

National Parks and Wildlife Service

Conservation Objectives Series

Omey Island Machair SAC 001309



An Roinn Ealaíon, Oidhreachta,
Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta

Department of Arts, Heritage,
Regional, Rural and Gaeltacht Affairs



**National Parks and Wildlife Service,
Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs,
7 Ely Place, Dublin 2, Ireland.
Web: www.npws.ie
E-mail: nature.conservation@ahg.gov.ie**

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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

001309	Omey Island Machair SAC
1395	Petalwort <i>Petalophyllum ralfsii</i>
21A0	Machairs (* in Ireland)
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Oxycoccus</i> spp.

Please note that this SAC overlaps with Inishbofin, Omey Island and Turbot Island SPA (004231) and is adjacent to West Connacht Coast SAC (002998). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	1997
Title :	Coastal lagoons in the Republic of Ireland. Volume III: site reports
Author :	Healy, B.; Oliver, G.; Hatch, P.; Good, J.
Series :	Unpublished report
Year :	1997
Title :	Coastal lagoons in the Republic of Ireland. Volume II: inventory of lagoons and saline lakes
Author :	Healy, B.; Oliver, G.; Hatch, P.; Good, J.
Series :	Unpublished report
Year :	1997
Title :	Coastal lagoons in the Republic of Ireland. Volume I: background, outline and summary of the survey
Author :	Healy, B.; Oliver, G.; Hatch, P.; Good, J.
Series :	Unpublished report
Year :	1998
Title :	Biomar survey of Irish machair sites 1996
Author :	Crawford, I.; Bleasdale, A.; Conaghan, J.
Series :	Irish Wildlife Manual No. 3
Year :	1998
Title :	Biomar Survey of Irish machair sites, 1996. Vol. 2: plant communities
Author :	Crawford, I.; Bleasdale, A.; Conaghan, J.
Series :	Irish Wildlife Manual No. 4
Year :	2009
Title :	Coastal Monitoring Project 2004-2006
Author :	Ryle, T.; Murray, A.; Connolly, K.; Swann, M.
Series :	Unpublished report to NPWS
Year :	2013
Title :	A survey of the benthic macrophytes of three hard-water lakes: Lough Bunny, Lough Carra and Lough Owel
Author :	Roden, C.; Murphy, P.
Series :	Irish Wildlife Manual No. 70
Year :	2013
Title :	Monitoring survey of Annex I sand dune habitats in Ireland
Author :	Delaney, A.; Devaney, F.M.; Martin, J.M.; Barron, S.J.
Series :	Irish Wildlife Manual No. 75
Year :	2013
Title :	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
Author :	NPWS
Series :	Conservation assessments
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 *Petalophyllum ralfsii* (Wils.) Nees & Gottsche (Petalwort) in the Republic of Ireland
Author : Campbell, C.; Hodgetts, N.; Lockhart, N.
Series : Irish Wildlife Manual No. 90

Year : 2017
Title : Omev Island Machair SAC (site code: 1309) Conservation objectives supporting document-coastal habitats V1
Author : NPWS
Series : Conservation objectives supporting document

Other References

Year : 1982
Title : Eutrophication of waters. Monitoring assessment and control
Author : OECD
Series : OECD, Paris

Year : 1999
Title : A survey of the sublittoral vegetation of 15 machair loughs in north west Ireland/ A survey of coastal lakes in Counties Galway, Mayo, Sligo and Donegal/ A survey of Irish machair loughs
Author : Roden, C.
Series : Report to the National Heritage Council, Kilkenny

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 : 2006
Title : The vegetation of Irish machair
Author : Gaynor, K.
Series : Biology and Environment: Proceedings of the Royal Irish Academy, vol 106B, No. 3: 311-321

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 : EPA, Wexford

Year : 2008
Title : Water Quality in Ireland 2004-2006
Author : Clabby, K.J.; Bradley, C.; Craig, M.; Daly, D.; Lucey, J.; McGarrigle, M.; O'Boyle, S.; Tierney, D.; Bowman, J.
Series : EPA, Wexford

Year : 2010
Title : Water quality in Ireland 2007-2009
Author : McGarrigle, M.; Lucey, J.; Ó Cinnéide, M.
Series : EPA, Wexford

Year : 2013
Title : Conservation of selected legally protected and Red Listed bryophytes in Ireland
Author : Campbell, C.
Series : Unpublished Ph.D. Thesis, Trinity College Dublin

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 : EPA, Wexford

Year : in prep.
Title : Monitoring of hard-water lakes in Ireland using charophytes and other macrophytes
Author : Roden, C.; Murphy, P.
Series : Unpublished report to NPWS

Spatial data sources

Year :	2013
Title :	Sand Dune Monitoring Project 2011. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used to resolve any issues arising
Used For :	21A0 (map 3)
<hr/>	
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 :	3140 (map 4)
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Year :	2016
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 :	1395 (map 5)
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Conservation Objectives for : Omev Island Machair SAC [001309]

21A0 Machairs (* in Ireland)

To restore the favourable conservation condition of Machairs (* in Ireland) in Omev Island Machair 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 including erosion and succession. For the sub-site mapped: Omev Island - 45.26ha. See map 3	Based on data from the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Machair habitat was recorded from the sub-site Omev Island (SDM site ID: 140) to give a total estimated area of 45.26ha within Omev Island Machair SAC. See the Omev Island Machair SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 3 for known distribution	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Machair habitat on Omev Island is split into three separate areas with the largest found west of Fahy Lough. The machair extends westward from Fahy Lough to the granite outcrop at Gooreen. Another small area of fenced machair occurs on the north-eastern edge of the island. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. See the coastal habitats supporting document for further details
Physical structure: hydrological and flooding regime	Water table levels; groundwater fluctuations (metres)	Maintain natural hydrological regime	Based on data from Crawford et al. (1998), Gaynor (2006), Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009) and Delaney et al. (2013). The presence of a shallow lake, Fahy Lough, adjacent to the machair adds to its overall value. This combination of machair and lake is a relatively rare feature on small machair systems. See the coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of machair habitat, subject to natural processes	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Natural erosion of the machair in the SAC is exacerbated by poaching and overgrazing. See the coastal habitats supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the range of sub-communities with typical species listed in Delaney et al. (2013)	Based on Gaynor (2006), Ryle et al. (2009) and Delaney et al. (2013). The machair at Omev Island Machair SAC supports a typical flora dominated by daisy (<i>Bellis perennis</i>) and red fescue (<i>Festuca rubra</i>), with creeping bent (<i>Agrostis stolonifera</i>), white clover (<i>Trifolium repens</i>), buck's-horn plantain (<i>Plantago coronopus</i>) and ribwort plantain (<i>P. lanceolata</i>). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. The negative indicator species creeping thistle (<i>Cirsium arvense</i>) and common ragwort (<i>Senecio jacobaea</i>) occurred occasionally throughout the machair habitat at Omev Island Machair SAC. See the coastal habitats supporting document for further details

Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: bryophytes	Percentage cover	Should always be at least an occasional component of the vegetation	Based on data from Ryle et al. (2009) and Delaney et al. (2013). In Omev Island Machair SAC, the mosses <i>Homalothecium lutescens</i> , <i>Hypnum cupressiforme</i> , <i>Syntrichia ruralis</i> subsp. <i>ruraliformis</i> and <i>Brachythecium albicans</i> were common on the machair. The Annex II liverwort petalwort (<i>Petalophyllum ralfsii</i>) has also been recorded. See the conservation objective for petalwort (1395) and the coastal habitats supporting document for further details

Conservation Objectives for : Omev Island Machair SAC [001309]

3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

To maintain the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. in Omev Island Machair 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 hard water lake habitat (3140) in Omev Island Machair SAC is found in Fahy Lough (Roden, 1999; Roden and Murphy, in prep.). Elements of the habitat may also occur in Lough Namackan (see map 4). Omev Island has calcareous sand overlying granite bedrock, and Fahy Lough is located at the interface between the machair (sand) and outcropping granite. 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. See map 4	As noted above, habitat 3140 occurs in Fahy Lough and possibly in Lough Namackan in the SAC. Healy et al. (1997) investigated Fahy Lough and concluded it was a freshwater lake that may once have been a coastal lagoon. Omev Island was also surveyed as part of the Biomar project (Crawford et al., 1998). Roden (1999) and Roden and Murphy (in prep.) surveyed Fahy Lough and found little change in 13 years. It was in good conservation condition in 2012 (Roden and Murphy, in prep.). It contains the coastal, machair form of habitat 3140, is shallow (c.4.6m) and has a very well-developed sandy shelf. The machair form is generally shallower, has cloudier water and is probably naturally more productive than typical hard water forms. It is likely that the machair form of habitat 3140 intergrades with or is related to lake habitats 3150 and 3130. More research is needed to characterise coastal lakes and the inter-relationships of lake habitats 3130, 3140 and 3150 within them
Vegetation composition: typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution	For lists of typical species (cyanobacteria, algae, higher plants and water beetles), see the Article 17 habitat assessment for lake habitat 3140 (NPWS, 2013) and the lake habitats supporting document (O Connor, 2015). The machair form of the hard water lake habitat (3140) differs from more typical forms by having characteristic plants such as <i>Ranunculus baudotii</i> and <i>Potamogeton pectinatus</i> . There was no significant change in the vegetation of Fahy Lough between 1999 and 2012, with the following species recorded: <i>Chara aspera</i> , <i>C. contraria</i> (dwarf form), <i>C. curta</i> (= <i>desmacantha</i>), <i>C. globularis</i> , <i>C. rudis</i> , <i>Littorella uniflora</i> , <i>Myriophyllum alterniflorum</i> , <i>Myriophyllum spicatum</i> , <i>Nitella flexilis</i> , <i>Potamogeton perfoliatus</i> and <i>Ranunculus baudotii</i> (Roden, 1999; Roden and Murphy, in prep.)

Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition	The characteristic zonation of lake habitat 3140 has been described (Roden and Murphy, 2013; in prep.). The zonation in machair forms of habitat 3140 differs from that of the clearer water forms (Roden and Murphy, in prep.). Fahy Lough has extensive charophytes (<i>Chara aspera</i> and <i>C. contraria</i> (dwarf form)) on the very well-developed sandy shelf, bordered by a deeper sandy area with hummocky growths of <i>C. globularis</i> and <i>C. rudis</i> (Roden, 1999; Roden and Murphy, in prep.). The deepest point has a dense stand of <i>Potamogeton perfoliatus</i> , with some <i>Myriophyllum spicatum</i> . Submerged rock has sparse krustenstein and clumps of <i>C. curta</i> . An area of granite gravel has <i>Littorella uniflora</i> , <i>Myriophyllum alterniflorum</i> and <i>C. curta</i> . A <i>Nitella flexilis</i> zone also occurs in one place at more than 3m depth
Vegetation distribution: maximum depth	Metres	No change to maximum depth of vegetation, subject to natural processes	The maximum depth of vegetation is likely to be specific to the lake shoreline in question, but is typically expected to be deep in clear, hard water lakes. An indicative target of >6m has been developed for hard water lakes (3140), but this may need to be modified based on the habitat sub-type/form and/or the specific lake in question (see Roden and Murphy, 2013; in prep.). Colonisation tends to be shallower in the machair form of hard water lakes, owing to cloudier water and shallower lake depth (Roden and Murphy, in prep.). Extremely clear marl lakes can have charophyte vegetation to far greater depths, such as Lough Rea (charophytes to 10-11m), or Coolorta (>9m) (Roden and Murphy, in prep.). In this SAC, Fahy Lough is shallow (4.6m) and vegetation occurs at all depths (Roden and Murphy, in prep.)
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat	The hydrological regime of lakes with habitat 3140 is driven by groundwater flows. Groundwater can discharge directly to the lake, via springs or seepages, or to in-flowing rivers. For machair forms, the hydrological regime is that of the surrounding sand plain. Fluctuations in lake water level are typical in Ireland, but can be amplified by activities such as abstraction and drainage. 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, particularly the groundwater contribution, 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	The hard water lake habitat is associated with a range of base-rich substratum types, from marl and limestone bedrock, through rocks, cobbles, gravel, muds and even peat. Further research into substratum quality (notably calcium, iron and nutrient concentrations) in the hard water lake habitat would be beneficial. Sand dominates the substratum of Fahy Lough, with some outcropping granite bedrock and limited granite-derived gravels along the shore

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. A target has been set for hard water lakes (3140) of >6m (Roden and Murphy, in prep.). The OECD fixed boundary system set transparency targets for oligotrophic lakes of ≥6m annual mean Secchi disk depth and ≥3m annual minimum Secchi disk depth. Hard water lakes typically have high transparency, particularly in the very clear and typical marl forms; however, transparency may be relatively lower in the machair form (Roden and Murphy, in prep.). Secchi depth at Fahy Lough was 4.5m in 2012 (Roden and Murphy, in prep.)
Water quality: nutrients	µg/l P; mg/l N	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	Habitat 3140 is typically associated with high water quality, as demonstrated by naturally low dissolved nutrients. However, some forms appear to be naturally more productive than others and the machair form may, naturally, be more nutrient-rich. The default target is Water Framework Directive (WFD) High Status or oligotrophic (OECD, 1982). Annual average TP concentration should be ≤10µg/l TP, average annual total ammonia concentration should be ≤0.04mg/l N and annual 95th percentile for total ammonia should be ≤0.09mg/l N. For machair sites, where study demonstrates it can maintain favourable condition for the long-term, a target of 'good' status or mesotrophic can be applied: annual average TP ≤ 20µg/l TP and total ammonia ≤0.065mg/l N, total ammonia 95th percentile ≤0.14mg/l N. Where nutrient concentrations are lower than the targets, there should be no upward trend in concentrations. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009
Water quality: phytoplankton biomass	µg/l Chlorophyll <i>a</i>	Maintain appropriate water quality to support the habitat, including high chlorophyll <i>a</i> status	Habitat 3140 is associated with high water quality, as demonstrated by naturally low algal growth. As for nutrients, the default target is WFD High Status or oligotrophic (OECD, 1982). Average growing season (March-October) chlorophyll <i>a</i> concentration must be <5.8µg/l. Annual average chlorophyll <i>a</i> concentration should be <2.5µg/l and the annual peak should be <8.0µg/l. For machair sites, where study demonstrates it can maintain favourable condition for the long-term, a target of 'good' status or mesotrophic can be applied: average growing season chlorophyll <i>a</i> <10µg/l; annual average <8.0µg/l; annual peak <25µg/l. Where chlorophyll <i>a</i> concentrations are lower than the targets, there should be no upward trend in phytoplankton biomass. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009
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, the default target for habitat 3140 is WFD high status
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	Nutrient enrichment can favour epiphytic and epipelagic algae that can out-compete the submerged vegetation. The cover abundance of attached algae in hard water lakes (3140) should, therefore, be trace/absent (<5% cover). EPA phytobenthos can be used as an indicator of changes in attached algal biomass. As for other water quality indicators, the default target status for lake habitat 3140 is high phytobenthos status

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 hard water lakes (3140). The EPA monitors macrophyte status for WFD purposes using the 'Free Index'. The target for lake habitat 3140 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
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	The specific requirements of habitat 3140, in terms of water and sediment pH, alkalinity and cation concentration, have not been fully determined. Acidification is not considered a threat to habitat 3140, however eutrophication can lead to at least temporary increases in pH to toxic levels ($>9/9.5$ pH units). Maximum pH should be <9.0 pH units, in line with the surface water standards. See Schedule Five of the European Communities Environmental Objectives (Surface Waters) Regulations 2009
Water colour	mg/l PtCo	Maintain appropriate water colour to support the habitat	Increased colour decreases light penetration and reduces the area of macrophyte habitat, particularly at the lower euphotic depths. Higher colour also appears to favour angiosperms over charophytes in hard water lakes (Roden and Murphy, in prep.). The primary source of increased colour in Ireland is peatland disturbance. No habitat-specific or national standards for water colour 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). Habitat 3140 is typically associated with very clear waters and expected colour would be <10 or, more likely, <5 mg/l PtCo. Higher colour is found in some hard water lakes with significant areas of peatland in their catchment, but it is not clear whether this is natural or the result of peatland degradation
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: Hectares
area and condition

Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3140

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. Equally, 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. Fringing fen habitats can be particularly important around hard water lakes, notably the Annex I habitats alkaline and *Cladium* fen, and petrifying springs (habitat codes 7230, 7210 and 7220). In this SAC, Fahy Lough is surrounded by machair on three sides, Lough Namackan has swamp and fen vegetation (Crawford et al., 1998; Roden, 1999)

Conservation Objectives for : Omey Island Machair SAC [001309]


1395 Petalwort *Petalophyllum ralfsii*

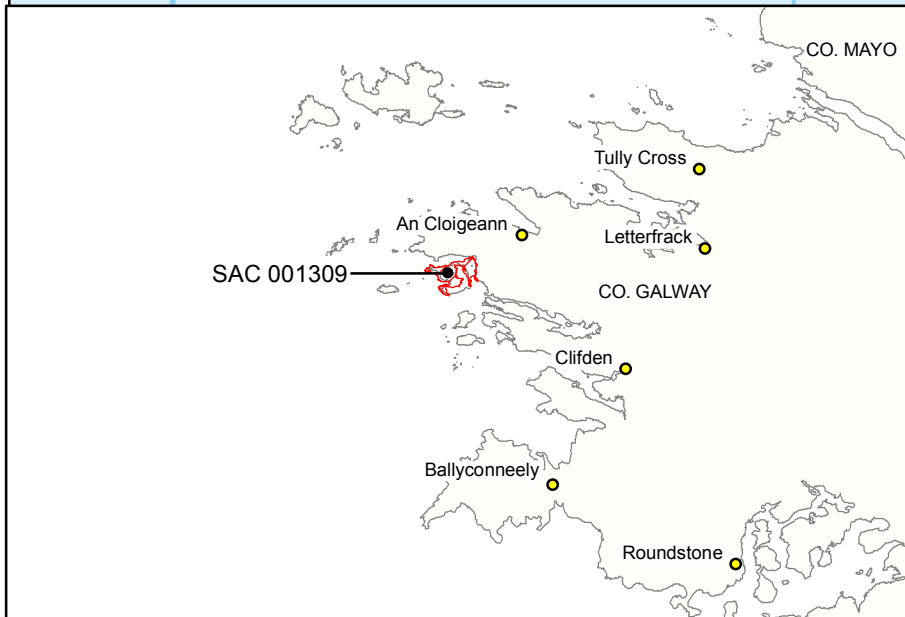
To maintain the favourable conservation condition of Petalwort in Omey Island Machair SAC, which is defined by the following list of attributes and targets:


Attribute	Measure	Target	Notes
Distribution	Number and geographical spread of populations	No decline. See map 5 for recorded locations	There are two known locations for <i>Petalophyllum ralfsii</i> in Omey Island Machair SAC. The first occurs along a compacted trackway for a distance of c.10m in a flat, wet basin with peaty calcareous sand which seasonally floods, and the second occurs further south in the wheel ruts of a trackway across the machair. Data from NPWS surveys carried out by Neil Lockhart in 1998 and 2006. See also Campbell et al. (2015)
Population size	Number of individuals	No decline. The population is estimated to be at least 155 thalli	Estimate based on the mean number of <i>Petalophyllum ralfsii</i> thalli recorded by Lockhart in 1998 (304 thalli) and in 2006 (6 thalli), i.e. 155 thalli. Numbers of thalli can vary from year to year. See also Campbell et al. (2015)
Area of suitable habitat	Hectares	No decline. Area of suitable habitat in Omey Island Machair SAC is estimated to be at least 0.102ha	The extent of suitable habitat in Omey Island Machair SAC has not been accurately measured using GPS, but is estimated to be at least 1019m ² (c.0.102ha) based on surveys by Lockhart in 1998 and 2006. Suitable habitat within the SAC is likely to be more widespread. See also Campbell et al. (2015)
Hydrological conditions: soil moisture	Occurrence of damp soil conditions	Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but is not subject to prolonged inundation by flooding in winter	<i>Petalophyllum ralfsii</i> grows on damp sandy substrate. Based on Campbell (2013) and Campbell et al. (2015)
Vegetation: open structure	Height and percentage cover of vegetation	Maintain open, low vegetation, with a high percentage cover of bryophytes (small acrocypus and liverwort turf) and bare ground	At Omey Island Machair SAC, <i>Petalophyllum ralfsii</i> grows in compacted, sandy ground, maintained by cattle and rabbit (<i>Oryctolagus cuniculus</i>) grazing, trampling by horses and compression by vehicles. The conditions should be maintained by grazing and usage by vehicles to compact soil and retain open ground. See Campbell et al. (2015) for further details



Legend

 Omey Island Machair SAC 001309



 An Roinn Ealaíon, Oidhreacht, Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta
 Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

**MAP 1:
 OMEY ISLAND MACHAIR SAC
 CONSERVATION OBJECTIVES
 SAC DESIGNATION**

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

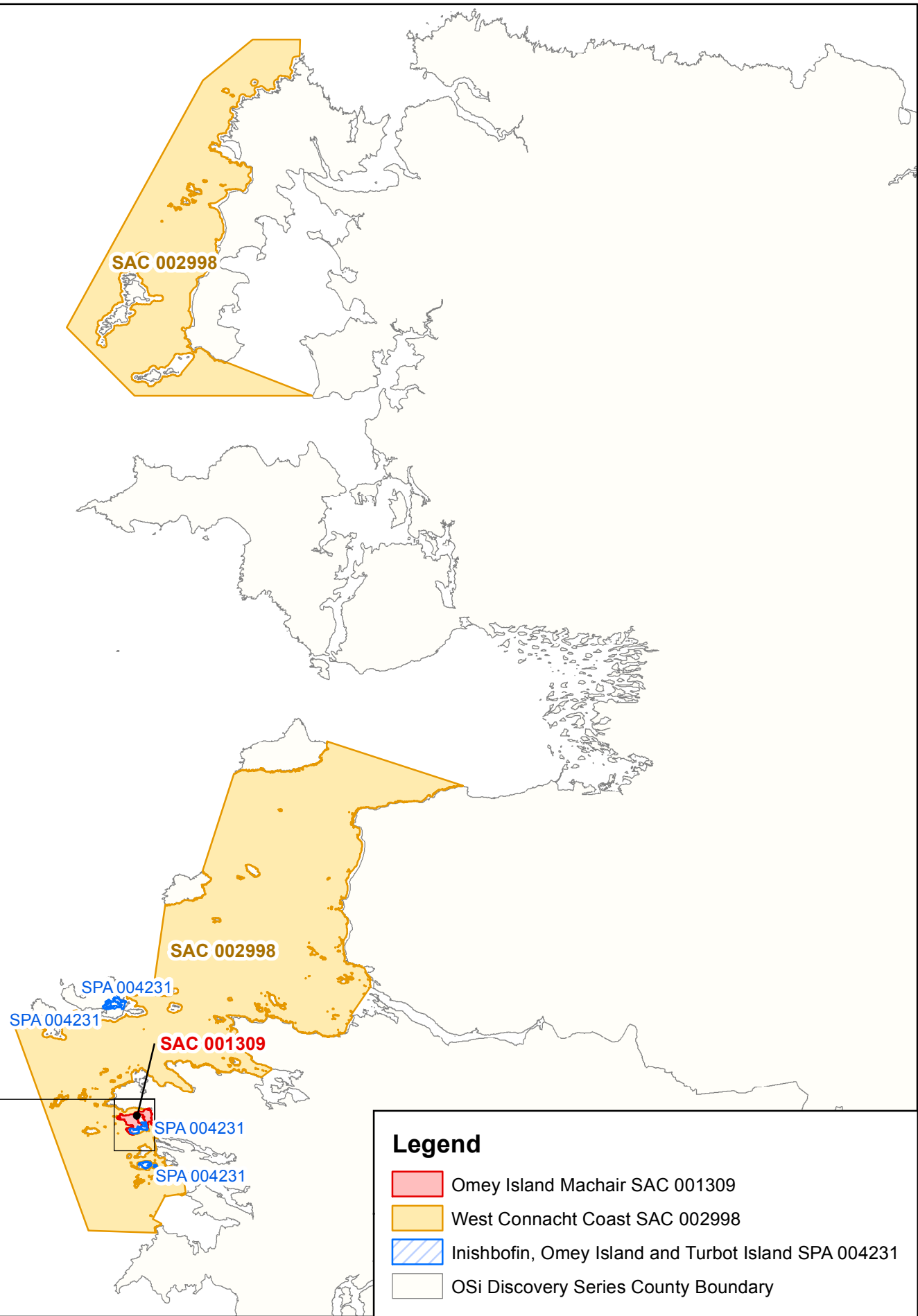
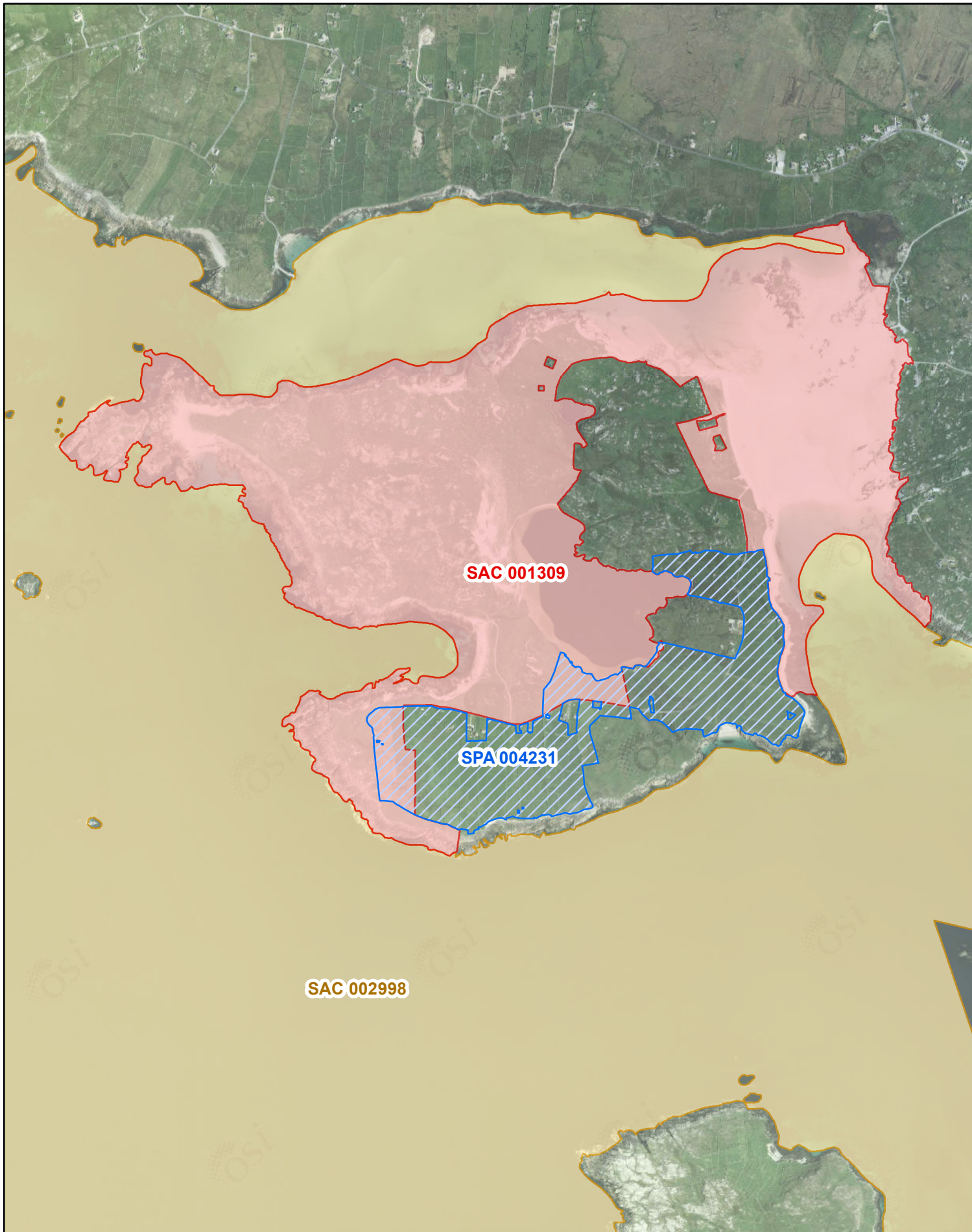
**SITE CODE:
 SAC 001309; version 3.
 CO. GALWAY**

0 0.1 0.2 0.3 0.4 0.5 km

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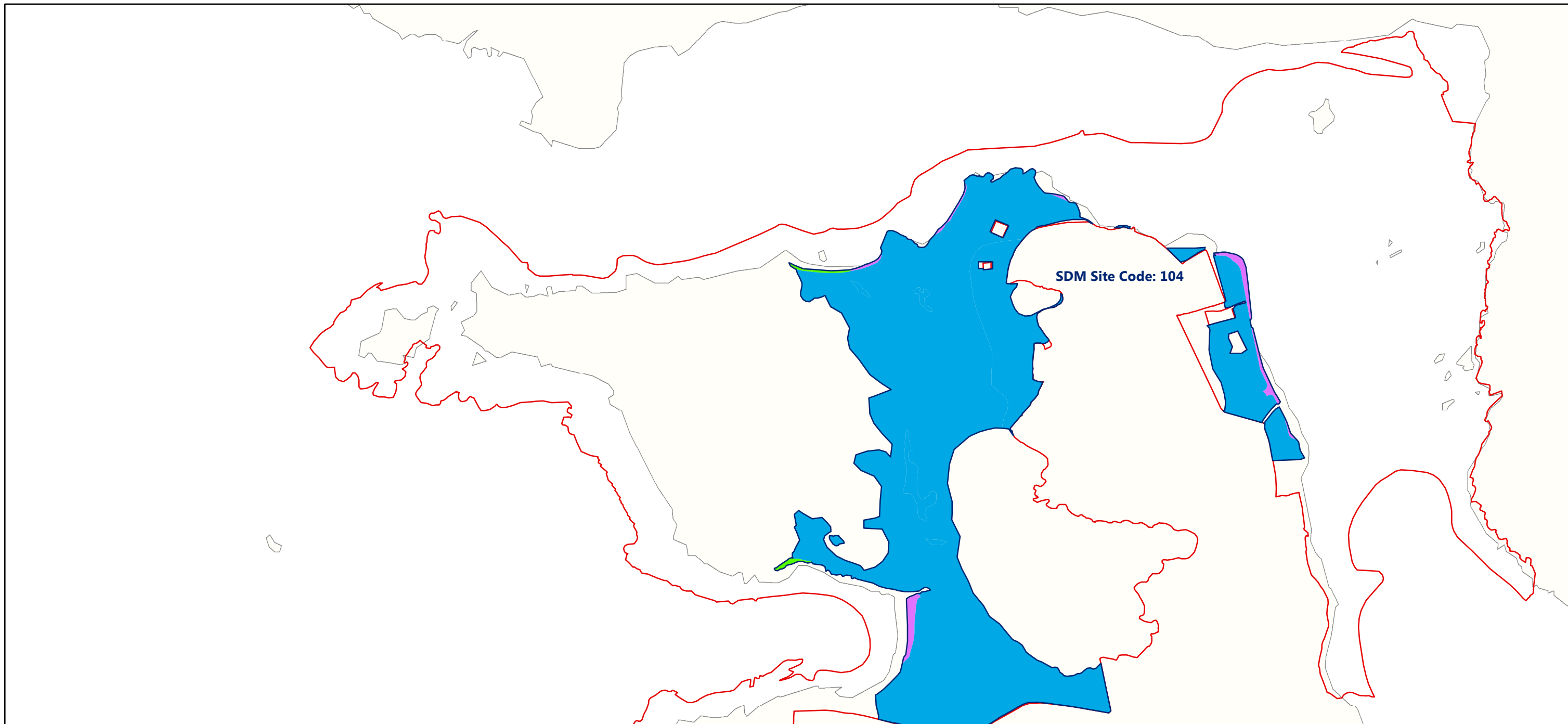
Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbheithnithe a déanamh ar theorainneacha na gceantar comharthaith. Suirbhéarachta Ordonáis na hÉireann Ceadúnas


Map Version 1
Date: Nov 2016



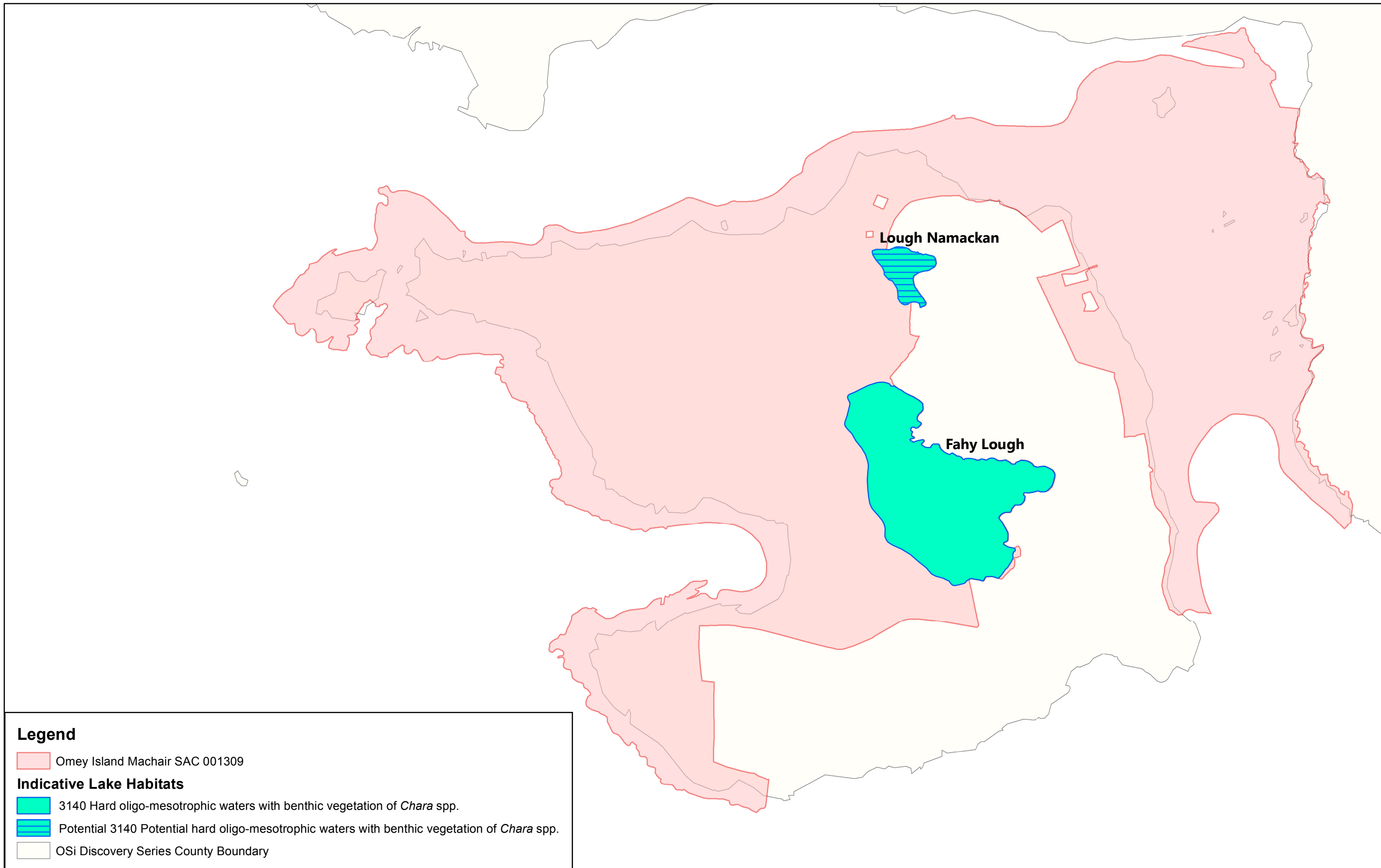
Legend

- Omey Island Machair SAC 001309
- West Connacht Coast SAC 002998
- Inishbofin, Omey Island and Turbot Island SPA 004231
- OSi Discovery Series County Boundary



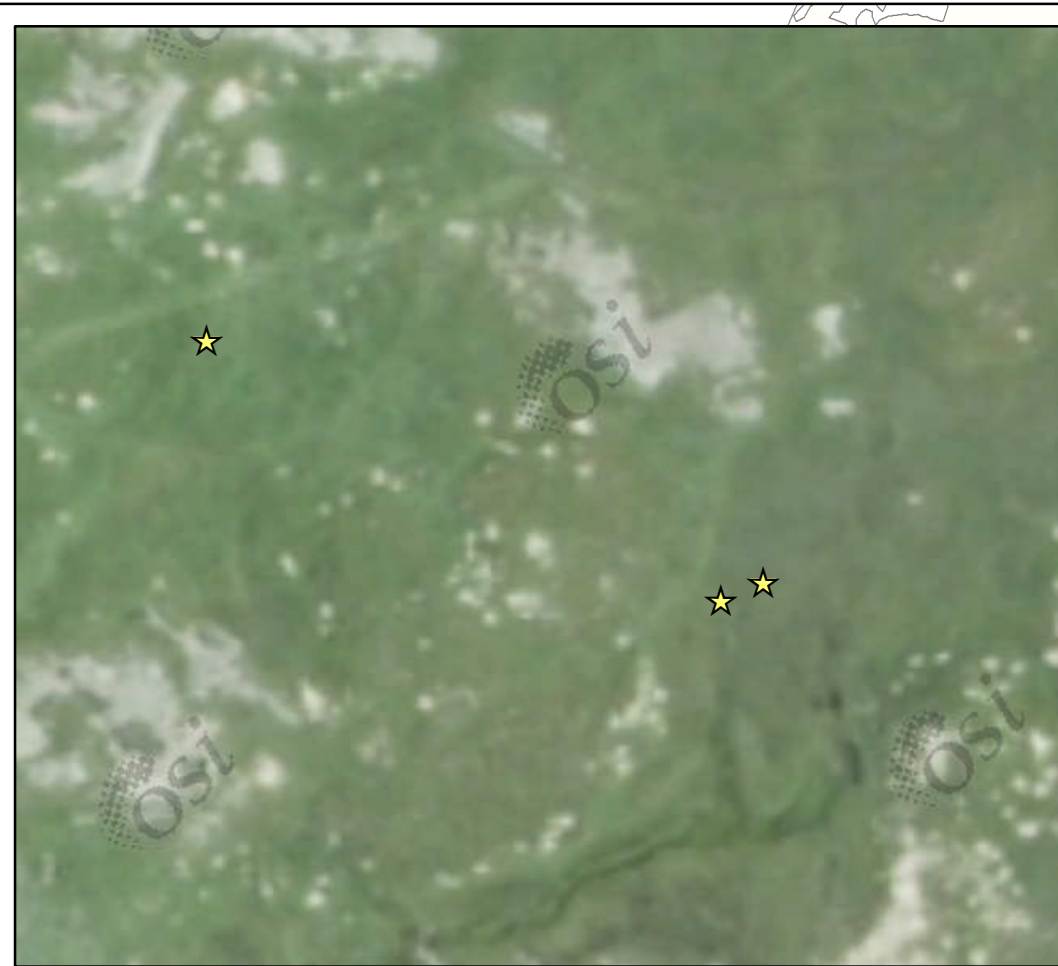
Legend

- Omev Island Machair SAC 001309
- Sand Dune Monitoring Project Survey Area
- Annex I Habitats Qualifying Interests**
- 21A0 Machairs (* in Ireland)
- Annex I Habitats Non Qualifying Interests**
- 1220 Perennial vegetation of stony banks
- 2110 Embryonic shifting dunes
- OSi Discovery Series County Boundary



Legend

- Omev Island Machair SAC 001309
- Indicative Lake Habitats**
- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- Potential 3140 Potential hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- OSi Discovery Series County Boundary



Legend

- Omey Island Machair SAC 001309
- OSi Discovery Series County Boundary
- 1395 Petalwort *Petalophyllum ralfsii* (Wills.) Nees and Gott.

