

National Parks and Wildlife Service

Conservation Objectives Series

Cloonee and Inchiquin Loughs, Uragh Wood SAC
001342



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

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Citation:

NPWS (2019) Conservation Objectives: Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

**Series Editor: Rebecca Jeffrey
ISSN 2009-4086**

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

001342	Cloonee and Inchiquin Loughs, Uragh Wood SAC
1024	Kerry Slug <i>Geomalacus maculosus</i>
1303	Lesser Horseshoe Bat <i>Rhinolophus hipposideros</i>
1833	Slender Naiad <i>Najas flexilis</i>
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)
4010	Northern Atlantic wet heaths with <i>Erica tetralix</i>
4030	European dry heaths
6985	Killarney Fern <i>Vandenboschia speciosa</i>
8220	Siliceous rocky slopes with chasmophytic vegetation
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles

Please note that this SAC is adjacent to Kenmare River SAC (002158). See map 2. The conservation objectives for this site should be used in conjunction with those for the adjacent site 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 :	1976
Title :	Abbreviated report of a botanical and malacological study performed in the southwestern part of Ireland
Author :	Visser, G.; Zoer, J.A.
Series :	Unpublished report to NPWS
Year :	2002
Title :	<i>Najas flexilis</i> in Donegal
Author :	Roden, C.M.
Series :	Unpublished report to NPWS
Year :	2004
Title :	The distribution of <i>Najas flexilis</i> in Ireland 2002-2004
Author :	Roden, C.M.
Series :	Unpublished report to NPWS
Year :	2006
Title :	Bat mitigation guidelines for Ireland
Author :	Kelleher, C.; Marnell, F.
Series :	Irish Wildlife Manuals, No. 25
Year :	2008
Title :	National survey of native woodlands 2003-2008
Author :	Perrin, P.M.; Martin, J.; Barron, S.; O'Neill, F.H.; McNutt, K.E.; Delaney, A.
Series :	Unpublished report to NPWS
Year :	2009
Title :	Ireland Red List No. 2: Non-marine molluscs
Author :	Byrne, A.; Moorkens, E.A.; Anderson, R.; Killeen, I.J.; Regan, E.C.
Series :	Ireland Red List series, NPWS
Year :	2010
Title :	A provisional inventory of ancient and long-established woodland in Ireland
Author :	Perrin, P.M.; Daly, O.H.
Series :	Irish Wildlife Manuals, No. 46
Year :	2010
Title :	Ireland Red List No. 4: Butterflies
Author :	Regan, E.C.; Nelson, B.; Aldwell, B.; Bertrand, C.; Bond, K.; Harding, J.; Nash, D.; Nixon, D.; Wilson, C.J.
Series :	Ireland Red List series, NPWS
Year :	2011
Title :	Distribution and population dynamics of the Kerry Slug, <i>Geomalacus maculosus</i> (Arionidae)
Author :	Mc Donnell, R.J.; Gormally, M.J.
Series :	Irish Wildlife Manuals, No. 54
Year :	2012
Title :	An assessment of the use of conifer plantations by the Kerry Slug <i>Geomalacus maculosus</i> with reference to the potential impacts of forestry operations
Author :	Reich, I.; O'Meara, K.; Mc Donnell, R.J.; Gormally, M.J.
Series :	Irish Wildlife Manuals, No. 64

Year :	2012
Title :	Ireland Red List No. 8: Bryophytes
Author :	Lockhart, N.; Hodgetts, N.; Holyoak, D.
Series :	Ireland Red List series, NPWS
Year :	2013
Title :	Results of a monitoring survey of old sessile oak woods and alluvial forests
Author :	O'Neill, F.H.; Barron, S.J.
Series :	Irish Wildlife Manuals, No. 71
Year :	2013
Title :	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
Author :	NPWS
Series :	Conservation assessments
Year :	2013
Title :	Article 17 assessment form and audit trail for <i>Najas flexilis</i> , the slender naiad (species code 1833). Backing document. April 2013
Author :	O Connor, Á.
Series :	Unpublished report by NPWS
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
Year :	2014
Title :	Targeted survey of <i>Najas flexilis</i>
Author :	Roden, C.; Murphy, P.
Series :	Unpublished report to NPWS
Year :	2015
Title :	Habitats Directive Annex I lake habitats: a working interpretation for the purposes of site-specific conservation objectives and Article 17 reporting
Author :	O Connor, Á.
Series :	Unpublished document by NPWS
Year :	2015
Title :	Monitoring methods for the Killarney fern (<i>Trichomanes speciosum</i> Willd.) in Ireland
Author :	Ní Dhúill, E.; Smyth, N.; Waldren, S.; Lynn, D.
Series :	Irish Wildlife Manuals, No. 82
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
Year :	2017
Title :	Ballyhoorisky Point to Fanad Head SAC (site code: 1975) Conservation objectives supporting document- <i>Najas flexilis</i> V1
Author :	NPWS
Series :	Conservation objectives supporting document

Year : 2017
Title : Mweelrea/Sheeffry/Erriff Complex SAC (site code: 1932) Conservation objectives supporting document- *Najas flexilis* V1
Author : NPWS
Series : Conservation objectives supporting document

Year : 2017
Title : Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (site code: 365) Conservation objectives supporting document- *Najas flexilis* V1
Author : NPWS
Series : Conservation objectives supporting document

Year : 2018
Title : Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*)
Author : NPWS
Series : Conservation objectives supporting document

Year : 2019
Title : The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments
Author : NPWS
Series : Conservation assessments

Year : 2019
Title : Leannan River SAC (002176) Conservation objectives supporting document- *Najas flexilis* V1
Author : NPWS
Series : Conservation objectives supporting document

Year : 2019
Title : The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments
Author : NPWS
Series : Conservation assessments

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

Year : in prep.
Title : Monitoring and assessment of Killarney Fern (*Vandenboschia speciosa* (Willd.) Kunkel) in Ireland, 2015-2018
Author : Ní Dhúill, E.; O'Neill, F.H.; Hodd, R.
Series : Irish Wildlife Manuals

Other References

Year : 1916
Title : Flora of County Kerry
Author : Scully, R.W.
Series : Hodges, Figgis & Company Ltd, Dublin

Year : 1934
Title : The Botanist in Ireland
Author : Praeger, R.L.
Series : Hodges, Figgis and Co., Dublin

Year :	1972
Title :	Verlag van een botanisch/malacologische studiereis naar Z.W. Ierland
Author :	Visser, G.; Zoer, J.A.
Series :	Unpublished Report; Rijksinstituut voor Natuurbeheer, Leersum, Netherlands
Year :	1982
Title :	Eutrophication of waters. Monitoring assessment and control
Author :	OECD
Series :	OECD, Paris
Year :	2000
Title :	Colour in Irish lakes
Author :	Free, G.; Allott, N.; Mills, P.; Kennelly, C.; Day, S.
Series :	Verhandlungen Internationale Vereinigung für theoretische und angewandte Limnologie, 27: 2620-2623
Year :	2001
Title :	Aquatic plants in Britain and Ireland
Author :	Preston, C.D.; Croft, J.M.
Series :	Harley Books, Colchester
Year :	2002
Title :	Reversing the habitat fragmentation of British woodlands
Author :	Peterken, G.
Series :	WWF-UK, London
Year :	2002
Title :	Deterioration of Atlantic soft water macrophyte communities by acidification, eutrophication and alkanisation
Author :	Arts, G.H.P.
Series :	Aquatic Botany, 73: 373-393
Year :	2004
Title :	The ecology of <i>Najas flexilis</i>
Author :	Wingfield, R.A.; Murphy, K.J.; Hollingsworth, P.; Gaywood, M.J.
Series :	Scottish Natural Heritage Commissioned Report No. 017 (ROAME No. F98PA02)
Year :	2006
Title :	A reference-based typology and ecological assessment system for Irish lakes. Preliminary investigations. Final report. Project 2000-FS-1-M1 Ecological assessment of lakes pilot study to establish monitoring methodologies EU (WFD)
Author :	Free, G.; Little, R.; Tierney, D.; Donnelly, K.; Coroni, R.
Series :	Environmental Protection Agency, Wexford
Year :	2008
Title :	The lesser horseshoe bat conservation handbook
Author :	Schofield, H.W.
Series :	The Vincent Wildlife Trust
Year :	2009
Title :	The identification, characterization and conservation value of isoetid lakes in Ireland
Author :	Free, G.; Bowman, J.; McGarrigle, M.; Little, R.; Coroni, R.; Donnelly, K.; Tierney, D.; Trodd, W.
Series :	Aquatic Conservation: Marine and Freshwater Ecosystems, 19(3): 264-273

Year :	2009
Title :	Common Standards Monitoring guidance for upland habitats
Author :	JNCC
Series :	Joint Nature Conservation Committee, Peterborough
Year :	2009
Title :	Importance of night roosts for bat conservation: roosting behaviour of the lesser horseshoe bat <i>Rhinolophus hipposideros</i>
Author :	Knight, T.; Jones, G.
Series :	Endangered Species Research, 8: 79-86
Year :	2010
Title :	Water Quality in Ireland 2007-2009
Author :	McGarrigle, M.; Lucey, J.; Ó Cinnéide, M.
Series :	Environmental Protection Agency, Wexford
Year :	2012
Title :	Rare and threatened bryophytes of Ireland
Author :	Lockhart, N.; Hodgetts, N.; Holyoak, D.
Series :	National Museums Northern Ireland
Year :	2013
Title :	Interpretation manual of European Union habitats- Eur 28
Author :	European Commission- DG Environment
Series :	European Commission
Year :	2015
Title :	Water Quality in Ireland 2010-2012
Author :	Bradley, C.; Byrne, C.; Craig, M.; Free, G.; Gallagher, T.; Kennedy, B.; Little, R.; Lucey, J.; Mannix, A.; McCreesh, P.; McDermott, G.; McGarrigle, M.; Ní Longphuirt, S.; O'Boyle, S.; Plant, C.; Tierney, D.; Trodd, W.; Webster, P.; Wilkes, R.; Wynne, C.
Series :	Environmental Protection Agency, Wexford
Year :	2016
Title :	Irish Vegetation Classification: Technical Progress Report No. 2
Author :	Perrin, P.
Series :	Report submitted to National Biodiversity Data Centre
Year :	2017
Title :	Water Quality in Ireland 2010-2015
Author :	Fanning, A.; Craig, M.; Webster, P.; Bradley, C.; Tierney, D.; Wilkes, R.; Mannix, A.; Treacy, P.; Kelly, F.; Geoghegan, R.; Kent, T.; Mageean, M.
Series :	Environmental Protection Agency, Wexford
Year :	2017
Title :	Irish Vegetation Classification: Technical Progress Report No. 3
Author :	Perrin, P.
Series :	Report submitted to National Biodiversity Data Centre

Spatial data sources

Year :	2008
Title :	OSi 1:5000 IG vector dataset
GIS Operations :	WaterPolygons feature class clipped to the SAC boundary. Expert opinion used to identify Annex I habitat and to resolve any issues arising
Used For :	3110 (map 3)
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Year :	Revision 2010
Title :	National Survey of Native Woodlands 2003-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91A0 (map 4)
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Year :	2019
Title :	NPWS rare and threatened species database
GIS Operations :	Dataset created from spatial references in database records. Expert opinion used as necessary to resolve any issues arising
Used For :	1024 (map 5)
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Year :	2018
Title :	NPWS lesser horseshoe bat database
GIS Operations :	Roosts identified, clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	1303 (map 6)
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Year :	2007
Title :	Forest Inventory and Planning System, (FIPS)
GIS Operations :	Dataset clipped to 2.5km buffer centred on roost location
Used For :	1303 (map 6)
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Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)

To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) in Cloonee and Inchiquin Loughs, Uragh Wood 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	Lake habitat 3110 is considered to occur in the Cloonee Lough system, i.e. in all lakes in Cloonee and Inchiquin Loughs, Uragh Wood SAC. In line with Article 17 reporting (NPWS, 2013), all lakes larger than 1ha have been mapped as 3110 (see map 3). Sources for aquatic plant records for the lakes in the SAC include Praeger (1934), Visser and Zoer (1976) and Roden and Murphy (2014). Inchiquin Lough is on the Water Framework Directive (WFD) monitoring programme and regular macrophyte surveys are conducted by the Environmental Protection Agency (EPA). Two measures of extent should be used: 1. the area of the lake itself and; 2. the extent of the vegetation communities/zones that typify the habitat. Further information relating to all attributes is provided in the lake habitats supporting document for the purposes of site-specific conservation objectives and Article 17 reporting (O Connor, 2015)
Habitat distribution	Occurrence	No decline, subject to natural processes	As noted above, habitat 3110 is considered to occur in all lakes in the SAC: the series of four large lakes (Lough Inchiquin and Cloonee Loughs Upper, Middle and Lower) and smaller mountain lakes (including Lough Napeasta and Lough Cummeenadillure)
Vegetation composition: typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution	For lists of typical plant species, see the Article 17 habitat assessments for 3110 (NPWS, 2013, 2019) and O Connor (2015). See Praeger (1934), Visser and Zoer (1972, 1976) and Roden and Murphy (2014) for vegetation data for some lakes in the SAC; species recorded include <i>Isoetes lacustris</i> , <i>I. echinospora</i> (Near Threatened (NT)); Wyse Jackson et al., 2016), <i>Lobelia dortmanna</i> , <i>Eriocaulon aquaticum</i> (NT), <i>Nymphaea alba</i> , <i>Utricularia</i> sp. and <i>Nitella translucens</i> , also fringing <i>Phragmites australis</i> and <i>Cladium mariscus</i> . The underlying geology of the area is Old Red Sandstone and consequently the lakes are base-poor. Although <i>Najas flexilis</i> was recorded once in the SAC (see the conservation objective for 1833 in this volume), it is believed that, at best, small, isolated, marginal population(s) occur and that habitat 3130 is absent. In 2016, the non-native invasive <i>Lagarosiphon major</i> was first recorded in Lough Inchiquin
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition	Further work is necessary to describe the characteristic zonation and other spatial patterns in lake habitat 3110 (see O Connor, 2015). Lake-specific information on vegetation zonation may be available from Praeger (1934), Visser and Zoer (1972, 1976) and Roden and Murphy (2014), EPA surveys and other sources
Vegetation distribution: maximum depth	Metres	Maintain maximum depth of vegetation, subject to natural processes	The maximum depth of vegetation is likely to be specific to the lake shoreline in question. Further work is necessary to develop indicative targets for lake habitat 3110. Maximum depth should be large in lakes in the SAC within undisturbed peatland and uplands; however, pressures such as eutrophication, overgrazing, forestry and peat-cutting may have reduced vegetation depth in some lakes. Roden and Murphy (2014) recorded a euphotic depth of 5.1m in Cloonee Middle Lough and stated that the water is slightly peat-coloured

Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat	Fluctuations in lake water level are typical in Ireland, but can be amplified by activities such as abstraction, drainage and overgrazing. Increased water level fluctuations can increase wave action, up-root vegetation, increase turbidity, alter the substratum and lead to release of nutrients from the sediment. The hydrological regime of the lakes must be maintained so that the area, distribution and depth of the lake habitat and its constituent/characteristic vegetation zones and communities are not reduced
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the vegetation	Research is required to further characterise the substratum types (particle size and origin) and substratum quality (notably pH, calcium, iron and nutrient concentrations) favoured by each of the five Annex I lake habitats in Ireland. It is likely that lake habitat 3110 is associated with a range of nutrient-poor substrates, from stones, cobble and gravel, through sands, silt, clay and peat. Substratum particle size is likely to vary with depth and along the shoreline within a single lake. Data on lake substrata in Cloonee and Inchiquin Loughs, Uragh Wood SAC may be available from Praeger (1934), Visser and Zoer (1972, 1976), Roden and Murphy (2014), EPA surveys and other sources
Water quality: transparency	Metres	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	Transparency relates to light penetration and, hence, to the depth of colonisation of vegetation. It can be affected by phytoplankton blooms, water colour and turbidity. Specific targets have yet to be established for lake habitat 3110 (O Connor, 2015). Habitat 3110 is associated with very clear water. The OECD fixed boundary system set transparency targets for oligotrophic lakes of $\geq 6\text{m}$ annual mean Secchi disk depth, and $\geq 3\text{m}$ annual minimum Secchi disk depth (OECD, 1982). Free et al. (2009) found high isoetid abundance in lakes with Secchi depths of more than 3m. In this SAC, Roden and Murphy (2014) recorded a euphotic depth of 5.1m in Cloonee Middle Lough
Water quality: nutrients	$\mu\text{g/l P}$; mg/l N	Maintain/restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	As a nutrient-poor habitat, oligotrophic and WFD 'high' status targets apply. Where a lake has nutrient concentrations that are lower than these targets, there should be no decline within class, i.e. no upward trend in nutrient concentrations. For lake habitat 3110, annual average total phosphorus (TP) concentration should be $\leq 10\mu\text{g/l TP}$, average annual total ammonia concentration should be $\leq 0.040\text{mg/l N}$ and annual 95th percentile for total ammonia should be $\leq 0.090\text{mg/l N}$. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009. Lough Inchiquin passed the TP target in 2007-09 and 2015-17 (high status) (McGarrigle et al., 2010; Fanning et al., 2017), but failed in 2010-12 (good status) (Bradley et al., 2015)
Water quality: phytoplankton biomass	$\mu\text{g/l chlorophyll } a$	Maintain appropriate water quality to support the habitat, including high chlorophyll <i>a</i> status	Oligotrophic and WFD 'high' status targets apply to lake habitat 3110. Where a lake has a chlorophyll <i>a</i> concentration that is lower than this target, there should be no decline within class, i.e. no upward trend in phytoplankton biomass. The average growing season (March-October) chlorophyll <i>a</i> concentration must be $< 5.8\mu\text{g/l}$. The annual average chlorophyll <i>a</i> concentration should be $< 2.5\mu\text{g/l}$ and the annual peak chlorophyll <i>a</i> concentration should be $\leq 8.0\mu\text{g/l}$. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009. Lough Inchiquin passed the target (high status) in 2007-09, 2010-12 and 2013-15 (McGarrigle et al., 2010; Bradley et al., 2015; Fanning et al., 2017)

Water quality: phytoplankton composition	EPA phytoplankton composition metric	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	The EPA has developed a phytoplankton composition metric for nutrient enrichment of Irish lakes. As for other water quality indicators, lake habitat 3110 requires WFD high status
Water quality: attached algal biomass	Algal cover	Maintain trace/absent attached algal biomass (<5% cover)	Nutrient enrichment can favour epiphytic and epipelic algae that can out-compete the submerged vegetation. The cover abundance of attached algae in lake habitat 3110 should, therefore, be trace/absent (<5% cover)
Water quality: macrophyte status	EPA macrophyte metric (The Free Index)	Maintain high macrophyte status	Nutrient enrichment can favour more competitive submerged macrophyte species that out-compete the typical and characteristic species for the lake habitat. The EPA monitors macrophyte status for WFD purposes using the 'Free Index'. The target for lake habitat 3110 is high status or an Ecological Quality Ratio (EQR) for lake macrophytes of ≥ 0.90 , as defined in Schedule Five of the European Communities Environmental Objectives (Surface Waters) Regulations 2009. Lough Inchiquin passed the target, having high macrophyte status in 2007-09, 2010-12 and 2013-15 (McGarrigle et al., 2010; Bradley et al., 2015; Fanning et al., 2017)
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	Acidification can impact on species abundance and composition in soft water lake habitats. In Europe, acidification of isoetid lakes can lead to loss of isoetids and dominance by submerged <i>Sphagnum</i> mosses and <i>Juncus bulbosus</i> (Arts, 2002). The specific requirements of lake habitat 3110, in terms of water and sediment pH, alkalinity and cation concentration, have not been determined. For lakes with habitat 3110, and adopting a precautionary approach based on Arts (2002), minimum pH should not be <5.5 pH units. Maximum pH should be <9.0 pH units, in line with the surface water standards established for soft waters (where water hardness is ≤ 100 mg/l calcium carbonate). See Schedule Five of the European Communities Environmental Objectives (Surface Waters) Regulations 2009. Lough Inchiquin passed the WFD metric in 2007-09, 2010-12 and 2013-15 (McGarrigle et al., 2010; Bradley et al., 2015; Fanning et al., 2017)
Water colour	mg/l PtCo	Maintain/restore appropriate water colour to support the habitat	Increased water colour and turbidity decrease light penetration and can reduce the area of available habitat for lake macrophytes, particularly at the lower euphotic depths. The primary source of increased water colour in Ireland is disturbance to peatland. No habitat-specific or national standards for water colour currently exist. Studies have shown median colour concentrations in Irish lakes of 38mg/l PtCo (Free et al., 2000) and 33mg/l PtCo (Free et al., 2006). It is likely that the water colour in all Irish lake habitats would naturally be <50mg/l PtCo. Water colour can be very low (<20mg/l PtCo or even <10mg/l PtCo) in lakes with habitat 3110, where the peatland in the lake's catchment is intact. Free et al. (2006) reported colour of 12mg/l and 13mg/l PtCo in Inchiquin and Cloonee Middle, respectively. Roden and Murphy (2014) stated that the water was slightly peat-coloured in Cloonee Middle Lough

Dissolved organic carbon (DOC)	mg/l	Maintain appropriate organic carbon levels to support the habitat	Dissolved (and particulate) organic carbon (OC) in the water column is linked to water colour and acidification (organic acids). Increasing DOC in water has been documented across the Northern Hemisphere, including afforested peatland catchments in Ireland. Damage and degradation of peatland, leading to decomposition of peat is likely to be the predominant source of OC in Ireland. OC in water promotes decomposition by fungi and bacteria that, in turn, releases dissolved nutrients. The increased biomass of decomposers can also impact directly on the characteristic lake communities through shading, competition, etc.
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate unit	Maintain appropriate turbidity to support the habitat	Turbidity can significantly affect the quantity and quality of light reaching rooted and attached vegetation and can, therefore, impact on lake habitats. The settlement of higher loads of inorganic or organic material on lake vegetation communities may also have impacts on sensitive, delicate species. Turbidity can increase as a result of re-suspension of material within the lake, higher loads entering the lake, or eutrophication. Turbidity measurement and interpretation is challenging. As a result, it is likely to be difficult to set habitat-specific targets for turbidity in lakes
Fringing habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of lake habitat 3110	Most lake shorelines have fringing habitats of reedswamp, other swamp, fen, marsh or wet woodland that intergrade with and support the structure and functions of the lake habitat. Fringing habitats are dependent on the lake, particularly its water levels, and support wetland communities and species of conservation concern. Many of the fringing wetland habitats support higher invertebrate and plant species richness than the lake habitats themselves. In this SAC, fringing habitats include wet and dry heath, native woodland (which includes the Near Threatened strawberry tree (<i>Arbutus unedo</i>) (Wyse Jackson et al., 2016), juniper (<i>Juniperus communis</i>) and yew (<i>Taxus baccata</i>) along the shoreline) and wet grassland with blue-eyed grass (<i>Sisyrinchium bermudiana</i>). The Flora (Protection) Order, 2015 listed and Endangered pennyroyal (<i>Mentha pulegium</i>) (Wyse Jackson et al., 2016) was recorded "on the shore of the Middle Cloonee Lake, 1908" (Scully, 1916)

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

4010 Northern Atlantic wet heaths with *Erica tetralix*

To maintain the favourable conservation condition of Northern Atlantic wet heaths with *Erica tetralix* in Cloonee and Inchiquin Loughs, Uragh Wood 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	Northern Atlantic wet heaths with <i>Erica tetralix</i> has not been mapped in detail for Cloonee and Inchiquin Loughs, Uragh Wood SAC and thus the total area of the qualifying habitat in the SAC is unknown. Good quality areas of the habitat occur near the Cloonee River, around and to the south of Cummeenaloughan and between Cloonee Lough (Upper) and Lough Inchiquin. The habitat occurs in association with European dry heaths (see also the conservation objective for that habitat (code 4030) in this volume) and blanket bog in the SAC (NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes on 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 (NPWS, 2013)
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of wet heath vegetation communities within this SAC is currently unknown. Information on vegetation communities associated with this habitat in the uplands is presented in Perrin et al. (2014). See also the Irish Vegetation Classification (Perrin, 2017; www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification)
Vegetation composition: cross-leaved heath	Occurrence within 20m of a representative number of monitoring stops	Cross-leaved heath (<i>Erica tetralix</i>) present within a 20m radius of each monitoring stop	Attribute and target based on Perrin et al. (2014). Cross-leaved heath is the only characteristic species of the habitat listed in European Commission (2013). Whilst it is seldom abundant in wet heaths, its presence at high frequencies is considered one of the few characteristics common between the varied communities of this habitat (JNCC, 2009)
Vegetation composition: positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of positive indicator species at least 50%	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: lichens and bryophytes	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of <i>Cladonia</i> and <i>Sphagnum</i> species, <i>Racomitrium lanuginosum</i> and pleurocarpous mosses at least 10%	Attribute and target based on Perrin et al. (2014). A plentiful lichen/bryophyte layer is characteristic of this habitat
Vegetation composition: ericoid species and crowberry	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of ericoid species and crowberry (<i>Empetrum nigrum</i>) at least 15%	Attribute and target based on Perrin et al. (2014). A dwarf shrub layer with ericoid species is characteristic of this habitat (crowberry is only rarely present). Low cover of these species would be indicative of chronic overgrazing, burning, etc.
Vegetation composition: dwarf shrub species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of dwarf shrubs less than 75%	Attribute and target based on Perrin et al. (2014). A dwarf shrub layer is characteristic of wet heaths, but the vegetation should be a mixture of dwarf shrub and graminoid species with higher cover of dwarf shrubs being potentially indicative of drainage
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%	Attribute and target based on Perrin et al. (2014), where the list of negative indicator species for this habitat is also presented

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 20%	Attribute and target based on Perrin et al. (2014). High cover of native trees and shrubs would indicate that the habitat may be succeeding towards scrub or woodland due to lack of grazing or due to the habitat drying out
Vegetation composition: bracken	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of bracken (<i>Pteridium aquilinum</i>) less than 10%	Attribute and target based on Perrin et al. (2014). High cover of bracken would indicate that the habitat may be succeeding towards a dense bracken community
Vegetation composition: soft rush	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of soft rush (<i>Juncus effusus</i>) less than 10%	Attribute and target based on Perrin et al. (2014). High cover of soft rush would suggest undesirable hydrological conditions. Note, however, that poor flushes dominated by soft rush can naturally occur in mosaic with this habitat. Discrete areas of this separate habitat should not be considered here
Vegetation structure: <i>Sphagnum</i> condition	Condition at a representative number of 2m x 2m monitoring stops	Less than 10% of the <i>Sphagnum</i> cover is crushed, broken and/or pulled up	Attribute and target based on Perrin et al. (2014). High levels of disturbed <i>Sphagnum</i> would indicate undesirable levels of grazers
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops	Less than 33% collectively of the last complete growing season's shoots of ericoids, crowberry (<i>Empetrum nigrum</i>) and bog-myrtle (<i>Myrica gale</i>) showing signs of browsing	Attribute and target based on Perrin et al. (2014)
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Attribute and target based on Perrin et al. (2014), where the list of sensitive areas for this habitat is also presented
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 less than 10%	Attribute and target based on Perrin et al. (2014). Disturbance can include hoof marks, wallows, human footprints and vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for heaths and peatlands
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	Attribute and target based on Perrin et al. (2014). Drainage can result in loss of characteristic species and transition to drier habitats
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 and no decline in status of hepatic mats associated with this 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.)

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

4030 European dry heaths

To maintain the favourable conservation condition of European dry heaths in Cloonee and Inchiquin Loughs, Uragh Wood 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	European dry heaths has not been mapped in detail for Cloonee and Inchiquin Loughs, Uragh Wood SAC and thus the total area of the qualifying habitat in the SAC is unknown. Dry heath occurs in areas near the coast and also in the upland areas of the SAC, particularly in association with steep rocky slopes near cliffs where the habitat occurs in association with Northern Atlantic wet heaths with <i>Erica tetralix</i> (see also the conservation objective for that habitat (habitat code 4010) in this volume) and with blanket bog (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 (NPWS, 2013)
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of dry heath vegetation communities within this SAC is currently unknown. Information on vegetation communities associated with this habitat in the uplands is presented in Perrin et al. (2014). See also the Irish Vegetation Classification (Perrin, 2017; www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification)
Vegetation composition: lichens and bryophytes	Number of species at a representative number of 2m x 2m monitoring stops	Number of bryophyte or non-crustose lichen species present at each monitoring stop is at least three, excluding <i>Campylopus</i> and <i>Polytrichum</i> mosses	Attribute and target based on Perrin et al. (2014). Dry heath is not necessarily rich in lichen and bryophyte species, but a minimum amount should still be present
Vegetation composition: number of positive indicator species	Number of species at a representative number of 2m x 2m monitoring stops	Number of positive indicator species present at each monitoring stop is at least two	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat, which is composed of dwarf shrubs, is also presented. See also the Article 17 habitat assessment for European dry heaths (NPWS, 2013, 2019). In this SAC, positive indicator species recorded in the habitat near the coast include western gorse (<i>Ulex gallii</i>) and ling (<i>Calluna vulgaris</i>) (NPWS internal files)
Vegetation composition: cover of positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of positive indicator species at least 50% for siliceous dry heath and 50-75% for calcareous dry heath	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat, which is composed of dwarf shrubs, is also presented. See also the Article 17 habitat assessment for European dry heaths (NPWS, 2013, 2019)
Vegetation composition: dwarf shrub composition	Percentage cover at a representative number of 2m x 2m monitoring stops	Proportion of dwarf shrub cover composed collectively of bog-myrtle (<i>Myrica gale</i>), creeping willow (<i>Salix repens</i>) and western gorse (<i>Ulex gallii</i>) is less than 50%	Attribute and target based on Perrin et al. (2014). Bog-myrtle is indicative of flushed conditions and is more characteristic of wet heaths and blanket bogs. Creeping willow is more characteristic of dune heaths. Western gorse is a component of dry heath, but high proportions of it may indicate a history of undesirable levels of grazing
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%	Attribute and target based on Perrin et al. (2014), where the list of negative indicator species for this habitat is also presented

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 20%	Attribute and target based on Perrin et al. (2014). High cover of native trees and shrubs would indicate that the habitat may be succeeding towards scrub or woodland due to lack of grazing
Vegetation composition: bracken	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of bracken (<i>Pteridium aquilinum</i>) less than 10%	Attribute and target based on Perrin et al. (2014). High cover of bracken would indicate that the habitat may be succeeding towards a dense bracken community
Vegetation composition: soft rush	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of soft rush (<i>Juncus effusus</i>) less than 10%	Attribute and target based on Perrin et al. (2014). High cover of soft rush would suggest undesirable hydrological conditions. Note, however, that poor flushes dominated by soft rush can naturally occur in mosaic with this habitat. Discrete areas of this separate habitat should not be considered here
Vegetation structure: senescent ling	Percentage cover at a representative number of 2m x 2m monitoring stops	Senescent proportion of ling (<i>Calluna vulgaris</i>) cover less than 50%	Attribute and target based on Perrin et al. (2014). Senescence is part of the natural cycle of ling, but a dominance of ling in the senescent phase would indicate a lack of management (appropriate grazing or burning) to promote ling regeneration
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops	Less than 33% collectively of the last complete growing season's shoots of ericoids showing signs of browsing	Attribute and target based on Perrin et al. (2014)
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops	No signs of burning in sensitive areas	Attribute and target based on Perrin et al. (2014), where the list of sensitive areas is also presented. Fires can be part of the natural cycle of heaths and may, under carefully controlled circumstances, be used as an occasional management tool to promote regeneration of, or diversity of growth phases, in ling (<i>Calluna vulgaris</i>). However, currently most hill fires in Ireland are intentionally started to encourage grass growth for livestock. Fires which are too intense, too frequent, too extensive or which occur in sensitive areas are damaging to the habitat
Vegetation structure: growth phases of ling	Percentage cover in local vicinity of a representative number of monitoring stops	Outside sensitive areas, all growth phases of ling (<i>Calluna vulgaris</i>) should occur throughout, with at least 10% of cover in the mature phase	Attribute and target based on Perrin et al. (2014), where the list of sensitive areas is also presented. The growth phases of ling are pioneer (<10cm high), building (10-30cm high) and mature (<30cm high). As burning is undesirable in sensitive areas, it is not reasonable to require the stated diversity of growth phases within these areas
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 less than 10%	Attribute and target based on Perrin et al. (2014). Disturbance can include hoof marks, wallows, human footprints and vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for heaths and 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	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 : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

8220 Siliceous rocky slopes with chasmophytic vegetation

To maintain the favourable conservation condition of Siliceous rocky slopes with chasmophytic vegetation in Cloonee and Inchiquin Loughs, Uragh Wood 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	Siliceous rocky slopes with chasmophytic vegetation has not been mapped in detail for Cloonee and Inchiquin Loughs, Uragh Wood SAC and thus the total area of the qualifying habitat is unknown. Exposed rock and notable cliffs of Old Red Sandstone occur in a number of areas in the SAC, for example at the eastern end of the valley in the SAC, around Cummeenadilure Lough, and to the south of Lough Napeasta (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 (NPWS, 2013)
Vegetation composition: positive indicator species	Number of species in local vicinity of a representative number of monitoring stops	At least one positive indicator species present in vicinity of each monitoring stop	Attribute and target based on Perrin et al. (2014) where the list of positive indicator species for this habitat is also presented
Vegetation composition: non-native species	Percentage cover in local vicinity of a representative number of monitoring stops	Proportion of vegetation composed 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: bracken, native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Total cover of bracken (<i>Pteridium aquilinum</i>), native trees and shrubs less than 25%	Attribute and target based on Perrin et al. (2014). High cover of bracken (<i>Pteridium aquilinum</i>), native trees and shrubs indicate that rocky slopes are becoming more vegetated which would impact on the niches of the chasmophytic species
Vegetation structure: grazing and browsing	Percentage of leaves/shoots grazed/browsed in local vicinity of a representative number of monitoring stops	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%	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 and no decline in status of hepatic mats associated with this 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.)

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

To restore the favourable conservation condition of Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles in Cloonee and Inchiquin Loughs, Uragh Wood 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	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles is present in Uragh Wood, a large area of native woodland occupying the slopes above Lough Inchiquin in the remote Gleninchiquin valley in Cloonee and Inchiquin Loughs, Uragh Wood SAC. The SAC contains an excellent and important example of a hyper-oceanic oak woodland. As part of the National Survey of Native Woodlands (NSNW), Uragh Wood (NSNW site code 1273) was surveyed by Perrin et al. (2008). Map 4 shows the woodland (65.33ha) surveyed by Perrin et al. (2008). This polygon was estimated to comprise 95% old sessile oak woodland in mosaic with 5% bog woodland. The minimum area of old sessile oak woodland within the SAC is therefore estimated to be 62ha. Uragh Wood (1273) was also included in a national monitoring survey (O'Neill and Barron, 2013; Daly et al., in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. The surveyed woodland location is shown on map 4	Distribution based on Perrin et al. (2008). 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 total area of native woodland at Uragh Wood is 65.33ha (Perrin et al., 2008). 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 11m; 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 relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer and ground layer. 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). See also the Irish Vegetation Classification (Perrin, 2016; www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification)
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes of target species for 91A0 woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	The target species for 91A0 are sessile oak (<i>Quercus petraea</i>) and the hybrid oak <i>Quercus x rosacea</i> . Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013). Daly et al. (in prep.) found that the level of regeneration of <i>Quercus</i> and other native trees was inadequate
Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood of 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 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, archaeological and geological features as well as red listed and other rare or localised species. Almost all of Uragh Wood has been categorised as ancient woodland (Perrin and Daly, 2010). Atlantic and Lusitanian species such as strawberry tree (<i>Arbutus unedo</i>), Irish spurge (<i>Euphorbia hyberna</i>), kidney saxifrage (<i>Saxifraga hirsuta</i>) and St Patrick's cabbage (<i>S. spathularis</i>) are present. Uragh Wood is internationally important for oceanic bryophytes, such as the Vulnerable <i>Lejeunea flava</i> and the Near Threatened <i>L. eckloniana</i> , <i>Hageniella micans</i> , <i>Sematophyllum demissum</i> , <i>Radula holtii</i> and <i>Hypnum uncinulatum</i> (Lockhart et al., 2012). The latter two are listed on the Flora (Protection) Order, 2015. The rare hyperoceanic lichen <i>Leptogium juressianum</i> has been recorded at Uragh Wood. See also the conservation objectives for Lesser horseshoe bat, Kerry slug and Killarney fern
Woodland structure: indicators of overgrazing	Occurrence	All four indicators of overgrazing absent	There are four indicators of overgrazing within 91A0: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, and severe recent bark stripping (Daly et al., in prep.; O'Neill and Barron, 2013). A deer fence is present at Uragh Wood but grazing has been noted within the wood and is having a negative impact (Daly et al., in prep.)
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 91A0 are sessile oak (<i>Quercus petraea</i>) and the hybrid oak <i>Quercus x rosacea</i> (Daly et al., in prep.; O'Neill and Barron, 2013)
Vegetation composition: typical species	Occurrence	At least 1 target species for 91A0 woodlands present; at least 6 positive indicator species for 91A0 woodlands present	A variety of typical native species should be present, depending on woodland type. The target species for 91A0 are sessile oak (<i>Quercus petraea</i>) and the hybrid oak <i>Quercus x rosacea</i> . Positive indicator species for 91A0 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 such as montbretia (<i>Crocsmia x crocosmiiflora</i>)) should be absent or under control. In general, the following are the most common non-native invasive species in 91A0 woodlands: beech (<i>Fagus sylvatica</i>), sycamore (<i>Acer pseudoplatanus</i>) and rhododendron (<i>Rhododendron ponticum</i>)

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

1024 Kerry Slug *Geomalacus maculosus*

To maintain the favourable conservation condition of Kerry Slug (*Geomalacus maculosus*) in Cloonee and Inchiquin Loughs, Uragh Wood SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution: occupied 1km grid squares	Number	Number of occupied 1km grid squares at least stable, subject to natural processes. See map 5	The distribution of Kerry slug (<i>Geomalacus maculosus</i>) within Cloonee and Inchiquin Loughs, Uragh Wood SAC is not known in detail. There are records from three 1km grid squares (V8263, V8362, V8663) that are within/overlap the SAC boundary (NPWS species database; Mc Donnell and Gormally, 2011). See map 5. The species is likely to be found wherever there is suitable habitat and, within this SAC, Kerry slug has been found in the oak woodland at Uragh and in blanket bog habitat that has outcropping boulders of Old Red Sandstone. It is also likely to be present in any coniferous woodland, but this has not been confirmed by positive records
Habitat extent: area of blanket bog and heath with sandstone outcrops	Hectares	Stable or increasing, subject to natural processes	The underlying geology of Cloonee and Inchiquin Loughs, Uragh Wood SAC is Old Red Sandstone and wherever this is exposed there is likely to be suitable habitat for Kerry slug (<i>Geomalacus maculosus</i>). Slugs will occur on the bare rock faces where it feeds (mainly at night) on its preferred species of lichens and mosses. The quality of the habitat surrounding the rock outcrops is not considered important for the species as there is no evidence that the slug feeds off the rock surface. However, heavily enriched habitat may impact locally on the rock face flora. The species is thought to retreat during dry periods to refuges around the interface between the rock and the soil and crevices and holes in the trees. Movement presumably does occur between rocks, but the conditions needed to facilitate this are not known
Habitat extent: woodland area	Hectares	Stable or increasing, subject to natural processes	Uragh Wood is one of the best known sites for Kerry slug (<i>Geomalacus maculosus</i>) as it was used as a study site by Mc Donnell and Gormally (2011). The sessile oak (<i>Quercus petraea</i>) trees provide very suitable habitat. Kerry slug is known to feed on species of epiphytic lichens and mosses, particularly <i>Platismatia glauca</i> , <i>Usnea cornuta</i> , <i>Cladonia uncialis</i> , <i>Paromtrema perlatum</i> and <i>Lepraria incana</i> . The preferred trees are those with rough bark, such as sessile oak, but also conifers (Reich et al., 2012). See also the conservation objective for Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles (91A0) in this volume
Habitat quality: woodland	Proportion of oak trees	Proportion of sessile oak (<i>Quercus petraea</i>) in canopy at least stable	Oak is the preferred tree for Kerry slug (<i>Geomalacus maculosus</i>) within native broadleaved woodland. See also the conservation objective for Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles (91A0) in this volume
Habitat quality: non-native invasive species	Occurrence	Rhododendron (<i>Rhododendron ponticum</i>) in woodland and heath/bog absent or under control	Kerry Slug (<i>Geomalacus maculosus</i>) is negatively impacted by the presence of rhododendron (<i>Rhododendron ponticum</i>) which creates excessive shade and reduces cover of its epiphytic foodplants (Mc Donnell and Gormally, 2011). This is primarily, but not exclusively, a problem in woodland and rhododendron may also impact open heath and bog

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

1303 Lesser Horseshoe Bat *Rhinolophus hipposideros*

To restore the favourable conservation condition of Lesser Horseshoe Bat (*Rhinolophus hipposideros*) in Cloonee and Inchiquin Loughs, Uragh Wood SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population per roost	Number	Minimum number of 101 bats for the summer roost (roost id. 457 in NPWS database). See map 6	A figure of 100 bats for summer roosts and 50 bats for winter roosts was set as a minimum qualifying standard (MQS) when SACs were being selected for lesser horseshoe bat (<i>Rhinolophus hipposideros</i>). NPWS conduct annual counts at each qualifying roost. Qualified means from the 2012-2016 summer data have been calculated whereby the year with the highest maximum count and the year with the lowest maximum count were removed and the mean of the remaining years was calculated. This mean is set as the target figure for the summer roost (roost id. 457 in NPWS database) in Cloonee and Inchiquin Loughs, Uragh Wood SAC. See the conservation objectives supporting document for lesser horseshoe bat (NPWS, 2018) for further information on all attributes and targets
Summer roosts	Condition	No decline	Cloonee and Inchiquin Loughs, Uragh Wood SAC has been selected for lesser horseshoe bat because of the presence of one internationally important summer roost (roost id. 457 in NPWS database). Damage or disturbance to the roost or to the habitat immediately surrounding it will lead to a decline in its condition (Kelleher and Marnell, 2006)
Auxiliary roosts	Number and condition	No decline	Lesser horseshoe bat populations will use a variety of roosts during the year besides the main summer maternity and winter hibernation roosts. Such additional roosts within the SAC may be important as night roosts, satellite roosts, etc. Night roosts are also considered an integral part of core foraging areas and require protection (Knight and Jones, 2009). In addition, in response to weather conditions for example, bats may use different seasonal roosts from year to year; this is particularly noticeable in winter. A database of all known lesser horseshoe bat roosts is available on the National Biodiversity Data Centre website. NB further unrecorded roosts may also be present within this SAC
Extent of potential foraging habitat	Hectares	No significant decline within 2.5km of qualifying roost	Lesser horseshoe bats normally forage in woodlands/scrub within 2.5km of their roosts (Schofield, 2008). See map 6 which shows a 2.5km zone around the above roost and identifies potential foraging grounds
Linear features	Kilometres	No significant loss within 2.5km of qualifying roost. See map 6	This species follows commuting routes from its roost to its foraging grounds. Lesser horseshoe bats will not cross open ground. Consequently, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5km around each roost (Schofield, 2008)
Light pollution	Lux	No significant increase in artificial light intensity adjacent to named roost or along commuting routes within 2.5km of the roost. See map 6	Lesser horseshoe bats are very sensitive to light pollution and will avoid brightly lit areas. Inappropriate lighting around roosts may cause abandonment; lighting along commuting routes may cause preferred foraging areas to be abandoned, thus increasing energetic costs for bats (Schofield, 2008)

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

1833 Slender Naiad *Najas flexilis*

To maintain the favourable conservation condition of Slender Naiad (*Najas flexilis*) in Cloonee and Inchiquin Loughs, Uragh Wood SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population extent	Hectares; distribution	No change to the spatial extent of <i>Najas flexilis</i> (slender naiad) within the lakes, subject to natural processes	A population of <i>Najas flexilis</i> may occur in the Cloonee Loughs, or elsewhere in the SAC. The species has only once been recorded in the SAC: in 1957 D.A. Webb found a drift specimen (lodged in TCD herbarium). The given location is 'Cloonee lakes', which could be any one of Cloonee Upper, Middle or Lower (Roden and Murphy, 2014). Despite several dedicated surveys, including snorkel surveys in 2004/05 and 2014, it has not been located (Roden and Murphy, 2014). Roden and Murphy (2014) concluded that the status of the species in the SAC was difficult to establish, but that the highly oligotrophic, base-poor lake habitat is, at best, marginal for the species. NPWS (2019) assessed the Cloonee population as extinct. For further information on the species and its distribution in Ireland see O Connor (2013) and <i>Najas flexilis</i> supporting documents for other SACs (e.g. SACs 002176, 001975, 001932, 000365)
Population depth	Metres	No change to the depth range of <i>Najas flexilis</i> within the lake, subject to natural processes	As the only record for the species was a drift specimen, there is no information on the depth distribution of the species in the SAC. Given that the habitat in the SAC is marginal for <i>Najas flexilis</i> , populations of the species will be difficult to locate (Roden and Murphy, 2014). <i>Najas flexilis</i> is frequently associated with the lower depths of macrophyte growth, where scattered plants gradually give way to bare mud or silt (Preston and Croft, 2001; Roden, 2002). Roden and Murphy (2014) recorded a euphotic depth of 5.1m in Cloonee Middle Lough. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs, for example SACs 002176 (NPWS, 2019), 001975 (NPWS, 2017), 001932 (NPWS, 2017) and 000365 (NPWS, 2017)
Population viability	Plant traits	No decline in plant fitness, subject to natural processes	Wingfield et al. (2004) used certain traits (leaf area/shoot length x reproductive number/shoot length) to assess <i>Najas flexilis</i> plant fitness and indicated a score of less than one would give rise to concern. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Population abundance	Square metres	No change to the cover abundance of <i>Najas flexilis</i> , subject to natural processes	Cover abundance is likely to vary within a lake, with depth, substratum and exposure. It may also vary inter-annually. Such variations may be even more marked in small, marginal populations such as are likely to occur in this SAC. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Species distribution	Occurrence	No decline, subject to natural processes	Despite several dedicated surveys, the exact distribution of the species in this SAC is not known. For further information on the species and its distribution in Ireland, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs and the Article 17 species assessment for <i>Najas flexilis</i> (NPWS, 2019)

Habitat extent	Hectares	No decline, subject to natural processes	Habitat for the species relates to the area and quality of the available habitat for the species. The quality of the habitat for <i>Najas flexilis</i> in Cloonee and Inchiquin Loughs, Uragh Wood SAC appears to be naturally poor (or marginal) and, as a result, its extent is likely to be small. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat for the species	The hydrological regime of the lakes must be maintained so that the area, distribution and depth of the <i>Najas flexilis</i> habitats are not reduced. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the population(s) of the species	<i>Najas flexilis</i> is typically found on soft substrata of mud, silt or fine sand (Preston and Croft, 2001; Roden, 2002, 2004). The sediment chemistry of <i>Najas flexilis</i> lakes is described by Wingfield et al. (2004). For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Water quality	Various	Maintain appropriate water quality to support the population(s) of the species	<i>Najas flexilis</i> is typically associated with high water quality. This is demonstrated by naturally low dissolved nutrients, clear water and low algal growth. Water quality can be measured by the following attributes: nutrient concentrations, phytoplankton biomass, phytoplankton composition and macrophyte status. In the absence of species-specific variables and thresholds, the targets are 'High Status' or oligotrophic. The species' association with mixed geology, including some base-enrichment, is well-documented (Preston and Croft, 2001; Roden, 2004; Wingfield et al., 2004). The base-poor nature of the lakes in the SAC is the likely reason the habitat here is marginal for the species. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations in order to support the population(s) of <i>Najas flexilis</i> , subject to natural processes	Acidification is considered a significant threat to <i>Najas flexilis</i> (Preston and Croft, 2001; Roden, 2004; Wingfield et al., 2004). Wingfield et al. (2004) considered that <i>Najas flexilis</i> has rather specific environmental requirements and occupies a relatively narrow realised niche in Britain and Ireland. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Water colour	mg/l PtCo	Maintain/restore appropriate water colour to support the population(s) of <i>Najas flexilis</i>	Increased water colour and turbidity decrease light penetration and can reduce the area of available <i>Najas flexilis</i> habitat, particularly at the lower euphotic depths. The primary source of increased water colour in Ireland is disturbance to peatland. Roden and Murphy (2014) stated the water in Cloonee Middle Lough is slightly peat-stained. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs
Associated species	Species composition and abundance	Maintain appropriate associated species and vegetation communities to support the population(s) of <i>Najas flexilis</i>	Roden and Murphy (2014) recorded a vegetation typical of oligotrophic lakes with <i>Isoetes lacustris</i> , the Near Threatened <i>I. echinospora</i> (Wyse Jackson et al., 2016), <i>Lobelia dortmanna</i> , <i>Eriocaulon aquaticum</i> , also Near Threatened (Wyse Jackson et al., 2016), and <i>Nitella translucens</i> abundant at depth. For further information on all attributes and targets, see O Connor (2013) and <i>Najas flexilis</i> conservation objective supporting documents for other SACs

Fringing habitat: Hectares
area and condition

Maintain the area and
condition of fringing
habitats necessary to
support the population(s)
of *Najas flexilis*

Fringing habitats are an integral part of the structure
and functioning of lake systems. For further
information on all attributes and targets, see O
Connor (2013) and *Najas flexilis* conservation
objective supporting documents for other SACs

Conservation Objectives for : Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

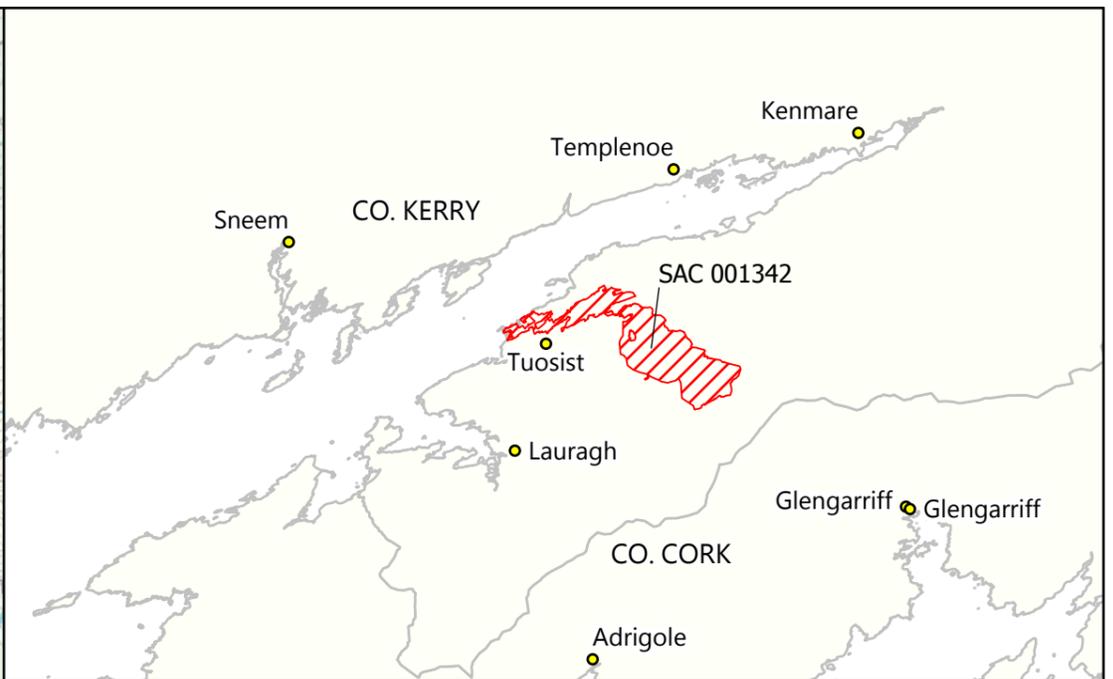
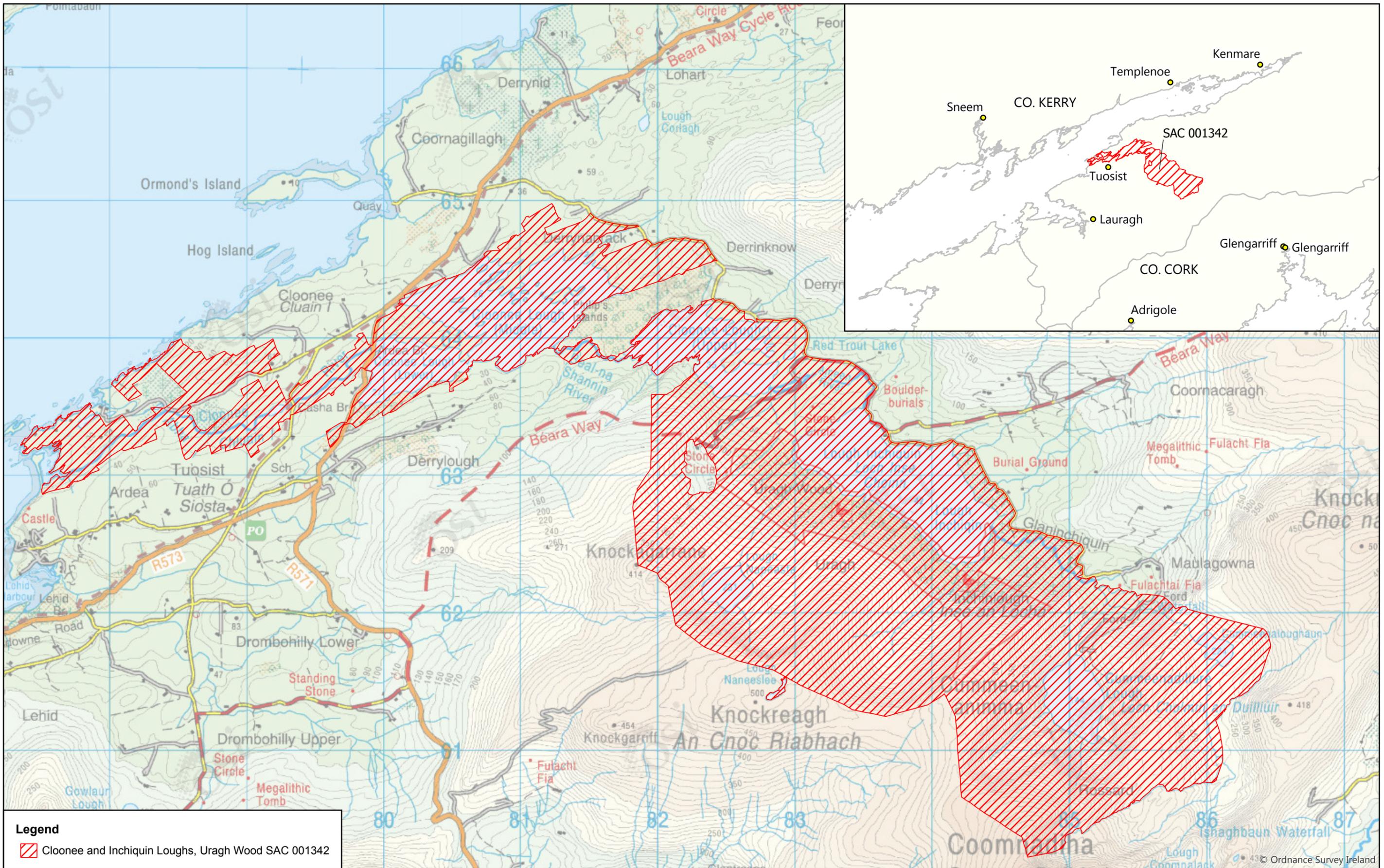
6985

Killarney Fern *Vandenboschia speciosa*

To maintain the favourable conservation condition of Killarney Fern (*Vandenboschia speciosa*) in Cloonee and Inchiquin Loughs, Uragh Wood SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Occurrence	No loss in geographical spread of populations, subject to natural processes	Killarney fern (<i>Vandenboschia speciosa</i> [formerly <i>Trichomanes speciosum</i> , species code 1421]) is currently known from several locations in Cloonee and Inchiquin Loughs, Uragh Wood SAC, within hectad V86. Exact locations are not mapped here on account of the threat posed by illegal collecting. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Number of populations	Number	No decline, subject to natural processes	Two populations of the species have been recorded in the SAC since 1960, one of which has not been re-found since originally recorded in 1967. A possible third population was recorded in 1950/1952 but its exact location, relationship with other records and present status is currently unknown. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Number of colonies	Number	No decline, subject to natural processes	Five colonies of the species have been recorded in the two populations in the SAC since 1960, four in 2017, the fifth not since 1967. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population: life-cycle stage	Type (sporophyte or gametophyte)	Maintain life-cycle stage composition of populations, subject to natural processes	Two of the five colonies recorded since 1960 are composed of sporophytes (frond stage), one of which has co-existing gametophytes (filamentous stage), and three are composed of gametophytes only. It is not known whether or not gametophytes co-existed with the sporophyte colony last recorded in 1967. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population size: area of occupancy	Square metres	No decline, subject to natural processes	Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population size: living sporophyte fronds	Number	No decline, subject to natural processes	Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population structure: young and unfurling fronds	Occurrence	Young (not fully expanded) and/or unfurling (crozier) fronds present in populations previously observed to have these, subject to natural processes	Young and/or unfurling fronds have not been recorded from Cloonee and Inchiquin Loughs, Uragh Wood SAC. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population structure: fertile fronds	Occurrence	Fertile fronds present in populations previously observed to have these, subject to natural processes	Fertile fronds have not been recorded from the SAC. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Population structure: juvenile sporophyte fronds emerging from gametophytes	Number	No decline, subject to natural processes	Juvenile sporophyte fronds emerging from gametophytes have been recorded from the SAC. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files

Habitat extent	Hectares	No loss of suitable habitat, subject to natural processes	The species grows in deeply shaded, humid situations - dripping caves, overhangs and crevices on cliffs, rocky slopes, by waterfalls, in stream ravines and gullies, on rock or soil banks in woodlands and, occasionally, under fallen trees and on the floor of damp woodlands. Whilst also occurring in these habitats, the gametophyte stage can grow in drier areas that do not suit the sporophyte. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Hydrological conditions: wet/damp microhabitats	Occurrence	Maintain hydrological conditions at the locations of known populations - visible water source, with dripping or seeping water present and/or substrate wet/damp to touch, subject to natural processes	Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Hydrological conditions: relative humidity	Percentage	Maintain relative humidity levels at known colonies at not less than 80%, subject to natural processes	Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Hydrological conditions: desiccated fronds	Number	No increase, subject to natural processes	Presence of desiccated sporophyte fronds and gametophyte mats is indicative of unsuitable conditions. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Light levels: shading	Shade index score	At least 4 for woodland sporophyte-only and mixed colonies; at least 5 for open upland sporophyte-only and mixed colonies; at least 6 for gametophyte-only colonies, subject to natural processes	Shade Index: 4. Moderate shade, e.g. light-medium deciduous canopy with sun flecks. 5. Permanently shaded from direct sunlight but otherwise open to sky. 6. Deep woodland (e.g. coniferous or in ravine) shade, no sun flecks. 7. Perpetual deep shade, e.g. cave entrance, beneath boulder. The species occurs in deep shade in woodland in Cloonee and Inchiquin Loughs, Uragh Wood SAC. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Woodland canopy cover	Percentage	No loss of woodland canopy at, or in the vicinity of, the locations of known populations and canopy cover here maintained at more than 33%, subject to natural processes	Woodland management at or near to locations of known populations of the species must take account of its habitat requirements, particularly with regard to maintenance of sufficient canopy cover. The species occurs in woodland in Cloonee and Inchiquin Loughs, Uragh Wood SAC. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files
Invasive species	Occurrence	Maintain absence of invasive non-native and vigorous native plant species at the locations of known populations or, if present, maintain vegetation cover of these at less than 10%, taking into account the habitat requirements of <i>V. speciosa</i>	In order to avoid negative impacts on the Killarney fern (<i>Vandenboschia speciosa</i>), its habitat requirements (site hydrology, relative humidity, canopy cover, shading levels, etc.) must be taken into account in locations that are subject to or proposed for management actions to control invasive non-native and/or vigorous native plant species. Based on Ní Dhúill et al. (2015, in prep.), NPWS (2019) and NPWS internal files



Legend

 Clonoee and Inchiquin Loughs, Uragh Wood SAC 001342



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MAP 1:
CLOONEE AND INCHQUIN LOUGHS, URAGH WOOD SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

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

SITE CODE:
SAC 001342; version 3.01. CO. KERRY

0 325 650 975 1,300 Meters

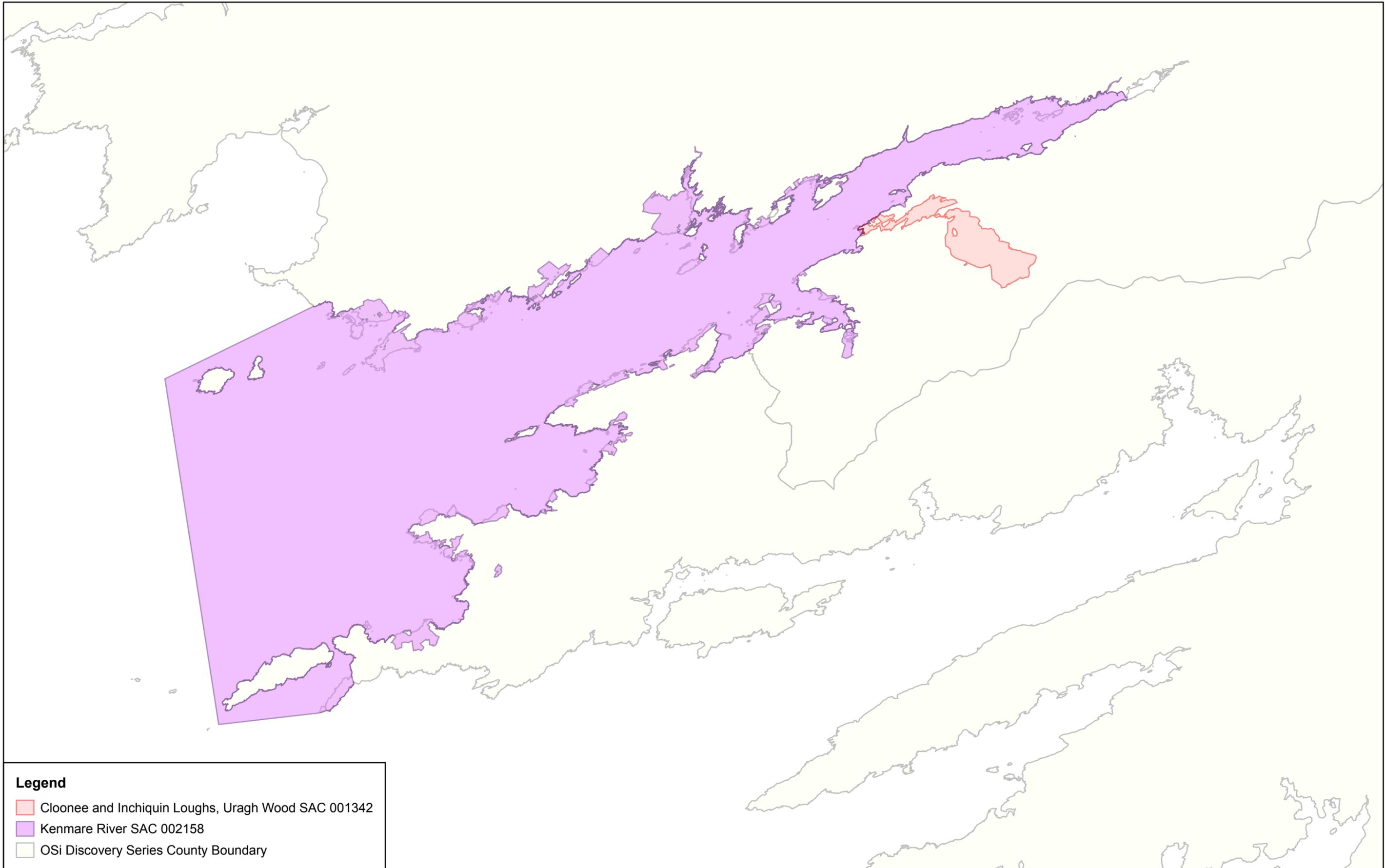
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.
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Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbheithnithe a déanamh ar theorainneacha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

N



Map Version 1
Date: June 2019



Legend

- Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342
- Kenmare River SAC 002158
- OSi Discovery Series County Boundary

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MAP 2:
CLOONEE AND INCHIQVIN LOUGHS, URAGH WOOD SAC
CONSERVATION OBJECTIVES ADJACENT
ADJOINING AND OVERLAPPING DESIGNATIONS

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

SITE CODE:
SAC 001342; version 3.01. SAC 002158; version 3.04
CO. KERRY, CO. CORK

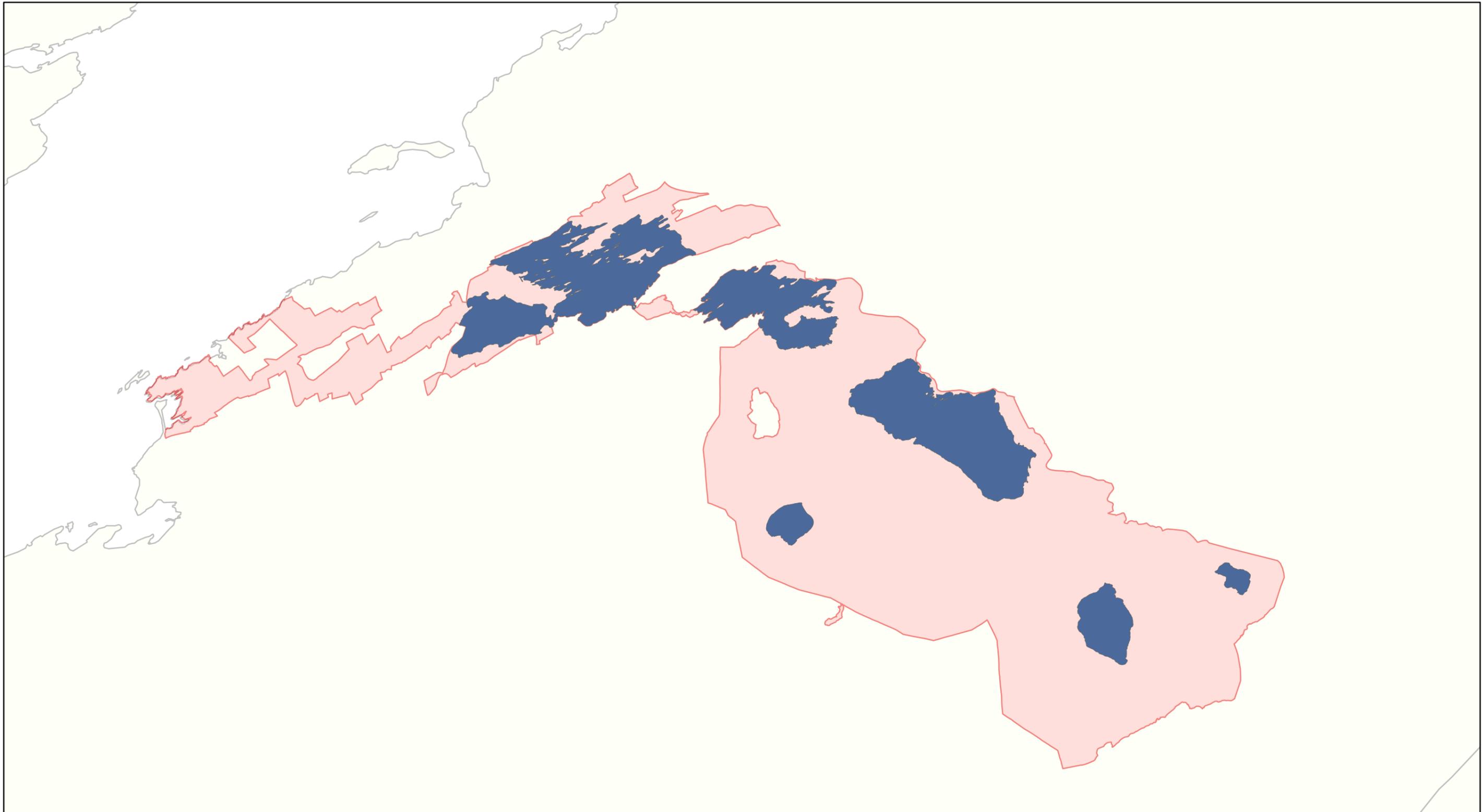
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Map Version 1
Date: June 2019



Legend

- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342
- OSi Discovery Series County Boundary

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**MAP 3:
CLOONEE AND INCHQUIN LOUGHS, URAGH WOOD SAC
CONSERVATION OBJECTIVES
LAKE HABITATS**

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

**SITE CODE:
SAC 001342; version 3.01,
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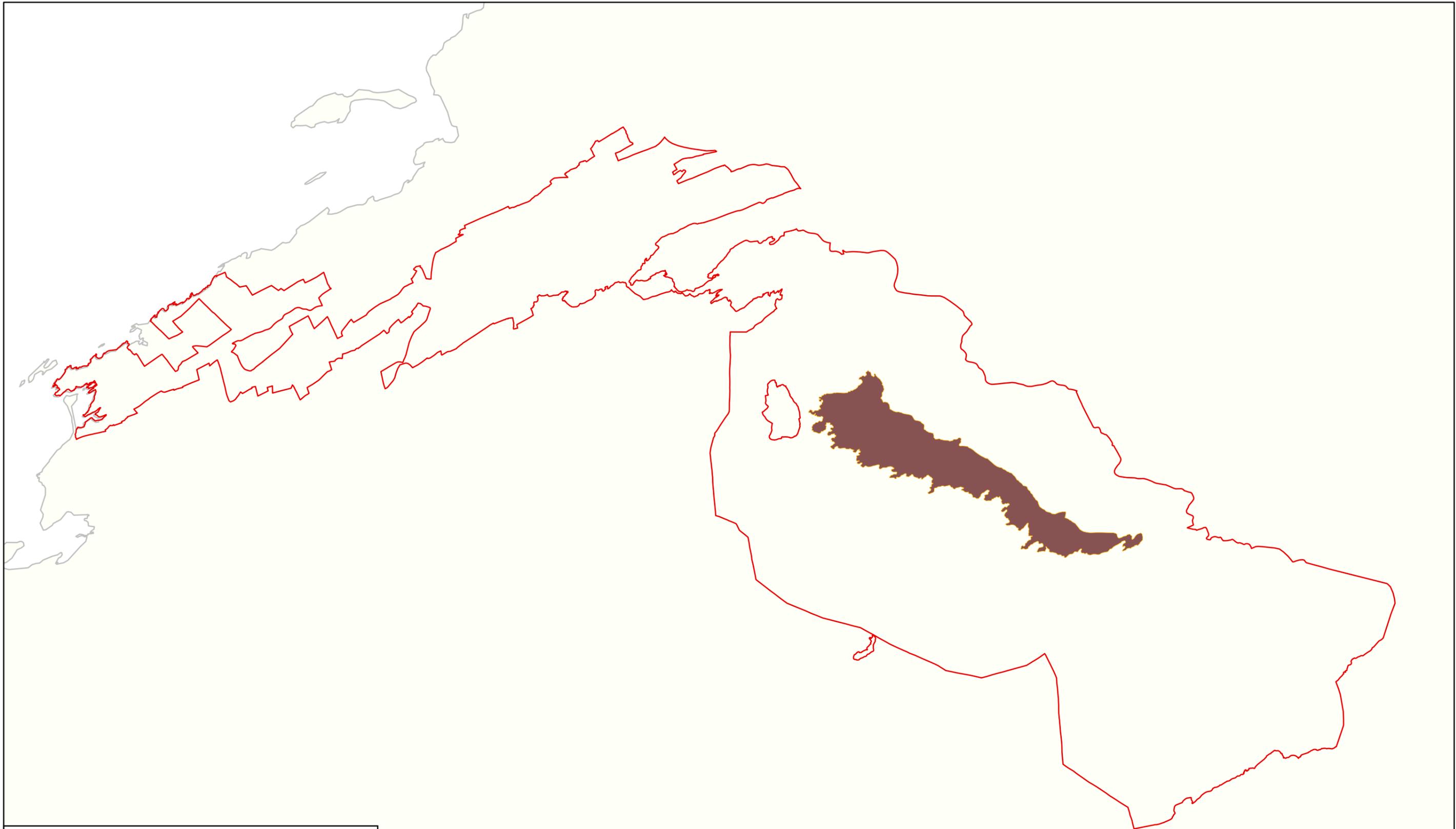
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N

**Map Version 1
Date: June 2019**



Legend

- 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342
- OSi Discovery Series County Boundary

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MAP 4:
CLOONEE AND INCHIQUIN LOUGHS, URAGH WOOD SAC
CONSERVATION OBJECTIVES
WOODLAND HABITATS

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

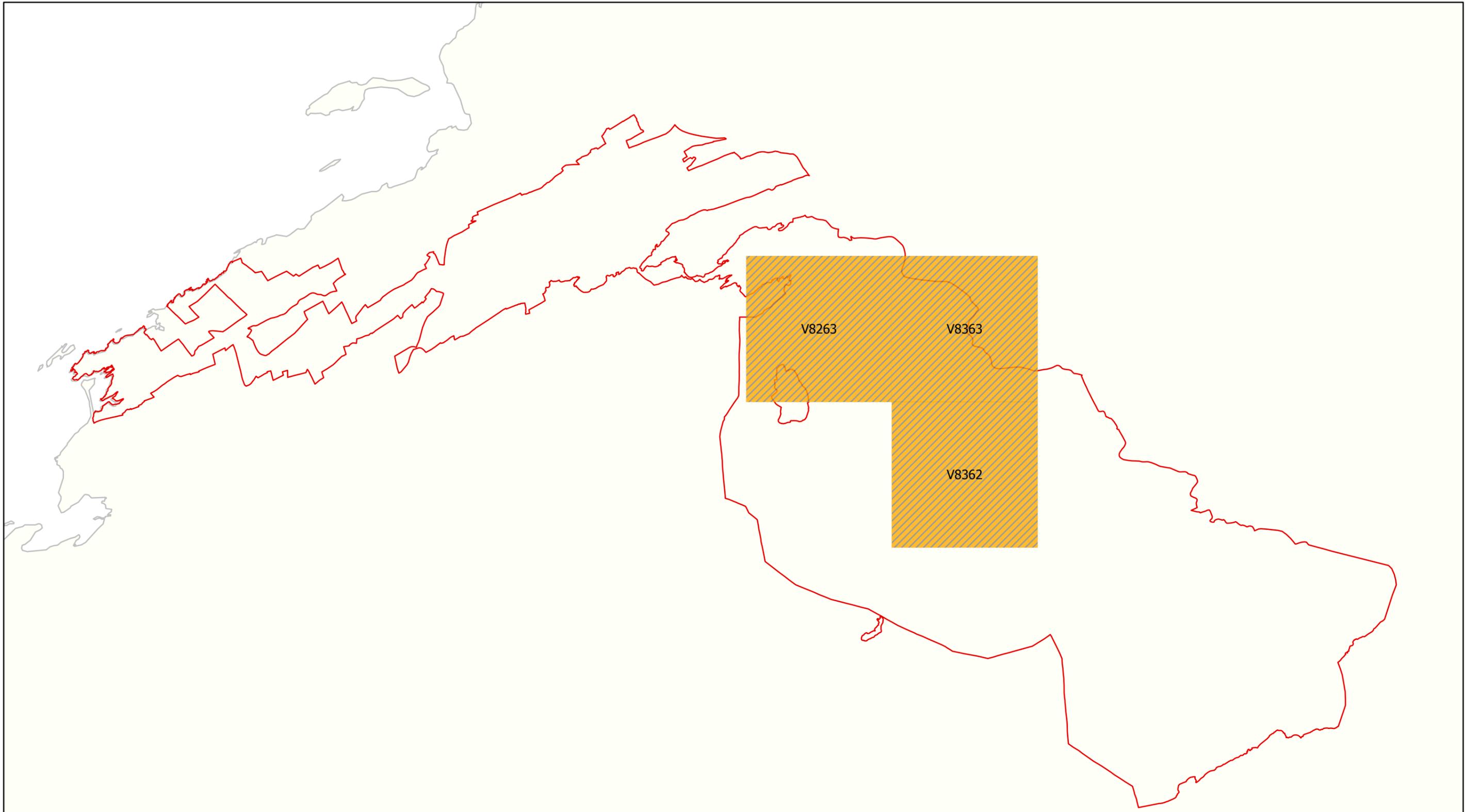
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Map Version 1
Date: June 2019



Legend

- Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342
- OSi Discovery Series County Boundary
- 1024 Kerry Slug *Geomalacus maculosus*

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**MAP 5:
CLOONEE AND INCHQUIN LOUGHS, URAGH WOOD SAC
CONSERVATION OBJECTIVES
KERRY SLUG**

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

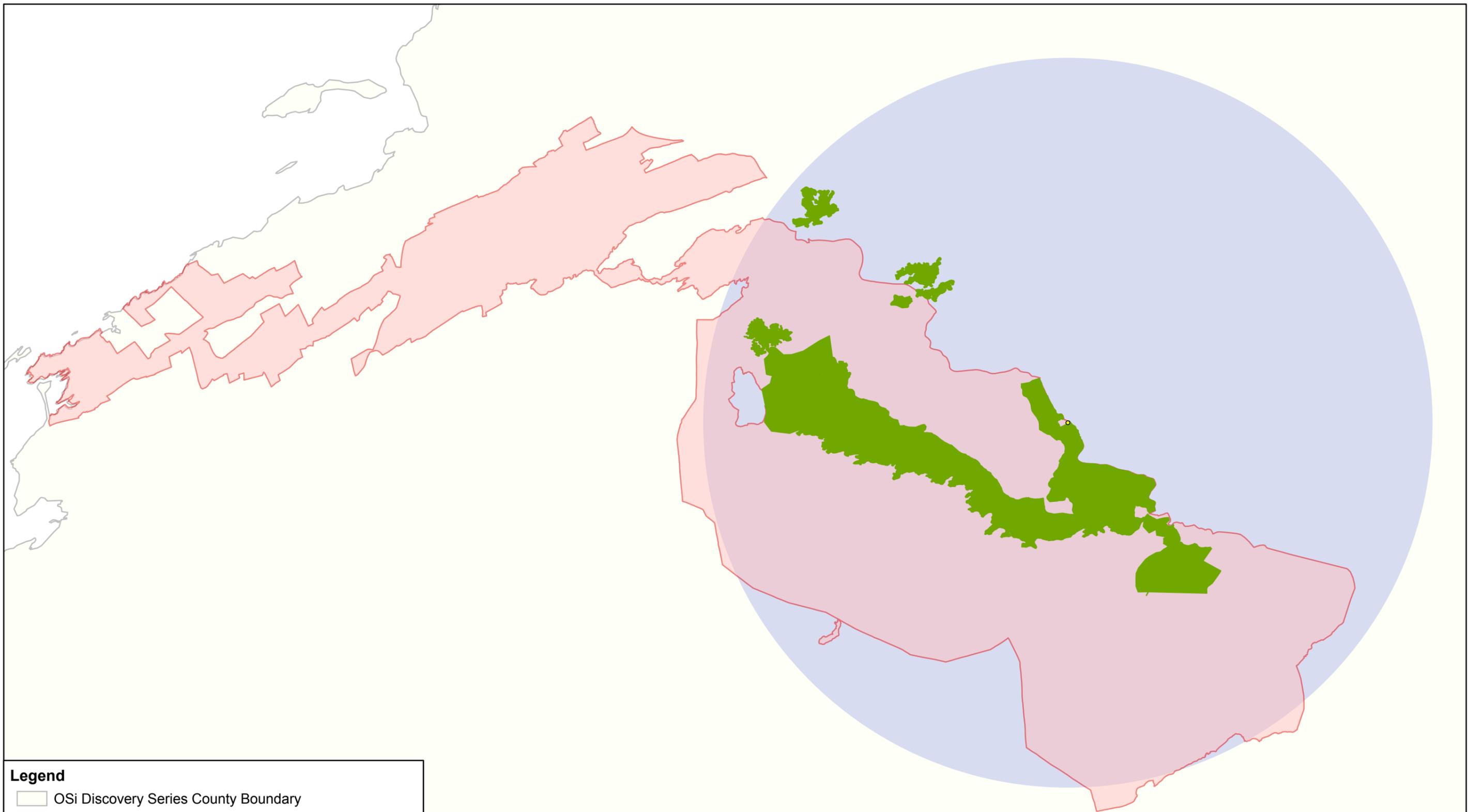
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SAC 001342; version 3.01.
CO. KERRY, CO. CORK**

0 0.3 0.6 0.9 1.2 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: June 2019**



Legend

- OSi Discovery Series County Boundary
- Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342
- 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros***
- Roost Location
- Roost ID 457 Foraging Range
- Potential Foraging Grounds