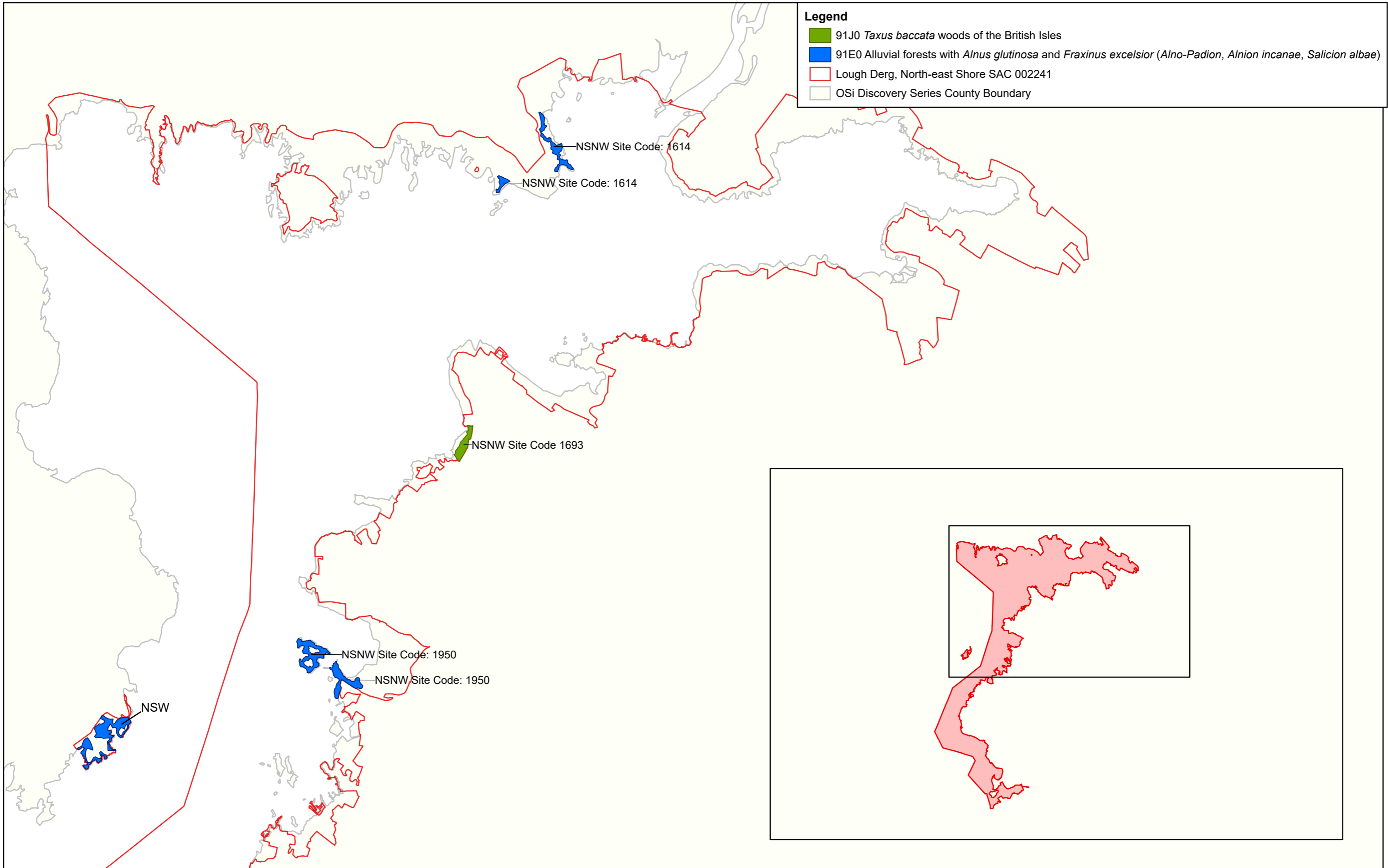
**SITE CODE:  
SAC 002241; version 3.03.  
CO. GALWAY, CO. TIPPERARY**

0 1 2 3 4 Kilometers

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
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**Map Version 1  
Date: Oct 2018**



**Legend**

- 91J0 *Taxus baccata* woods of the British Isles
- 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- Lough Derg, North-east Shore SAC 002241
- OSi Discovery Series County Boundary