

# National Parks and Wildlife Service

## *Conservation Objectives Series*

### Muckish Mountain SAC 001179



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*

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001179	Muckish Mountain SAC
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4060	Alpine and Boreal heaths
8220	Siliceous rocky slopes with chasmophytic vegetation

**Please note that this SAC overlaps with Derryveagh and Glendowan Mountains SPA (004039). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping site 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>	1973
<b>Title :</b>	A Report on Areas of Biological and Geological Interest in County Donegal
<b>Author :</b>	Young, R.
<b>Series :</b>	Unpublished Report
<b>Year :</b>	1998
<b>Title :</b>	A Survey of Protected, Threatened and Scarce Plant Species in County Donegal
<b>Author :</b>	Conaghan, J.
<b>Series :</b>	Unpublished report to NPWS
<b>Year :</b>	2005
<b>Title :</b>	Conservation Plan for 2005-2010. Muckish Mountain cSAC Site Code 001179 Co. Donegal
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation Plan
<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>	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>	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>	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation assessments
<b>Year :</b>	2014
<b>Title :</b>	Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland, Version 2.0
<b>Author :</b>	Perrin, P.M.; Barron, S.J.; Roche, J.R.; O'Hanrahan, B.
<b>Series :</b>	Irish Wildlife Manuals, No. 79
<b>Year :</b>	2015
<b>Title :</b>	Conservation assessment and monitoring methods for the Annex V Clubmoss group ( <i>Lycopodium</i> spp.) in Ireland
<b>Author :</b>	Smyth, N.; Nienhuis, C.; Muldoon, C.; Lynn, D.
<b>Series :</b>	Irish Wildlife Manuals, No. 86
<b>Year :</b>	2016
<b>Title :</b>	Ireland Red List No. 10: Vascular Plants
<b>Author :</b>	Wyse Jackson, M.; FitzPatrick, Ú.; Cole, E.; Jebb, M.; McFerran, D.; Sheehy Skeffington, M.; Wright, M.
<b>Series :</b>	Ireland Red List Series, NPWS

**Year :** 2016  
**Title :** Survey of Flora Protection Order Bryophytes 2016  
**Author :** Hodd, R.L.  
**Series :** Unpublished report to NPWS

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## Other References

**Year :** 2012  
**Title :** Rare and threatened bryophytes of Ireland  
**Author :** Lockhart, N.; Hodgetts, N.; Holyoak, D.  
**Series :** National Museums Northern Ireland

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**Year :** 2017  
**Title :** Irish Vegetation Classification: Technical Progress Report No. 3  
**Author :** Perrin, P.  
**Series :** Report submitted to National Biodiversity Data Centre

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## Conservation Objectives for : Muckish Mountain SAC [001179]

### 4060 Alpine and Boreal heaths

**To maintain the favourable conservation condition of Alpine and Boreal heaths in Muckish Mountain 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	Alpine and Boreal heaths has not been mapped in detail for Muckish Mountain SAC and thus the exact total current area of the qualifying habitat in the SAC is unknown. The summit and upper spurs and slopes of Muckish Mountain, a flat-topped mountain (c.670m in altitude) where peat is absent or very thin over much of the surface, mostly supports a dwarf Alpine and Boreal heath vegetation (Young, 1973; NPWS internal files). See NPWS (2005) for further details on the habitat in the SAC
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 Alpine and Boreal heath 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; <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: 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	Attribute and target based on Perrin et al. (2014). Alpine and Boreal heath is not necessarily rich in lichen and bryophyte species, but a minimum amount should still be present. Lichens and bryophytes recorded in the habitat in Muckish Mountain SAC include the lichen <i>Cladonia furcata</i> and the bryophytes <i>Anastrepta orcadensis</i> , <i>Bazzania tricenata</i> , <i>Isoetecium myosuroides</i> var. <i>brachythecioides</i> , <i>Herbertus aduncus</i> subsp. <i>hutchinsiae</i> , <i>Racomitrium lanuginosum</i> , <i>Rhytidiadelphus loreus</i> and <i>Scapania gracilis</i> (Hodd, 2016; NPWS internal files)
Vegetation composition: positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of positive indicator species at least 66%	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented. Positive indicator species recorded in the habitat in the SAC include dwarf willow ( <i>Salix herbacea</i> ), juniper ( <i>Juniperus communis</i> ), bilberry ( <i>Vaccinium myrtillus</i> ), cowberry ( <i>V. vitis-idaea</i> ), crowberry ( <i>Empetrum nigrum</i> ), bearberry ( <i>Arctostaphylos uva-ursi</i> ), ling heather ( <i>Calluna vulgaris</i> ), bell heather ( <i>Erica cinerea</i> ), stiff sedge ( <i>Carex bigelowii</i> ), Alpine clubmoss ( <i>Diphasiastrum alpinum</i> ), <i>Cladonia furcata</i> , <i>Herbertus aduncus</i> subsp. <i>hutchinsiae</i> , <i>Racomitrium lanuginosum</i> and <i>Scapania gracilis</i> (NPWS, 2005; Hodd, 2016; NPWS internal files)
Vegetation composition: dwarf shrub species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of dwarf shrub species at least 10%	Attribute and target based on Perrin et al. (2014). A lower cover of dwarf shrubs could indicate that the habitat is transitional to grassland or other montane vegetation
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 10%	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 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 structure: signs of grazing	Percentage of leaves grazed at a representative number of 2m x 2m monitoring stops	Less than 10% collectively of the live leaves of specific graminoids showing signs of grazing	Attribute and target based on Perrin et al. (2014). The specific graminoids are stiff sedge ( <i>Carex bigelowii</i> ), wavy hair-grass ( <i>Deschampsia flexuosa</i> ), sheep's-fescue ( <i>Festuca ovina</i> ) and viviparous sheep's-fescue ( <i>Festuca vivipara</i> ). High levels of grazing of these species would be undesirable as grazing is not required to maintain this habitat
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 and crowberry ( <i>Empetrum nigrum</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 within the habitat	Attribute and target based on Perrin et al. (2014). Alpine and Boreal heath does not require burning for the maintenance of the habitat
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. In this SAC, the habitat's inaccessibility and remoteness means it is relatively undisturbed, apart from natural wind erosion, sheep grazing and hill-walkers (NPWS, 2005). It has been reported that wind-blown fine sand from a disused quarry, formerly worked for white silica sand, on the north face of Muckish has been deposited on the peat surface of the habitat near the quarry (NPWS, 2005)
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 (FPO) and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). The Annex V listed clubmosses Alpine clubmoss ( <i>Diphasiastrum alpinum</i> ), which is classified as Near Threatened (Wyse Jackson et al., 2016), and fir clubmoss ( <i>Huperzia selago</i> ) occur in the habitat in the SAC (NPWS, 2005; Smyth et al., 2015; NPWS internal files). Hepatic mats and a number of Red Listed and Near Threatened bryophytes are associated with the habitat in the SAC, including the Vulnerable and FPO listed hepatic mat liverworts <i>Adelanthus lindenbergianus</i> and <i>Scapania ornithopodioides</i> (Lockhart et al., 2012; Hodd, 2016)



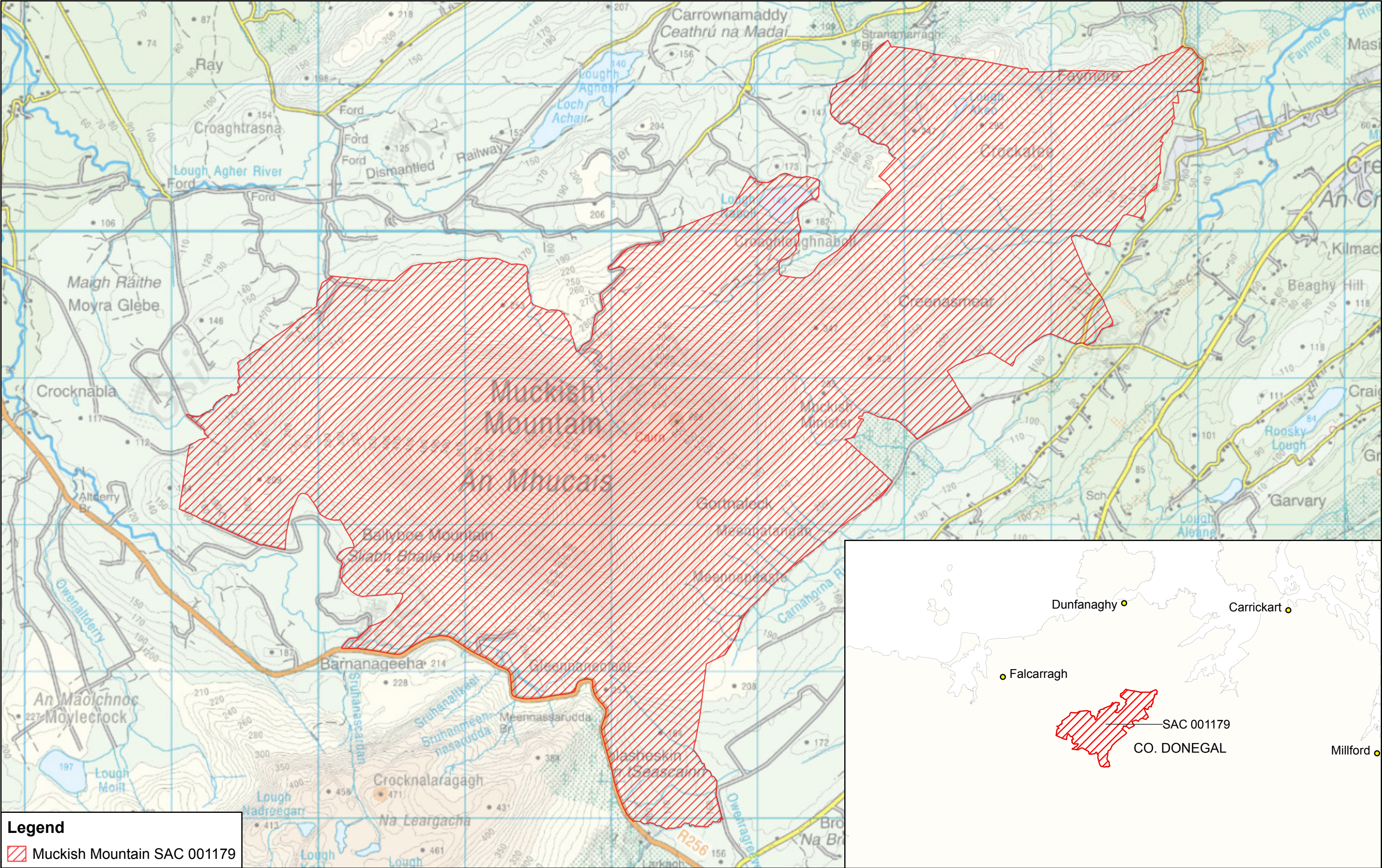
## Conservation Objectives for : Muckish Mountain SAC [001179]

### 8220 Siliceous rocky slopes with chasmophytic vegetation

**To maintain the favourable conservation condition of Siliceous rocky slopes with chasmophytic vegetation in Muckish Mountain 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 Muckish Mountain SAC and thus the exact total area of the qualifying habitat in the SAC is currently unknown. The habitat occurs as an extensive area of sparsely vegetated acidic quartzite cliffs below the summit plateau of Muckish Mountain and above the scree slopes (NPWS, 2005; 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)
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). The list of positive indicator species for this habitat is also presented in Perrin et al. (2014) and is the same as for Siliceous scree of the montane to snow levels ( <i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i> ) (EU habitat code 8110). Positive indicator species recorded in the habitat in the SAC include St. Patrick's cabbage ( <i>Saxifraga spathularis</i> ) and hard fern ( <i>Blechnum spicant</i> ). Other species recorded include mountain avens ( <i>Dryas octopetala</i> ) and fir clubmoss ( <i>Huperzia selago</i> ) (NPWS, 2005; NPWS internal files)
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)
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)
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 (FPO) and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). The Vulnerable Alpine saw-wort ( <i>Saussurea alpina</i> ) has been recorded in the habitat in the SAC (NPWS, 2005; NPWS internal files). The Annex V listed species fir clubmoss ( <i>Huperzia selago</i> ) occurs in the habitat in the SAC (NPWS, 2005; NPWS internal files). Rare bryophytes associated with the habitat in the SAC include the FPO listed and Endangered species <i>Brachydontium trichodes</i> and <i>Gymnomitrium concinnatum</i> and the Near Threatened moss <i>Tetradontium brownianum</i> (Lockhart et al., 2012; Hodd, 2016). The Vulnerable holly-fern ( <i>Polystichum lonchitis</i> ) (Wyse Jackson et al., 2016) has been recorded on the slopes of Muckish Mountain (Conaghan, 1998), but cannot be specifically assigned to this habitat





Legend

Muckish Mountain SAC 001179

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MAP 1:  
MUCKISH MOUNTAIN SAC  
CONSERVATION OBJECTIVES  
SAC DESIGNATION

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

SITE CODE:  
SAC 001179; version 3.0. CO. DONEGAL

03006009001,200

Meters

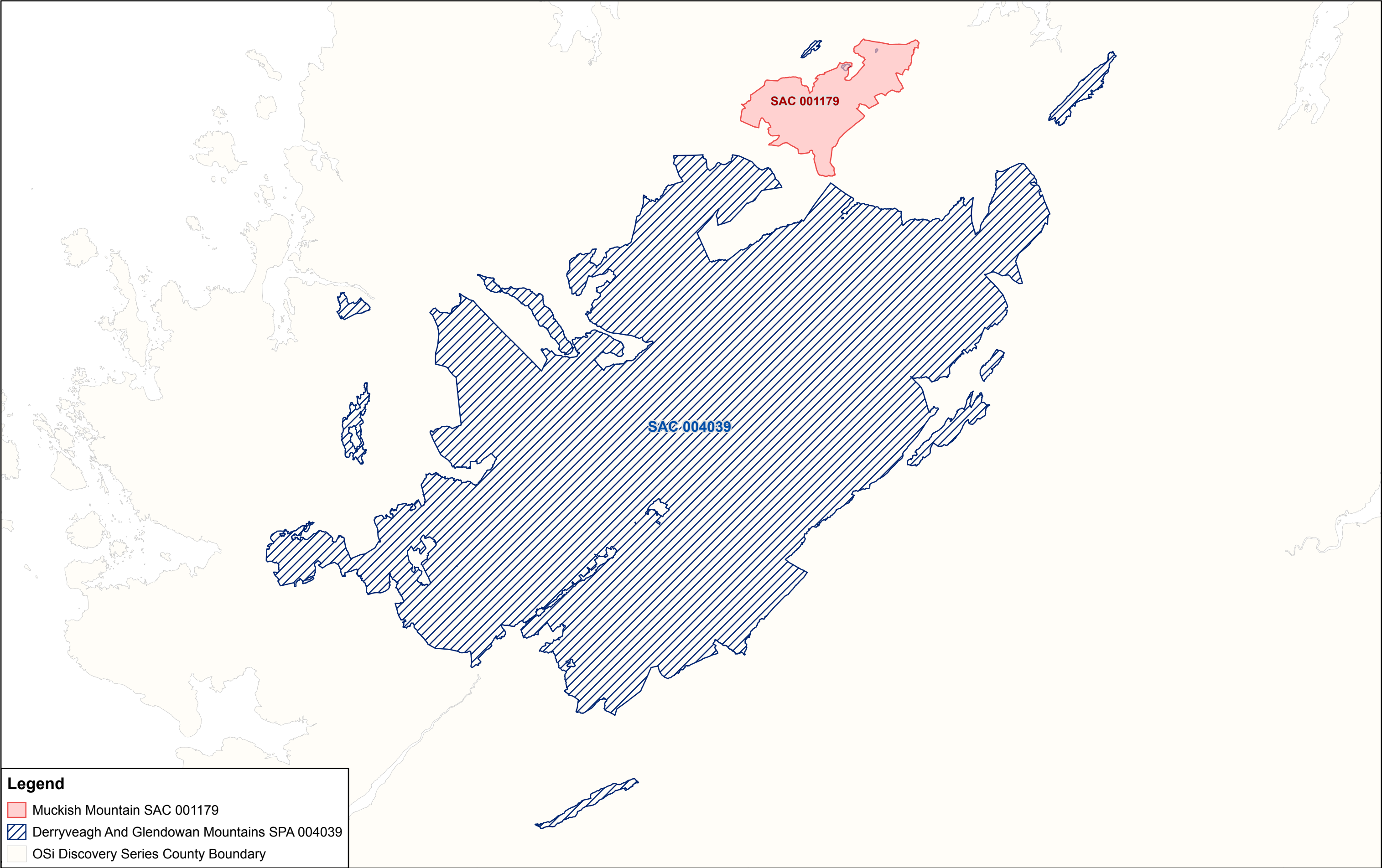
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
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Nil sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe. Suirbhéarachta Ordonáis na hÉireann Ceadúnas Uimh EN 0059216. © Suirbhéarachta Ordonáis na hÉireann Rialtas na hÉireann

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Map Version 1  
Date: Feb 2019





**Legend**

■ Muckish Mountain SAC 001179

▨ Derryveagh And Glendowan Mountains SPA 004039

□ OSi Discovery Series County Boundary



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**MAP 2:**  
**MUCKISH MOUNTAIN SAC**  
**CONSERVATION OBJECTIVES**  
**OVERLAPPING, ADJACENT**  
**AND ADJOINING DESIGNATIONS**

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

**SITE CODE:**  
**SAC 001179; version 3.0.**  
**SPA 004039; version 3.02.**  
**CO. DONEGAL**

0 1.5 3 4.5 6 Kilometers

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 EN 0059216. © Suirbhéarachta Ordonáis na hÉireann Rialtas na hÉireann



**Map Version 1**  
**Date: Feb 2019**