

# National Parks and Wildlife Service

## *Conservation Objectives Series*

### Castletaylor Complex SAC 000242



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage

**National Parks and Wildlife Service,  
Department of Housing, Local Government and Heritage,  
90 King Street North, Dublin 7, D07 N7CV, Ireland.  
Web: [www.npws.ie](http://www.npws.ie)  
E-mail: [natureconservation@housing.gov.ie](mailto:natureconservation@housing.gov.ie)**

**Citation:**

**NPWS (2021) Conservation Objectives: Castletaylor Complex SAC 000242.  
Version 1. National Parks and Wildlife Service, Department of Housing, Local  
Government and Heritage.**

**Series Editors: Rebecca Jeffrey and Christina Campbell  
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*

---

000242      Castletaylor Complex SAC

---

3180      Turloughs\*

4060      Alpine and Boreal heaths

5130      *Juniperus communis* formations on heaths or calcareous grasslands

6210      Semi-natural dry grasslands and scrubland facies on calcareous substrates  
(Festuco-Brometalia) (\* important orchid sites)

8240      Limestone pavements\*

## 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>	1992
<b>Title :</b>	Turloughs over 10ha - Vegetation survey and evaluation
<b>Author :</b>	Goodwillie, R.N.
<b>Series :</b>	Unpublished report to NPWS
<b>Year :</b>	2007
<b>Title :</b>	Grasslands monitoring project 2006
<b>Author :</b>	Dwyer, R.; Crowley, W.; Wilson, F.
<b>Series :</b>	Unpublished report to NPWS
<b>Year :</b>	2009
<b>Title :</b>	Irish Red List No. 1 - Water beetles
<b>Author :</b>	Foster, G.N.; Nelson, B.H.; O Connor, Á.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2009
<b>Title :</b>	Ireland Red List No. 2: Non-marine molluscs
<b>Author :</b>	Byrne, A.; Moorkens, E.A.; Anderson, R.; Killeen, I.J.; Regan, E.C.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2010
<b>Title :</b>	Ireland Red List No. 4: Butterflies
<b>Author :</b>	Regan, E.C.; Nelson, B.; Aldwell, B.; Bertrand, C.; Bond, K.; Harding, J.; Nash, D.; Nixon, D.; Wilson, C.J.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2012
<b>Title :</b>	The conservation status of juniper formations in Ireland
<b>Author :</b>	Cooper, F.; Stone, R.E.; McEvoy, P.; Wilkins, T.; Reid, N.
<b>Series :</b>	Irish Wildlife Manuals, No. 63
<b>Year :</b>	2012
<b>Title :</b>	Ireland Red List No. 8: Bryophytes
<b>Author :</b>	Lockhart, N.; Hodgetts, N.; Holyoak, D.
<b>Series :</b>	Ireland Red List series, NPWS
<b>Year :</b>	2013
<b>Title :</b>	Irish semi-natural grasslands survey 2007-2012
<b>Author :</b>	O'Neill, F.H.; Martin, J.R.; Devaney, F.M.; Perrin, P.M.
<b>Series :</b>	Irish Wildlife Manuals, No. 78
<b>Year :</b>	2013
<b>Title :</b>	National survey of limestone pavement and associated habitats in Ireland
<b>Author :</b>	Wilson, S.; Fernandez, F.
<b>Series :</b>	Irish Wildlife Manuals, No. 73
<b>Year :</b>	2015
<b>Title :</b>	Turlough hydrology, ecology and conservation (Part 1)
<b>Author :</b>	Waldren, S. (ed.)
<b>Series :</b>	Unpublished report to NPWS

<b>Year :</b>	2015
<b>Title :</b>	Turlough hydrology, ecology and conservation (Part 2)
<b>Author :</b>	Waldren, S. (ed.)
<b>Series :</b>	Unpublished report to NPWS
<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 Lists series, NPWS
<b>Year :</b>	2017
<b>Title :</b>	Conservation objectives supporting document: Turloughs* and Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidenton</i> p.p. vegetation
<b>Author :</b>	O Connor, Á.
<b>Series :</b>	Conservation objectives supporting document
<b>Year :</b>	2018
<b>Title :</b>	The Irish Juniper Monitoring Survey 2017
<b>Author :</b>	O'Neill, F.H.; Martin, J.R.
<b>Series :</b>	Irish Wildlife Manuals, No. 101
<b>Year :</b>	2018
<b>Title :</b>	The Irish Juniper Monitoring Survey 2017 - Appendices
<b>Author :</b>	O'Neill, F.H.; Martin, J.R.
<b>Series :</b>	Irish Wildlife Manuals, No. 101
<b>Year :</b>	2018
<b>Title :</b>	The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats
<b>Author :</b>	Martin, J.R.; O'Neill, F.H.; Daly, O.H.
<b>Series :</b>	Irish Wildlife Manuals, No. 102
<b>Year :</b>	2019
<b>Title :</b>	Checklists Protected and Threatened Species in Ireland 2019
<b>Author :</b>	Nelson, B.; Cummins, S.; Fay, L.; Jeffrey, R.; Kelly, S.; Kingston, N.; Lockhart, N.; Marnell, F.; Tierney, D.; Wyse Jackson, M.
<b>Series :</b>	Irish Wildlife Manuals, No. 116
<b>Year :</b>	2021
<b>Title :</b>	Checklists Protected and Threatened Species in Ireland. Version 2.1. 3 December 2021
<b>Author :</b>	Nelson, B.; Cummins, S.; Fay, L.; Jeffrey, R.; Kelly, S.; Kingston, N.; Lockhart, N.; Marnell, F.; Tierney, D.; Wyse Jackson, M.
<b>Series :</b>	Irish Wildlife Manuals, No. 116

## Other References

<b>Year :</b>	1986
<b>Title :</b>	A study of the geology, hydrology and geomorphology of turloughs
<b>Author :</b>	Coxon, C.
<b>Series :</b>	Unpublished Ph.D. Thesis, Trinity College Dublin
<b>Year :</b>	1992
<b>Title :</b>	A review of the scarce and threatened Coleoptera of Great Britain. Part 1. UK. Nature Conservation: 3
<b>Author :</b>	Hyman, P.S.; Parsons, M.S.
<b>Series :</b>	Joint Nature Conservation Committee, Peterborough, UK

<b>Year :</b>	1997
<b>Title :</b>	An Investigation of the Flooding Problems in the Gort–Ardrahan Area of South Galway. Ecology Baseline Study. Vols I and II.
<b>Author :</b>	Southern Water Global and Jennings O'Donovan and Partners (eds)
<b>Series :</b>	The Office of Public Works
<b>Year :</b>	2002
<b>Title :</b>	New records of the water beetles <i>Berosus signaticollis</i> (Charpentier) and <i>Graptodytes bilineatus</i> (Sturm) in turloughs
<b>Author :</b>	Bradish, S.; O Connor, Á.; Reed, T.
<b>Series :</b>	Irish Naturalists' Journal, 27: 83–84
<b>Year :</b>	2002
<b>Title :</b>	Conservation implications of the land use practices on the plant and carabid beetle communities of two turloughs in Co. Galway, Ireland
<b>Author :</b>	Ní Bhriain, B.; Sheehy Skeffington, M.; Gormally, M.
<b>Series :</b>	Biological Conservation, 105(1): 81–92
<b>Year :</b>	2003
<b>Title :</b>	Changes in land-use practices at two turloughs, on the east Burren Limestones, Co. Galway, with reference to nature conservation
<b>Author :</b>	Ní Bhriain, B.; Gormally, M.; Sheehy Skeffington, M.
<b>Series :</b>	Biology and Environment: Proceedings of the Royal Irish Academy, 103B(3): 169-176
<b>Year :</b>	2005
<b>Title :</b>	An investigation of the plant, carabid, and staphylinid communities of turloughs in southeast Galway/north Clare, Ireland
<b>Author :</b>	Regan, E.C.
<b>Series :</b>	Unpublished Ph.D. Thesis, National University of Ireland, Galway
<b>Year :</b>	2005
<b>Title :</b>	Further records of carabid beetles from turloughs
<b>Author :</b>	Regan, E.C.
<b>Series :</b>	Irish Naturalists' Journal, 28(2): 59–61
<b>Year :</b>	2005
<b>Title :</b>	Charophytes collected in Counties Clare (H9) and South-east Galway (H15) in 2003
<b>Author :</b>	Langangen, A.
<b>Series :</b>	Irish Naturalists' Journal, 28(4): 151–158
<b>Year :</b>	2007
<b>Title :</b>	Wetland plant communities of turloughs in southeast Galway/north Clare, Ireland in relation to environmental factors
<b>Author :</b>	Regan, E.C.; Sheehy Skeffington, M.; Gormally, M.J.
<b>Series :</b>	Aquatic Botany, 87(1): 22-30
<b>Year :</b>	2011
<b>Title :</b>	The hydrology and hydroecology of turloughs
<b>Author :</b>	Naughton, O.
<b>Series :</b>	Unpublished Ph.D. Thesis, Trinity College Dublin
<b>Year :</b>	2012
<b>Title :</b>	Rare and threatened bryophytes of Ireland
<b>Author :</b>	Lockhart, N.; Hodgetts, N.; Holyoak, D.
<b>Series :</b>	National Museums Northern Ireland

**Year :** 2012  
**Title :** Groundwater flooding in Irish karst: The hydrological characterisation of ephemeral lakes (turloughs)  
**Author :** Naughton, O.; Johnston, P.M.; Gill, L.W.  
**Series :** Journal of Hydrology, 470-471: 82-97

---

**Year :** 2012  
**Title :** The influence of flood duration on the surface soil properties and grazing management of karst wetlands (turloughs) in Ireland  
**Author :** Kimberley, S.; Naughton, O.; Johnston, P.M.; Gill, L.W.; Waldren, S.  
**Series :** Hydrobiologia, 692: 29–40

---

**Year :** 2014  
**Title :** Orchid Ireland Survey 2014  
**Author :** Curtis, T.; Wilson, F.  
**Series :** Report to National Museums Northern Ireland

---

**Year :** 2017  
**Title :** Groundwater flood hazards and mechanisms in lowland karst terrains  
**Author :** Naughton, O.; McCormack, T.; Gill, L.; Johnston, P.  
**Series :** Geological Society, London, Special Publications, 466

---



## Spatial data sources

<b>Year :</b>	2015
<b>Title :</b>	Turlough hydrology, ecology and conservation
<b>GIS Operations :</b>	Dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	3180 (map 2)
<hr/>	
<b>Year :</b>	2012
<b>Title :</b>	The conservation status of juniper formations in Ireland
<b>GIS Operations :</b>	Juniper survey location centroids clipped to SAC boundary
<b>Used For :</b>	5130 (map 3)
<hr/>	
<b>Year :</b>	2006
<b>Title :</b>	Grassland Monitoring Project 2006
<b>GIS Operations :</b>	Dataset clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	6210 (map 4)
<hr/>	
<b>Year :</b>	2013
<b>Title :</b>	National Survey of Limestone Pavement and Associated Habitats in Ireland distribution data
<b>GIS Operations :</b>	Dataset clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	8240 (map 5)
<hr/>	

## Conservation Objectives for : Castletaylor Complex SAC [000242]

### 3180 Turloughs\*

**To restore the favourable conservation condition of Turloughs\* in Castletaylor Complex SAC, which is defined by the following list of attributes and targets:**

Attribute	Measure	Target	Notes
Habitat area	Habitat area	Area stable at c.32ha or increasing, subject to natural processes	Caranavoodaun Turlough within Castletaylor Complex SAC is a well-studied Irish turlough (Coxon, 1986; Goodwillie, 1992; Goodwillie et al., 1997 in Southern Water Global and Jennings O'Donovan and Partners, 1997; Bradish et al., 2002; Langangen, 2005; Regan 2005; Naughton, 2011; Waldren, 2015). The area target is based on the approximate area of 31.7ha for Caranavoodaun Turlough from Waldren (2015) within Castletaylor Complex SAC. See map 2 for the recorded extent in the SAC. Goodwillie (1992) highlighted Caranavoodaun's pristine undrained state, its rare plants and extreme oligotrophy and Waldren (2015) said it is 'of probable international significance'. Caranavoodaun Turlough was assessed to be borderline between unfavourable-inadequate (poor) conservation condition and favourable (good) conservation condition by Waldren (2015). See O Connor (2017) for information on all attributes and targets
Habitat distribution	Occurrence	No decline, subject to natural processes	See map 2
Hydrological regime	Various	Maintain appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat	Hydrological regime is sub-divided into more detailed attributes (groundwater contribution, flood duration, frequency, area and depth, and permanently flooded/wet areas) and targets in O Connor (2017). The hydrology of Caranavoodaun Turlough is well-studied (Coxon, 1986; Goodwillie, 1992; Naughton, 2011; Naughton et al., 2012, 2017; Waldren, 2015). It was characterised by Waldren (2015) as shallow with a moderately low inflow and outflow and a low drainage capacity. It typically has one significant annual flooding event (hydroperiod 205 days), with smaller fluctuations occurring throughout the year. It has a localised autogenic catchment, a lag between rainfall and peak water levels and a prolonged recession (Naughton et al., 2017). Waldren (2015) noted a small, deep hollow in the north-east arm of the turlough. Waldren (2015) said drainage lowered the flood level in the past but is not currently impacting on the ecological functioning and assessed the hydrological regime as good
Soil type	Hectares	Maintain variety, area and extent of soil types necessary to support turlough vegetation and other biota	Caranavoodaun Turlough has extensive areas of fen peat, and shallow well-drained organic soils occupy the upper slopes; there are also small areas of marl with peaty top soil (Waldren, 2015). For further information on soil type in Caranavoodaun Turlough, see Goodwillie (1992), Kimberley et al. (2012) and Waldren (2015)
Soil nutrient status: nitrogen and phosphorus	N and P concentration in soil	Maintain/restore nutrient status appropriate to soil types and vegetation communities	Waldren (2015) recorded relatively high mean total nitrogen (TN) within the soils at Caranavoodaun Turlough of 15,893mg/kg TN and a mean total phosphorus (TP) of 814mg/kg TP, which was close to the median figure for turloughs studied by Waldren (2015)
Physical structure: bare ground	Presence	Maintain sufficient wet bare ground, as appropriate	See O Connor (2017) for information on all attributes and targets

Chemical processes: calcium carbonate deposition and concentration	Calcium carbonate deposition rate/soil concentration	Maintain appropriate calcium carbonate deposition rate and concentration in soil	Soils had a high calcium carbonate content of 34.6% at Caranavoodaun Turlough (Waldren, 2015). Waldren (2015) stated that there are patches of marl with peaty topsoil surrounding the fen peat in the east of Caranavoodaun. See also Goodwillie (1992)
Active peat formation	Flood duration	Maintain active peat formation	Peat is a significant feature of the turlough habitat in this SAC, with a high (36.2%) mean organic matter content recorded (Waldren 2015). See also Kimberley et al. (2012) and Goodwillie (1992)
Water quality	Various	Restore appropriate water quality to support the natural structure and functioning of the habitat	Water quality is sub-divided into more detailed attributes (nutrients, colour, phytoplankton and epiphyton biomass) and targets in O Connor (2017). See also The European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2019. Caranavoodaun Turlough had high alkalinity, low colour, low total phosphorus (mean of 11.0µg/l TP), and high total nitrogen (mean of 2.3 mg/l TN) (Waldren, 2015). Mean chlorophyll <i>a</i> was 2.8µg/l and the maximum was 9.2µg/l. A negligible quantity of algal mats were observed by Waldren (2015). Caranavoodaun Turlough should, typically, be naturally highly oligotrophic and requires targets of ≤10µg/l TP, annual mean chlorophyll <i>a</i> <2.5µg/l and annual maximum chlorophyll <i>a</i> <8µg/l, and maintenance of trace/absent epiphyton as algal mats (<2% cover) to reach favourable condition
Vegetation composition: area of vegetation communities	Hectares	Maintain area of sensitive and high conservation value vegetation communities/units	The vegetation of Caranavoodaun Turlough is diverse and, of the mapped vegetation communities mapped by Waldren (2015), the <i>Eleocharis palustris-Ranunculus flammula</i> community was dominant, occurring over most of the bottom of the basin. Vegetation communities of high conservation value, the <i>Molinia caerulea-Carex panicea</i> and Flooded pavement communities, were also recorded (Waldren, 2015). Waldren (2015) reported that changes in the vegetation suggests that the turlough may now be wetter in the central part than when surveyed by Goodwillie (1992), with more aquatic communities. There was localised heavy cattle grazing and poaching damage recorded by Waldren (2015). If these high grazing levels continue for a significant period of time, they could negatively impact the vegetation composition of Caranavoodaun Turlough. See Goodwillie (1992), Goodwillie et al. (1997) and Waldren (2015) for further information on the vegetation communities. See also Regan et al. (2007)
Vegetation composition: vegetation zonation	Distribution	Maintain vegetation zonation/mosaic characteristic of the turlough	The upper vegetation zone at Caranavoodaun Turlough includes areas of scrub, woodland and <i>Lolium</i> and limestone grassland. Moving down into the turlough, the the Sedge fen community was common and, at the lowest level of the turlough, the <i>Eleocharis palustris-Ranunculus flammula</i> community was the dominant vegetation type (Waldren, 2015). See Goodwillie (1992), Goodwillie et al. (1997) and Waldren (2015) for further information on the vegetation communities in Caranavoodaun Turlough
Vegetation structure: sward height	Centimetres	Restore sward heights appropriate to the vegetation unit, and a variety of sward heights across the turlough	The grazing regime at Caranavoodaun Turlough has changed over time; Goodwillie (1992) reported a noticeable lack of grazing and Waldren (2015) reported localised heavy cattle grazing and poaching damage. See Ní Bhriain et al. (2002, 2003) for further information on grazing practices at Caranavoodaun. See Goodwillie (1992), Goodwillie et al. (1997) and Waldren (2015) for further information on the vegetation communities in Caranavoodaun Turlough

Typical species	Presence	Maintain typical species within the turlough	Typical species is sub-divided into more detailed attributes (terrestrial, wetland and aquatic plants, invertebrates and birds) and targets in O Connor (2017). Two notable vascular plant species within the turlough are <i>Sorbus hibernica</i> (Goodwillie, 1992), Vulnerable in Wyse Jackson et al. (2016), and <i>Frangula alnus</i> (Waldren, 2015). Two notable moss species recorded are <i>Drepanocladus sendtneri</i> and <i>D. lycopodioides</i> , both Vulnerable in Lockhart et al. (2012). Two notable water beetle species <i>Berosus signaticollis</i> and <i>Graptodytes bilineatus</i> (Bradish et al., 2002; Waldren, 2015), listed respectively as Endangered and Near Threatened in Foster et al. (2009), have also been recorded. Regan (2005) recorded notable ground beetles within Caranavoodaun Turlough, including <i>Bembidion clarkii</i> , <i>Chlaenius nigricomis</i> , <i>Pterostichus gracilis</i> and <i>Pelophila borealis</i> , all listed in the British Red Data Book (Hyman and Parsons, 1992)
Fringing habitats: area	Hectares	Restore marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations	Caranavoodaun Turlough is of high conservation importance for its mosaic of Annex I and other habitats, particularly the transitions and gradations between habitats, e.g. between turloughs grassland communities, limestone pavement, scrub and woodland. See the conservation objectives for the Annex I habitats Alpine and Boreal heaths (habitat code 4060), <i>Juniperus communis</i> formations on heaths or calcareous grasslands (5130), Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) (6210) and Limestone pavements* (3180) in this volume. Vegetation and rock clearance has resulted in the loss of areas of habitats fringing Caranavoodaun Turlough
Vegetation structure: turlough woodland	Species diversity and woodland structure	Restore appropriate turlough woodland diversity and structure	There are areas of scrub and woodland noted on the edge of Caranavoodaun Turlough (Goodwillie, 1992; Goodwillie et al., 1997; Waldren, 2015). <i>Rhamnus cathartica</i> was recorded within the turlough site by Goodwillie (1992), Goodwillie et al. (1997) and Waldren (2015). Goodwillie (1992) reported that the <i>Fraxinus</i> woodland included <i>Taxus baccata</i> , and both <i>Sorbus aria</i> and <i>S. hibernica</i> . Vegetation and rock clearance has resulted in the loss of areas of habitats fringing Caranavoodaun Turlough

## Conservation Objectives for : Castletaylor Complex SAC [000242]

### 4060 Alpine and Boreal heaths

To restore the favourable conservation condition of Alpine and Boreal heaths in Castletaylor Complex 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 heath occurs in mosaic with other Annex I habitats throughout Castletaylor Complex SAC: Limestone pavements* (8240), <i>Juniperus communis</i> formations on heaths or calcareous grasslands (Annex I habitat code 5130), Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) (6210). Therefore, these Annex I habitats cannot easily be mapped or considered separately. Conservation objectives for all these habitats should be used in conjunction with each other as appropriate. Some of the heath, particularly in the southern sector of the SAC, is similar to the <i>Arctostaphylos-Dryas</i> vegetation of the Burren limestone area, and is a rare lowland alpine type heath confined to only a few locations in western Ireland (NPWS internal files). Vegetation and rock clearance in the north-east of the SAC in the recent past may have resulted in loss of area and change to this habitat
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for habitat area above
Vegetation composition: positive indicator species	Number at a representative number of monitoring stops	At least seven positive indicator species present	The list of positive indicator species for the habitat identified by the National Survey of Limestone Pavement and Associated Habitats is presented in Wilson and Fernandez (2013). The habitat in Castletaylor Complex SAC is characterised by the presence of juniper ( <i>Juniperus communis</i> ) and mountain avens ( <i>Dryas octopetala</i> ), and bearberry ( <i>Arctostaphylos uva-ursi</i> ) has also been recorded (NPWS internal files)
Vegetation composition: negative indicator species	Percentage cover at a representative number of monitoring stops	Negative indicator species collectively not more than 10% cover	Attribute and target based on Wilson and Fernandez (2013), where the list of negative indicator species for the habitat, as identified by Wilson and Fernandez (2013), is presented
Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Non-native species not more than 1% cover	Attribute and target based on Wilson and Fernandez (2013)
Vegetation composition: native trees and shrubs	Percentage cover at a representative number of monitoring stops	Cover of native trees and shrubs (except juniper ( <i>Juniperus communis</i> )) not more than 25% cover	Attribute and target based on Wilson and Fernandez (2013)
Physical structure: disturbance	Percentage cover at a representative number of monitoring stops	Less than 10% disturbed bare ground (excluding rocks/stones)	Attribute and target based on Wilson and Fernandez (2013)
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, species of flora and fauna on Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.; see Nelson et al., 2019, 2021) and other rare or localised species, as well as archaeological and geological features, which often support distinctive species

## Conservation Objectives for : Castletaylor Complex SAC [000242]

### 5130 Juniperus communis formations on heaths or calcareous grasslands

To maintain the favourable conservation condition of *Juniperus communis* formations on heaths or calcareous grasslands in Castletaylor Complex 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	<i>Juniperus communis</i> formations on heaths or calcareous grasslands occurs in mosaic with other Annex I habitats in Castletaylor Complex SAC: Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210), Alpine and Boreal heath (4060) and Limestone pavements* (8240). Therefore, these habitats cannot easily be mapped or considered separately. Conservation objectives for all the habitats should be used in conjunction with each other as appropriate. Cooper et al. (2012) identified areas of juniper vegetation at two sub-sites in Castletaylor Complex SAC: Gregmore (GY13) and Catherweelder (GY29), though only the latter was classified as a juniper formation by Cooper et al. (2012). It should be noted that the definition of a juniper formation in Cooper et al. (2012) has been updated by the Irish Juniper Monitoring Survey 2017 (O'Neill and Martin, 2018; see below). Note that further unsurveyed areas of the habitat may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 3	Distribution is based on Cooper et al. (2012). See map 3 for the point location of the formation classified by Cooper et al. (2012) at the sub-site Catherweelder (site code GY29). It is important to note that further unsurveyed areas of the habitat may be present within the SAC
Juniper formation size	Number and proximity of juniper plants	At least 50 juniper plants present with each plant separated by no more than 20m	Attribute and target based on O'Neill and Martin (2018). A juniper formation is defined by O'Neill and Martin (2018) as any cluster of $\geq 50$ juniper plants where no plant is more than 20m from another. In practice, this means that juniper plants should achieve a minimum density of 25 plants per hectare to qualify as a formation
Vegetation structure: female fruiting plants	Percentage in a representative number of 5m x 5m monitoring stops or in an <i>ad hoc</i> count of 50 plants	Fruiting females comprise at least 10% of juniper plants rooted in plot in at least 50% of stops or in an <i>ad hoc</i> count of 50 plants	Attribute and target based on Cooper et al. (2012) and O'Neill and Martin (2018)
Vegetation structure: seedling recruitment	Presence in a representative number of 5m x 5m monitoring stops	At least one seedling recorded in at least one monitoring stop	Attribute and target based on O'Neill and Martin (2018). Juniper seedlings are defined as plants less than 15cm high that are still flexible and single-stemmed, or with only two branches at most
Vegetation structure: live juniper	Percentage in a representative number of 5m x 5m monitoring stops or across the site as a whole	At least 90% of juniper plants rooted in plot alive in at least 75% of stops or across the site as a whole	Attribute and target based on Cooper et al. (2012) and O'Neill and Martin (2018)
Vegetation composition: negative indicator species	Percentage in a representative number of 5m x 5m monitoring stops	Total cover of negative indicator species to be less than 10% in at least 50% of stops	Attribute and target based on O'Neill and Martin (2018) where the list of negative indicator species is also presented
Physical structure: germination niches	Percentage in a representative number of 5m x 5m monitoring stops	At least 5% bare soil and/or at least 5% bare rock in at least 25% of stops	Attribute and target based on O'Neill and Martin (2018). Bare soil is important as a germination micro-site and bare rock can also contribute, particularly at the soil-rock interface and in limestone pavement grikes

Formation structure: browning/die-back of plants	Percentage of juniper cover in a representative number of 5m x 5m monitoring stops	Browning or dead juniper branches (excluding fully dead plants) comprise no more than 20% of total juniper cover in plot in at least 75% of stops	Attribute and target based on O'Neill and Martin (2018)
Formation structure: evidence of browsing and bark stripping	Occurrence across a representative number of 5m x 5m monitoring stops	No browsing of juniper shoot tips, and trunk bark stripping evident in no more than 10% of juniper shrubs in at least 75% of stops	Attribute and target based on O'Neill and Martin (2018). This attribute concerns bark stripping by animals. Bark stripping or damage from abrasion by rock is not included here. It should be noted, however, that distinguishing between the two may be difficult
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 species of flora and fauna on Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.; see Nelson et al., 2019, 2021)

## Conservation Objectives for : Castletaylor Complex SAC [000242]

### 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (\* important orchid sites)

To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (\* important orchid sites) in Castletaylor Complex SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	The Grasslands Monitoring Project 2006 (Dwyer et al., 2007) surveyed the habitat in Castletaylor Complex SAC and noted that it often occurs in mosaic with other habitats. The area of orchid-rich calcareous grassland habitat surveyed was estimated to be 8.94ha (see map 4) and was located in the north of the SAC. It is important to note that further unsurveyed areas of the habitat are likely to be present in the SAC. Habitat damage resulting in the loss and change of habitats in the SAC through vegetation and rock clearance may also have affected the area of 6210. As the habitat occurs in intimate association with other Annex I habitats in Castletaylor Complex SAC (Limestone pavements* - habitat code 8240, Alpine and Boreal heaths - 4060, and <i>Juniperus communis</i> formations - 5130), it is important to note that these habitats cannot easily be mapped or considered separately. Conservation objectives for all these habitats should be used in conjunction with each other as appropriate
Habitat distribution	Occurrence	No decline, subject to natural processes	Distribution based on the Grasslands Monitoring Project 2006 (Dwyer et al., 2007). See map 4. Note that further unsurveyed areas of the habitat are likely to be present within the SAC
Vegetation composition: positive indicator species	Number at a representative number of 2m x 2m monitoring stops; within 20m surrounding area of monitoring stops	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least two 'high quality' positive indicator species present in stop or within 20m of stop	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where the lists of positive indicator species, including high quality indicators, are also presented. These documents should be consulted for further details. The following orchid species were recorded in the SAC in the Dwyer et al. (2007) and Curtis and Wilson (2014) surveys: common spotted-orchid ( <i>Dactylorhiza fuchsii</i> ), heath spotted-orchid ( <i>Dactylorhiza maculata</i> subsp. <i>ericetorum</i> ), fragrant orchid ( <i>Gymnadenia conopsea</i> ), common twayblade ( <i>Listera ovata</i> ), early-purple orchid ( <i>Orchis mascula</i> ), lesser butterfly-orchid ( <i>Platanthera bifolia</i> ) and greater butterfly-orchid ( <i>Platanthera chlorantha</i> ), and a number of other positive indicator species are known to occur
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover of an individual species not more than 10%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where the list of negative indicator species is presented. Excessive cover of some negative indicator species (particularly those indicating undergrazing) have been recorded by Dwyer et al. (2007) and Curtis and Wilson (2014) in the habitat in this SAC
Vegetation composition: non-native species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)



Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of woody species (except certain listed species) and bracken ( <i>Pteridium aquilinum</i> ) not more than 5%	Woody species that can occur above 5% cover are juniper ( <i>Juniperus communis</i> ), burnet rose ( <i>Rosa spinosissima</i> ), mountain avens ( <i>Dryas octopetala</i> ) and hoary rock-rose ( <i>Helianthemum oelandicum</i> ). However, cover of these species above 25% may indicate transition to another Annex I habitat such as Alpine and Boreal heaths (4060) or <i>Juniperus communis</i> formations (5130). Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018). Bracken has been recorded as a significant management issue and potential threat to the orchid-rich calcareous grassland in this SAC (Dwyer et al., 2007)
Vegetation structure: broadleaf herb:grass ratio	Percentage at a representative number of 2m x 2m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018). Broadleaf herb component of vegetation between 30% and 40% may be allowed to pass on expert judgement (Martin et al., 2018)
Vegetation structure: sward height	Percentage at a representative number of 2m x 2m monitoring stops	At least 30% of sward between 5cm and 40cm tall	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation structure: litter	Percentage cover at a representative number of 2m x 2m monitoring stops	Litter cover not more than 25%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: bare soil	Percentage cover at a representative number of 2m x 2m monitoring stops	Not more than 10% bare soil	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: grazing or disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or disturbance less than 20m <sup>2</sup>	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)

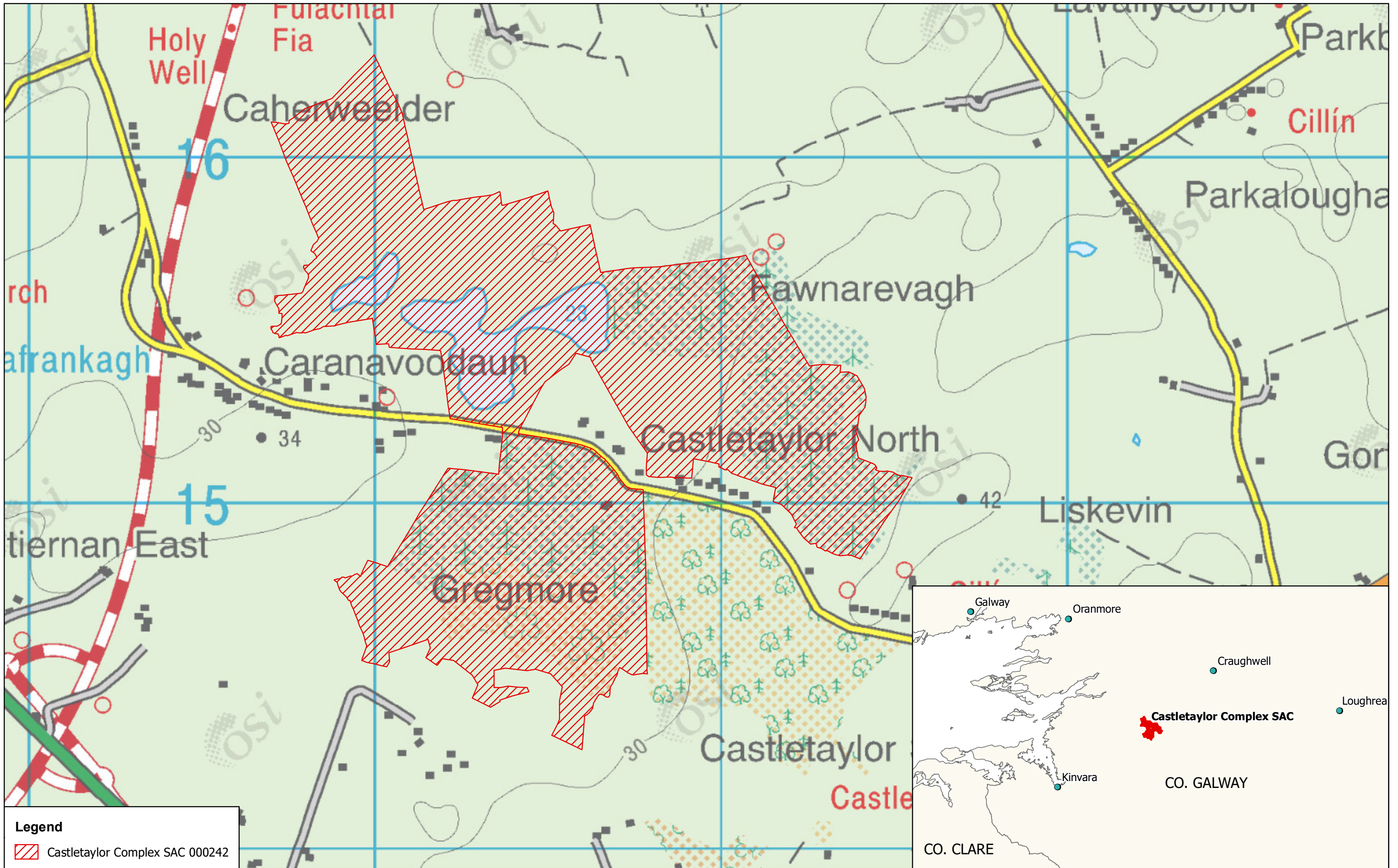
## Conservation Objectives for : Castletaylor Complex SAC [000242]

### 8240 Limestone pavements\*

To restore the favourable conservation condition of Limestone pavements\* in Castletaylor Complex 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	Limestone pavements* in Castletaylor Complex SAC occurs in intimate association with other Annex I habitats <i>Juniperus communis</i> formations on heaths or calcareous grasslands (habitat code 5130), Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210) and Alpine and Boreal heath (4060) throughout the SAC. Limestone pavement also breaks through the floors of the Turloughs* (3180) and woodland areas in the SAC in places, and supports scrub vegetation in others (NPWS internal files). Therefore, the Annex I habitats cannot easily be mapped or considered separately. Conservation objectives for all these habitats should be used in conjunction with each other as appropriate. Wilson and Fernandez (2013) mapped the indicative area of Limestone pavement* in the SAC, including mosaics with other habitats, as 24.6ha (see map 5)
Distribution	Occurrence	No decline, subject to natural processes. Map 5 shows the indicative distribution, including mosaics with other habitats	See the notes for Habitat area above. Distribution based on data from Wilson and Fernandez (2013). This habitat can be split into exposed pavement and wooded pavement. Vegetation and rock clearance in the north-east of the SAC in the recent past may have resulted in changes to the area and distribution of wooded pavement
Vegetation composition: positive indicator species	Number at a representative number of monitoring stops	At least seven positive indicator species present	The list of positive indicator species for the habitat identified by the National Survey of Limestone Pavement and Associated Habitats is presented in Wilson and Fernandez (2013). Positive indicator species recorded on exposed pavement in the SAC include bloody crane's-bill ( <i>Geranium sanguineum</i> ), herb-robert ( <i>G. robertianum</i> ), wood sage ( <i>Teucrium scorodonia</i> ), burnet rose ( <i>Rosa spinosissima</i> ), mountain avens ( <i>Dryas octopetala</i> ), wild thyme ( <i>Thymus polytrichus</i> ), the Near Threatened (Wyse Jackson et al., 2016) spring gentian ( <i>Gentiana verna</i> ), the Near Threatened orchids autumn lady's-tresses ( <i>Spiranthes spiralis</i> ) and dense-flowered orchid ( <i>Neotinea maculata</i> ), wall-rue ( <i>Asplenium ruta-muraria</i> ), rusty-back spleenwort ( <i>A. ceterach</i> ), hart's-tongue fern ( <i>A. scolopendrium</i> ) and the bryophytes <i>Breutelia chrysocoma</i> and <i>Neckera crispa</i> (NPWS internal files)
Vegetation composition: bryophyte layer	Percentage at a representative number of monitoring stops	Bryophyte cover at least 50% on wooded pavement	Attribute and target based on Wilson and Fernandez (2013)
Vegetation composition: negative indicator species	Percentage at a representative number of monitoring stops	Collective cover of negative indicator species on exposed pavement not more than 1%	Negative indicator species are listed in Wilson and Fernandez (2013). Negative indicator species for wooded pavement overlap with non-native species (below)
Vegetation composition: non-native species	Percentage at a representative number of monitoring stops	Cover of non-native species not more than 1% on exposed pavement; on wooded pavement not more than 10% with no regeneration	Attribute and target based on Wilson and Fernandez (2013)
Vegetation composition: scrub	Percentage at a representative number of monitoring stops	Scrub cover no more than 25% of exposed pavement	Attribute and target based on Wilson and Fernandez (2013)

Vegetation composition: bracken cover	Percentage at a representative number of monitoring stops	Bracken ( <i>Pteridium aquilinum</i> ) cover no more than 10% on exposed pavement	Attribute and target based on Wilson and Fernandez (2013)
Vegetation structure: woodland canopy	Percentage at a representative number of monitoring stops	Canopy cover on wooded pavement at least 30%	Attribute and target based on Wilson and Fernandez (2013)
Vegetation structure: dead wood	Occurrence in a representative number of monitoring stops	Sufficient quantity of dead wood on wooded pavement to provide habitat for saproxylic organisms	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Physical structure: disturbance	Occurrence in a representative number of monitoring stops	No evidence of grazing pressure on wooded pavement	Attribute and target based on Wilson and Fernandez (2013)
Indicators of local distinctiveness	Occurrence 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, species of flora and fauna on Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.; see Nelson et al., 2019, 2021) and other rare or localised species, as well as archaeological and geological features, which often support distinctive species. The species spring gentian ( <i>Gentiana verna</i> ), autumn lady's-tresses ( <i>Spiranthes spiralis</i> ) and dense-flowered orchid ( <i>Neotinea maculata</i> ), all listed as Near Threatened in Wyse Jackson et al. (2016), have been recorded in the habitat in the SAC (NPWS internal files)



**Legend**  
 Castletaylor Complex SAC 000242

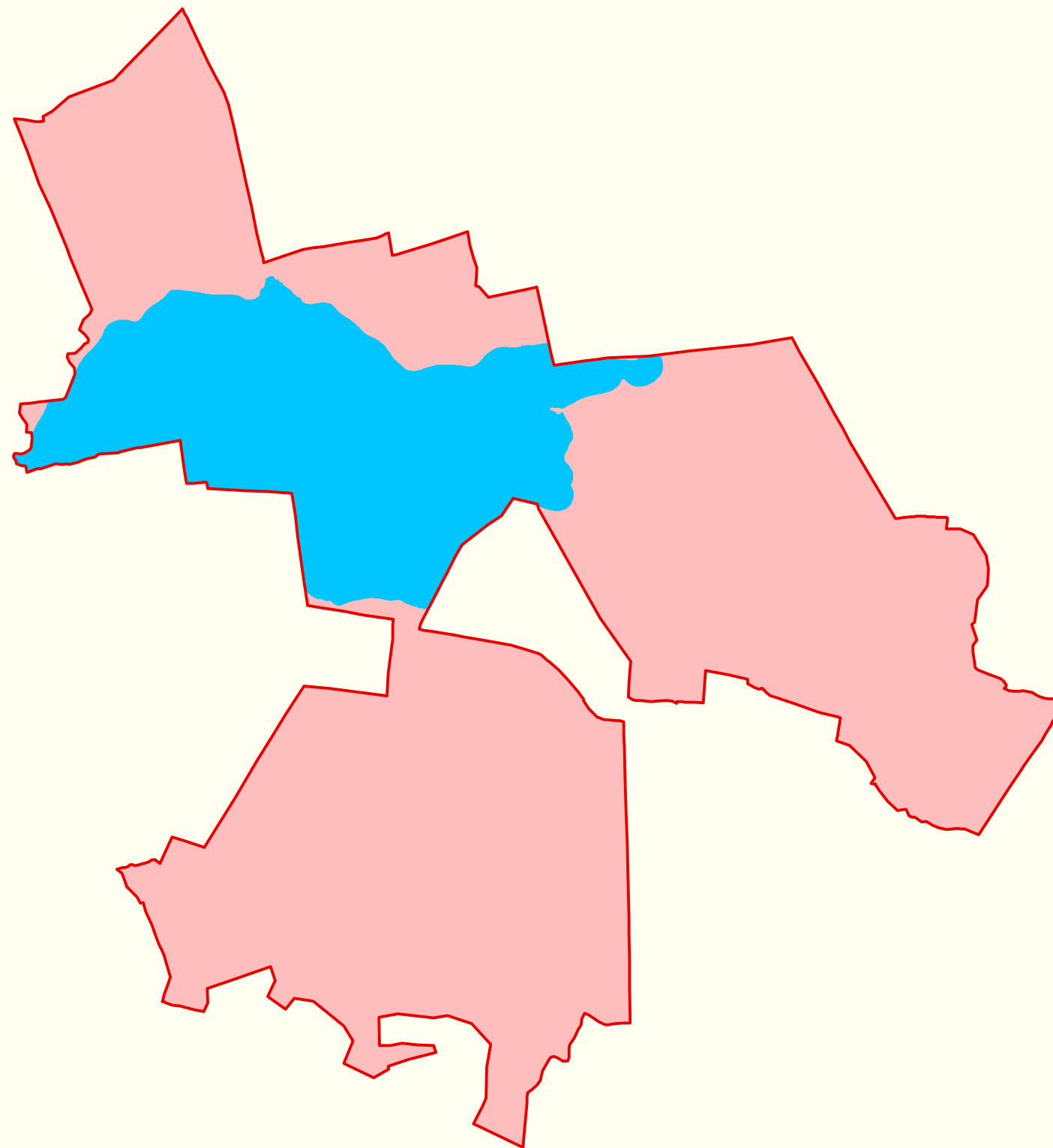
**An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreacht**  
 Department of Housing, Local Government and Heritage

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

**SITE CODE:  
 SAC 000242; version 3.01  
 CO. GALWAY**  
 0 100 200 400 Metres

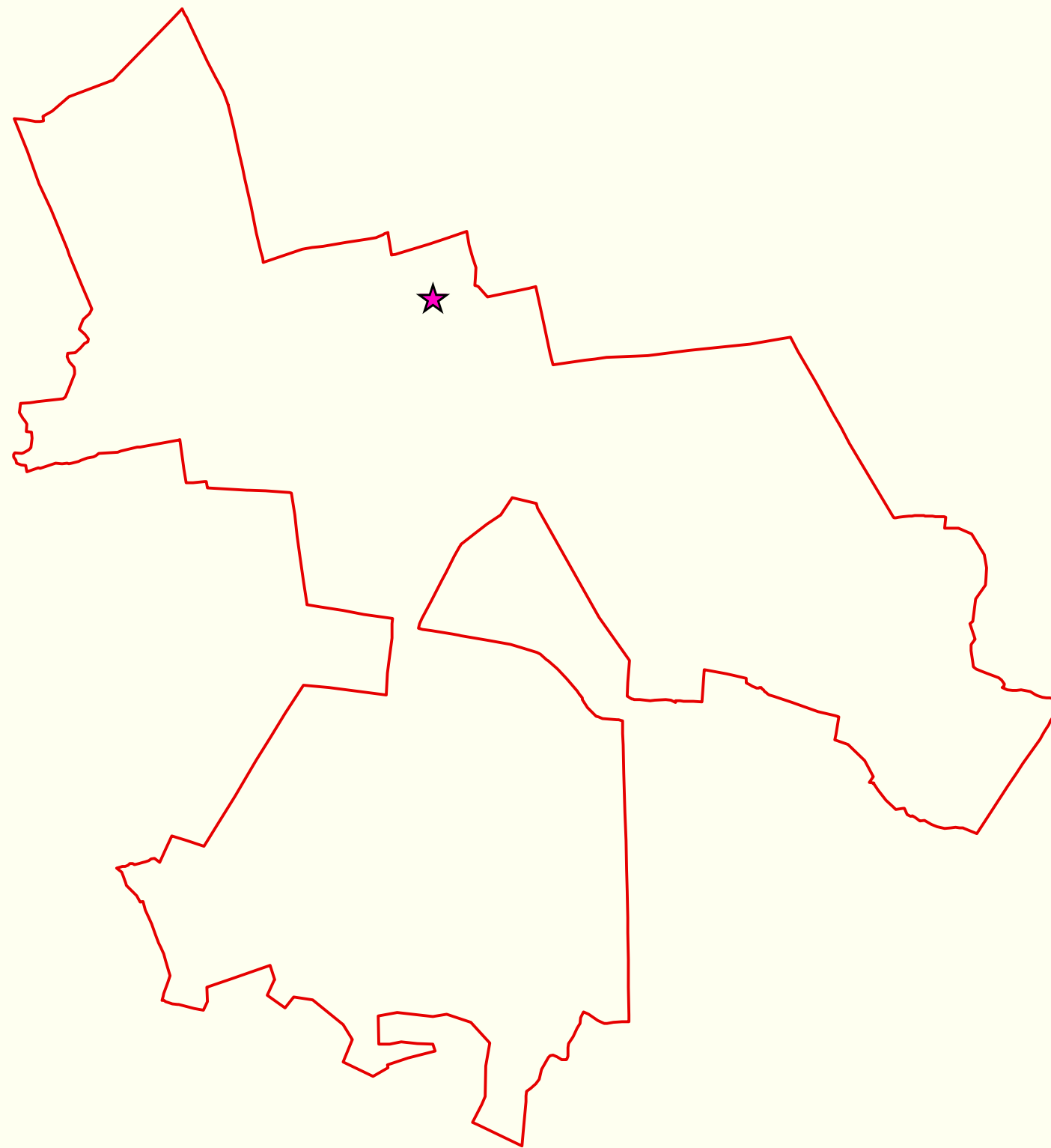
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
 Ordnance Survey of Ireland Licence No OSI-NMA-014. © Ordnance Survey of Ireland Government of Ireland  
 Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbheithnithe a déanamh ar theorainneacha na gceantar comharthaite. Suirbhéarachtá Ordonáis na hÉireann Ceadúnas Uimh OSI-NMA-014. © Suirbhéarachtá Ordonáis na hÉireann Rialtas na hÉireann

**N**  
 Date: November 2021



**Legend**

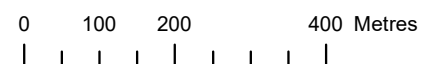
- 3180 Turloughs\*
- Castletaylor Complex SAC 000242



**Legend**

- ★ 5130 *Juniperus communis* formations on heaths or calcareous grasslands
- Castletaylor Complex SAC 000242

Ordnance Survey Ireland

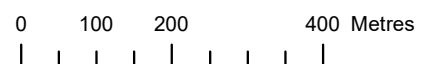




**Legend**

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites)
- Castletaylor Complex SAC 000242

Ordnance Survey Ireland





**Legend**

- Potential 8240 \*Limestone pavements including associated habitats
- Castletaylor Complex SAC 000242

Ordnance Survey Ireland

