

National Parks and Wildlife Service

Conservation Objectives Series

Carriggower Bog SAC 000716



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

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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*

000716 Carriggower Bog SAC

7140 Transition mires and quaking bogs

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 :	Areas of Scientific Interest in Co. Wicklow
Author :	Curtis, T.
Series :	Unpublished report
Year :	2008
Title :	Field survey of rare, threatened and scarce vascular plants in County Wicklow
Author :	Curtis, T.; Wilson, F.
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 :	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 :	2012
Title :	Ireland Red List No. 8: Bryophytes
Author :	Lockhart, N.; Hodgetts, N.; Holyoak, D.
Series :	Ireland Red List series, NPWS
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 :	Conservation status assessments for three fen habitat types - 7230 – Alkaline fens, 7210 – Calcareous fens with <i>Cladium mariscus</i> and species of <i>Caricion davallianae</i> and 7140 – Transition mires and quaking bogs
Author :	Kimberley, S.
Series :	Unpublished report to NPWS
Year :	2013
Title :	Survey of Marsh Fritillary Colonies – South and East Ireland 2012
Author :	Wilson, F.; Bond, K.; Crushell, P.; Foss, P.J.; Osthoff, C.
Series :	Unpublished report to 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 :	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 : 2018
Title : Backing document – National Conservation Status Assessments (NCAs) for three fen habitat types: 7140 – Transition mires and quaking bogs, 7210 – Calcareous fens with *Cladium mariscus* and species of *Caricion davallianae*, 7230 – Alkaline fens
Author : Long, M.P.; Crowe, O.; Kimberley, S.; Denyer, J.
Series : Unpublished report to NPWS

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

Other References

Year : 1950
Title : The Flora of the County Wicklow. Flowering Plants, Cryptogams and Characeae
Author : Brunner, J.P.
Series : Dundalgan Press, Dundalk

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

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

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

Year : 2018
Title : An investigation of fen vegetation communities: Carriggower Bog SAC, County Wicklow
Author : Cappelli, L.R.
Series : Unpublished M.Sc. thesis, Trinity College Dublin

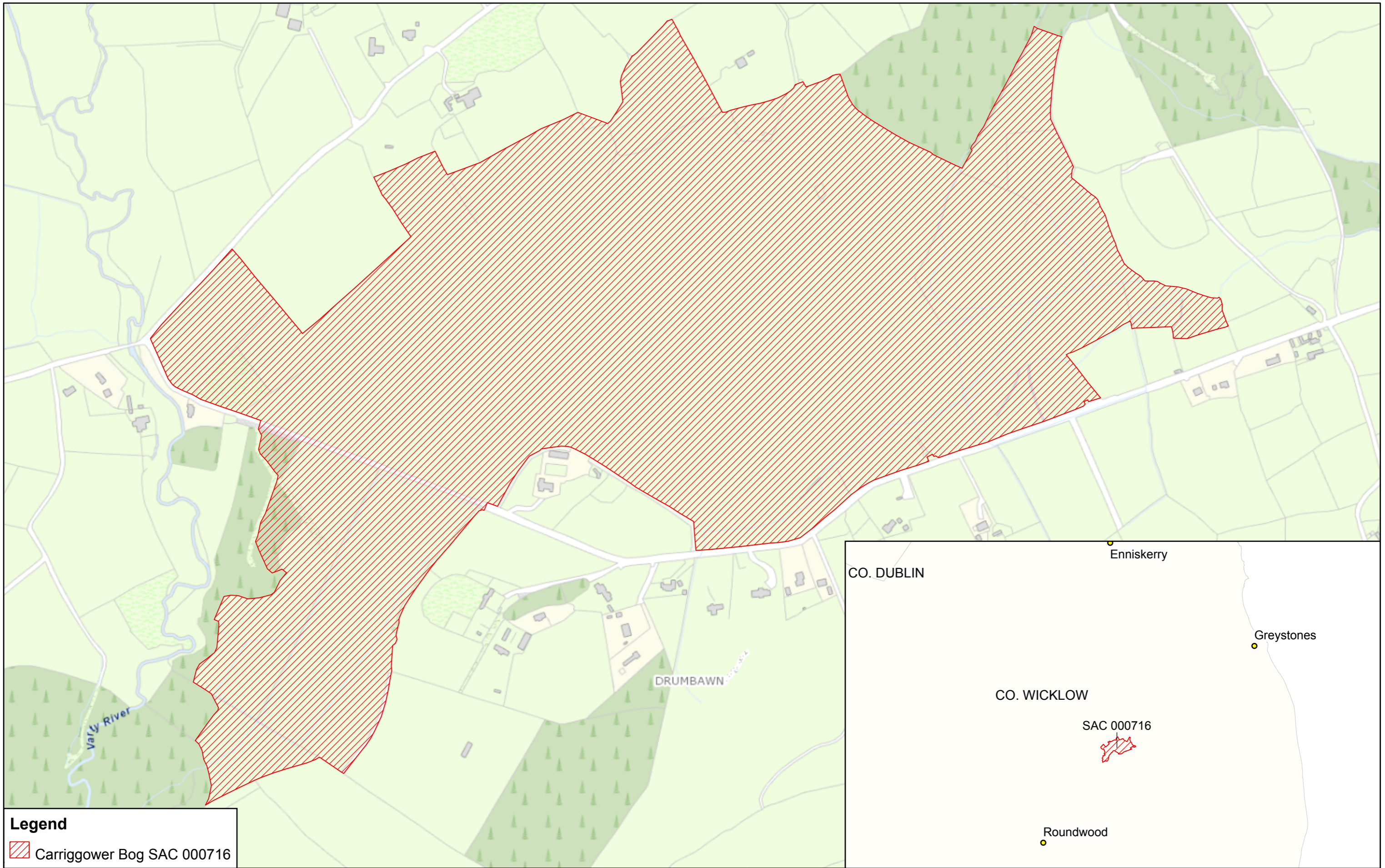
Conservation Objectives for : Carriggower Bog SAC [000716]


7140 Transition mires and quaking bogs

To maintain the favourable conservation condition of Transition mires and quaking bogs in Carriggower Bog 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	Very wet and quaking areas of transition mire occur mostly on the western side of Carriggower Bog SAC. A study to investigate the vegetation communities associated with transition mire in the SAC was undertaken by Cappelli (2018). This study should be consulted for further details. The transition mire habitat occurs in association with wet blanket bog, heath and poor fen habitats (Cappelli, 2018; NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for Habitat area above
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). See also Bobbink and Hettelingh (2011)
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time
Ecosystem function: hydrology - water levels	Centimetres; duration of water levels	Maintain appropriate water levels necessary to support the natural structure and functioning of the habitat	Maintenance of a permanently high water level, remaining close to the peat surface all year, with water level fluctuations within natural ranges, is required for this wetland habitat. See Kimberley (2013) and Long et al. (2018). A manually operated sluice was installed in this SAC in the mid-1990s to help control water levels (NPWS internal files)
Ecosystem function: hydrology - flow patterns	Flow direction	Maintain appropriate topography and water movement regime necessary to support the natural structure and functioning of the habitat	Maintenance, both within and surrounding the habitat, of topography and flow patterns within natural ranges is essential in order to ensure the hydrological integrity of this wetland habitat
Ecosystem function: water quality	Water chemistry measures	Maintain appropriate water quality to support the natural structure and functioning of the habitat	The surface water conditions necessary to maintain transition mires range from acidic to slightly base-rich. The vegetation typically has intimate mixtures of species considered to be acidophile and others considered calciphile. In other cases, these intermediate properties may reflect the actual process of succession, as peat accumulates in groundwater-fed fen or open water to produce rainwater-fed bog isolated from groundwater influence
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	Cappelli (2018) identified five vegetation communities in and associated with the habitat in the SAC, including poor flush and wet heath communities, in addition to recording areas of fen carr and gorse. See Cappelli (2018) for further details. 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, 2018; www.biodiversityireland.ie/projects/national-vegetation-database/irish-vegetation-classification)

Vegetation composition: typical vascular plants and bryophytes	Percentage cover at a representative number of 2m x 2m monitoring stops	Maintain adequate cover of typical vascular plant and bryophyte species	For lists of typical vascular plant and bryophyte species, including high quality indicator species, see the Article 17 conservation status assessment for transition mires and quaking bogs (NPWS, 2019) and the fen habitats supporting document (Long et al., 2018). See also Perrin et al. (2014) and JNCC (2004). In this SAC, typical species recorded in the habitat include bottle sedge (<i>Carex rostrata</i>), bog-sedge (<i>C. limosa</i>), common cottongrass (<i>Eriophorum angustifolium</i>), purple moor-grass (<i>Molinia caerulea</i>), common marsh-bedstraw (<i>Galium palustre</i>), bogbean (<i>Menyanthes trifoliata</i>), lesser spearwort (<i>Ranunculus flammula</i>), marsh-marigold (<i>Caltha palustris</i>), marsh cinquefoil (<i>Comarum palustre</i>), marsh pennywort (<i>Hydrocotyle vulgaris</i>) and a range of bryophytes, including <i>Aulacomnium palustre</i> and <i>Calliergonella cuspidata</i> (Curtis, 1976; Cappelli, 2018; NPWS internal files)
Vegetation composition: native negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable activities such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicator species that could suggest drying out include ling (<i>Calluna vulgaris</i>) and birch (<i>Betula pubescens</i>)
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances
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
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, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for peatlands. Poaching by deer has been reported as occurring in the habitat in the SAC (Curtis and Wilson, 2008)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 (FPO) and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). A variety of rare and scarce invertebrates (notably within the Order Diptera) have been recorded in the habitat in the SAC (NPWS internal files). The Annex II listed and Vulnerable marsh fritillary butterfly (<i>Euphydryas aurinia</i>) (Regan et al., 2010) has been recorded in the SAC (see Wilson et al., 2013; Cappelli, 2018). There is an historic record of the FPO listed and Near Threatened bog orchid (<i>Hammarbya paludosa</i>) from the vicinity of the SAC (see Bruncker, 1950), but the species was not found during a targeted survey in 2007 in the SAC, although suitable habitat for the species was present (Curtis and Wilson, 2008). The Near Threatened moss <i>Sphagnum teres</i> (Lockhart et al., 2012) has also been recently recorded in the habitat in the SAC (Maurice Eakin, NPWS, pers. comm.)



Legend
 Carrigower Bog SAC 000716

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**MAP 1:
 CARRIGOWER BOG SAC
 CONSERVATION OBJECTIVES
 SAC DESIGNATION**
 Map to be read in conjunction with the NPWS Conservation Objectives Document.

**SITE CODE:
 SAC 000716; version 3.01. CO. WICKLOW**

0 70 140 210 280 Meters

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: Jan 2019**