

**Inishkea Islands SAC (site code 507)  
Conservation objectives supporting document  
-coastal habitats**

**NPWS**

**Version 1**

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*Please note that the opinions expressed in the site reports from the Coastal Monitoring Project (CMP) are those of the authors and do not necessarily reflect the opinion or policy of NPWS.*

**Please note that this document should be read in conjunction with the following report: NPWS (2015). Conservation Objectives: Inishkea Islands SAC. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.**

## 1 Introduction

Achieving Favourable Conservation Status (FCS) is the overall objective to be reached for all Annex I habitat types and Annex II species of European Community interest listed in the Habitats Directive 92/43/EEC (Commission of the European Communities, 2007). It is defined in positive terms, such that a habitat type or species must be prospering and have good prospects of continuing to do so.

The Inishkea Islands are the two largest islands off the west coast of the Mullet Peninsula in north-west County Mayo. As well as Inishkea North and Inishkea South the site includes Carrickawilt, Carrigee, Carrickmoyleenacurhoga, Pluddany Rocks, Carrickfad, Carrickgormal, Carricklaur, Carrickalaveen and several smaller rocks and reefs.

The north island is low-lying and dominated by machair, a priority habitat listed on Annex I of the EU Habitats Directive. The south islands has a low-lying cover of machair vegetation in the northern part, but is characterised by a heath-covered ridge and hill (70m O.D.).

The islands were populated until 1932; today, the derelict houses remain clustered in two villages.

A population of *Petallophyllum ralfsii* has been discovered on North Inishkea. This species of liverwort is of high conservation importance and is listed on Annex II of the EU Habitats Directive. It is a species typically associated with machair habitat.

The Inishkeas are of ornithological interest for breeding seabirds.

The Inishkeas, together with a group of neighbouring islands are an important breeding site for Grey Seal, a species listed on Annex II of the EU Habitats Directive.

Inishkea Island Special Area of Conservation (SAC) (site code: 507) is designated for machair, which is the only coastal habitat included in the list of qualifying interests for the site (\*indicates priority habitat):

- Machairs (\*in Ireland) (21A0)

This backing document sets out the conservation objectives for the single coastal habitat listed above in Inishkea Islands SAC, which is defined by a list of parameters, attributes and targets. The main parameters are (a) Range (b) Area and (c) Structure and Functions, the last of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The targets set for the **sand dune habitats** are based primarily on the results of the Coastal Monitoring Project (CMP) (Ryle *et al.*, 2009) and this document should be read in conjunction with that report.

The CMP surveyed, mapped and assessed a total of one sub-site within Inishkea Islands SAC (Ryle *et al.*, 2009):

1. Inishkea Islands

The distribution of sand dune habitats within Inishkea Islands SAC is presented in Appendix I. As part of the Coastal Monitoring Project (CMP), a detailed individual report and habitat map was produced for the sub-site and this is included in Appendix II.

The conservation objective for the sand dune habitat, Machairs, in Inishkea Islands SAC is based on the findings of the individual report for the sub-site, combined with the results of Gaynor (2008). It is thought that the sub-site as surveyed by the CMP represents the total area of sand dune habitat within Inishkea Islands SAC.

## 2 Conservation Objectives

A conservation objective aims to define the favourable conservation condition of a habitat or species at a particular site. Achievement of these objectives will help to ensure that the habitat or species achieves favourable conservation status at a national level.

## 3 Sand dune habitats

Sand dunes are hills of wind-blown sand that have become progressively more stabilised by a cover of vegetation. In general, most sites display a progression through strandline, foredunes, mobile dunes and fixed dunes. Where the sandy substrate is decalcified, fixed dunes may give way to dune heath. Wet hollows, or dune slacks, occur where the dunes have been eroded down to the level of the water-table. Transitional communities can occur between dune habitats and they may also form mosaics with each other. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that all of the habitats present at a site achieve favourable conservation condition.

In Ireland, there are nine sand dune habitats (including annual vegetation of drift lines) listed under Annex I of the EU Habitats Directive (92/43/EEC) (\* denotes a priority habitat):

- Annual vegetation of drift lines (1210)
- Embryonic shifting dunes (2110)
- Shifting dunes along the shoreline with *Ammophila arenaria* (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130) \*
- Decalcified dunes with *Empetrum nigrum* (2140) \*
- Decalcified dune heath (2150) \*

- Dunes with *Salix repens* (2170)
- Humid dune slacks (2190)
- **Machair (21A0) \***

Only one dune habitat as indicated in bold above is listed as a Qualifying Interest for Inishkea Islands SAC.

**Machair (21A0)** is a highly specialised and complex dune habitat that is confined globally to the north-west coasts of Ireland and Scotland. It comprises a flat or gently undulating sandy plain that develops in an oceanic location with a cool moist climate. Machair systems are highly calcareous, the sediments usually containing a high percentage of shell fragments and having pH values in excess of 7. The vegetation is herbaceous, with low frequency of sand-binding species (Gaynor, 2006). Irish machair is a priority habitat under the E.U. Habitats Directive.

In 1996, the Biomar Machair Survey surveyed all sand dune sites at which machair formed a significant element (Crawford *et al.*, 1996). Comparison of the CMP with this 1992 survey revealed considerable degradation of machair habitat which could be attributed to changes in farming practices which has seen many machair commonages being fenced (stripped) resulting in greater concentration of livestock in confined areas, overgrazing, supplementary feeding and poaching of the land (Ryle *et al.*, 2009).

Dune habitats occur as a complex mosaic of constantly changing and evolving vegetation communities. They are inextricably linked in terms of their ecological functioning and should be regarded as single geomorphological units. As such, no dune habitat should be considered in isolation from the other dune habitats present at a site, or the adjoining semi-natural habitats with which they often form important transitional communities.

The CMP surveyed one sub-site within Inishkea Islands SAC:

1. Inishkea Islands

A total of 115.65ha of sand dune habitat was mapped within the Inishmore Island SAC, all of which represents machair. Detailed descriptions from the Coastal Monitoring Project (Ryle *et al.*, 2009) of this sub-site and the machair habitat found at Inishkea Islands are presented in Appendix II.

### 3.1 Overall objectives

The overall objective for 'Machair' in Inishkea Islands SAC is to 'restore the favourable conservation condition'.

This objective is based on an assessment of the recorded condition of each habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area (b) Range and (c) Structure and Functions.

### 3.2 Area

#### 3.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. Baseline habitat maps were produced for the sand dune habitats in Inishkea Islands SAC during the Coastal Monitoring Project (CMP) (Ryle *et al.*, 2009). This map is included with the individual site report in Appendix II at the end of this document. The total area of machair within the SAC as estimated by Ryle *et al.* (2009) is presented in the second column of the following table. These figures were subsequently checked and adjusted to take into account some overlapping polygons and mapping errors. The adjusted figures are presented in the final column.

Habitat	Total area (ha) of habitat from CMP	Total area (ha) of habitat within SAC boundary
Machair	115.7	115.65
<b>Total</b>	<b>115.7</b>	<b>115.65</b>

The general target for this attribute in the case of each habitat is that the area should be stable, or increasing. Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is always assessed subject to natural processes, including erosion and succession.

### 3.3 Range

#### 3.3.1 Habitat distribution

The distribution of sand dune habitats as mapped by Ryle *et al.* (2009) is presented in Appendix I.

Inishkea North is low-lying and is dominated by machair vegetation. At Inishkea South there is a small area of machair situated in the north-eastern part of the island, close to the derelict village (Ryle *et al.*, 2009).

The target is that there should be no decline or change in the distribution of these sand dune habitats, unless it is the result of natural processes, including erosion, accretion and succession.

### **3.4 Structure and Functions**

The location, character and dynamic behaviour of sand dunes are governed by a combination of geographic, climatic, edaphic and anthropogenic factors. Sand dunes are highly complex, dynamic systems, where the habitats occur in a complex and constantly evolving and changing mosaic. They function as systems in terms of geomorphology and hydrology and maintaining the favourable conservation condition of the habitats present depends on allowing these processes to continue unhindered. Maintaining the favourable conservation condition of Machairs in Inishkea Islands SAC in terms of structure and functions depends on a range of attributes for which targets have been set as outlined below.

#### **3.4.1 Physical structure: functionality and sediment supply**

Coastlines naturally undergo a constant cycle of erosion and accretion. There are two main causes of erosion: (a) those resulting from natural causes and (b) those resulting from human interference. Natural causes include the continual tendency towards a state of equilibrium between coasts and environmental forces, climatic change (particularly an increase in the frequency of storms or a shift in storm tracks), relative sea level rise and natural changes in the sediment supply. Human interference is usually associated with changes in the sediment budget, either directly, through the removal of beach or inshore sediment, or indirectly, by impeding or altering sediment movement. It is important to recognise that the process of coastal erosion is part of a natural tendency towards equilibrium. Natural shorelines attempt to absorb the energy entering the coastal zone by redistributing sediment.

Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Sediment supply is especially important in the embryonic dunes and mobile dunes, as well as the strandline communities where accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. The construction of physical barriers such as sea defences can interrupt longshore drift, leading to beach starvation and increased rates of erosion. Sediment circulation and erosion also has a role to play in the more stabilised dune habitats. Cycles of erosion and stabilisation are part of a naturally functioning dune system, where the creation of new bare areas allows pioneer species and vegetation communities to develop, increasing biodiversity. The construction of physical barriers can interfere with the sediment circulation by cutting the dunes off from the beach resulting in fossilisation or over-stabilisation of dunes.

The CMP noted that the machair at Inishkea North had been severely eroded naturally and this had been exacerbated by overgrazing. Both Inishkea Islands are very prone to coastal erosion and sediment depletion (Ryle *et al.*, 2009).

The target for this attribute is to maintain and where possible restore the natural circulation of sediment and organic matter throughout the entire dune system, without any physical obstructions

#### **3.4.2 Vegetation structure: zonation**

The range of vegetation zones on a dune system should be maintained. Gaynor (2008) highlights the highly transitional nature of much of the vegetation; therefore, it is important that the transitional communities are also conserved, including those to the saltmarsh communities.

The machair and heath habitats on the islands grade in to saltmarsh in places, particularly along the fringes of the islands. Other habitats presents within the SAC site include open marine water, lowland dry grassland, wet grassland, boulder beaches, shingle and bedrock shores.

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes, including erosion and succession.

#### **3.4.3 Vegetation structure: bare ground**

This target applies to machair, fixed dunes, dunes with *S. repens* and dune slacks. It does not apply to the other habitats present where high levels of bare sand are a natural component of the habitat. In the fixed and slack areas some degree of instability is vital. Constant cycles of erosion and stabilisation provide the necessary conditions for the establishment of pioneer species and species that favour open conditions such as petalwort (*Petalophyllum ralfsii*) and a range of invertebrates, helping to increase biodiversity.

The Annex II liverwort, *Petallophyllum ralfsii* was recorded on the north Island along a well-worn sheep path traversing the lower edge of the machair plain.

Bare ground cover >10% was recorded by the CMP in monitoring stops on Inishkea South.

The target is to achieve up to 10% bare sand, with the exception of pioneer slacks which can have up to 20% bare sand. This target is assessed subject to natural processes.

#### **3.4.4 Vegetation structure: vegetation height**

This attribute applies to the more fixed habitats (including machair). A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. The ecological benefits of moderate levels of grazing on dunes have been well documented (Gaynor, 2008). Moderate grazing regimes lead to the development of a species-rich vegetation cover. The animals increase biodiversity by creating micro-habitats through their grazing, dunging and trampling activities. Grazing slows down successional processes and in some cases reverses them, helping to



achieve a diverse and dynamic landscape. The effects of trampling assist the internal movement of sand through the development of small-scale blowouts, while dunging can eutrophicate those dune habitats whose nutrient-poor status is crucial for the survival of certain vegetation types. Many species, from plants to invertebrates, benefit immensely from the open and diverse system created by a sustainable grazing regime. Many dune species are small in size and have relatively low competitive ability. Consequently, the maintenance of high species diversity on a dune system is dependent on the existence of some control to limit the growth of rank coarse vegetation (Gaynor, 2008).

The machair on Iniskea Islands is overgrazed. Inishkea North and South are grazed by rabbits, geese and sheep (Ryle *et al.*, 2009).

The target for this attribute is to maintain structural variation within the sward.

#### **3.4.5 Vegetation composition: typical species & sub-communities**

Species diversity and plant distribution in dunes is strongly controlled by a range of factors, including mobility of the substrate, grazing intensities, moisture gradients, nutrient gradients and human disturbance. In the younger, more mobile dunes, marram (*Ammophila arenaria*) is common, while groundsel (*Senecio vulgaris*), sea rocket (*Cakile maritima*) and dandelion (*Taraxacum* sp.) are also present. The fixed, more stable dune vegetation includes lady's bedstraw (*Galium verum*), common birdsfoot trefoil (*Lotus corniculatus*), wild thyme (*Thymus praecox*), kidney vetch (*Anthyllis vulneraria*), wild pansy (*Viola tricolor*) and biting stonecrop (*Sedum acre*).

Typical species of machair were recorded at Inishkea North and South by the CMP (Ryle *et al.*, 2009)

The target for this attribute is to maintain a typical flora for the particular sand dune habitat.

#### **3.4.6 Vegetation composition: negative indicator species**

Negative indicators include non-native species (e.g. *Hippophae rhamnoides*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled.

The main invasive species identified in Gaynor (2008) were bracken (*Pteridium aquilinum*) and sea buckthorn (*Hippophae rhamnoides*). The invasion of non-native species compromises the typical plant community structure. Bracken (*Pteridium aquilinum*) is becoming increasingly dominant, particularly where sites have been abandoned or where grazing levels have been significantly reduced. The vegetation retains many elements of the original vegetation cover, but there is a reduction in biodiversity. As the canopy becomes taller and ranker, many of the low-growing species disappear. In this case, the vegetation is treated as a sub-community of the original community that was invaded. This is always the case unless the original vegetation cover has been completely destroyed, as can happen with *H. rhamnoides*, which can form dense impenetrable thickets.

On Inishkea North, negative indicators Yorkshire fog (*Holcus lanatus*) and common ragwort (*Senecio jacobaea*) were noted as present but not abundant by the CMP (Ryle *et al.*, 2009).

Thistles (*Cirsium* species) was noted on Inishkea South by the CMP (Ryle *et al.*, 2009).

The target is that negative indicators (including non-native species) such as *Hippophae* should make up less than 5% of the vegetation cover.

#### **3.4.7 Vegetation composition: scrub/trees**

This attribute only applies to the fixed dunes and machair. Scrub encroachment leads to reduction in dune biodiversity and needs to be controlled. The presence of scrub and trees which have deep roots can also lower the groundwater table which can have significant impacts on the slack communities.

The target for this attribute therefore is that the cover of scrub and tree species should be under control, or make up less than 5% of the vegetation cover.

#### **3.4.8 Vegetation composition: bryophytes**

This attribute applies to machair. Bryophytes are an important element of the machair flora. Moss cover is well developed within the machair habitat at this SAC and typically attains 90% cover. Frequently occurring species include *Campylium stellatum*, *Drepanocladus revolvens*, *Ctenidium molluscum* and *Philontis fontana*, most of which are indicative of wet, base-rich conditions.

The target for this attribute therefore is that the cover of bryophytes should and should always be at least an occasional component of the vegetation (Ryle *et al.*, 2009).

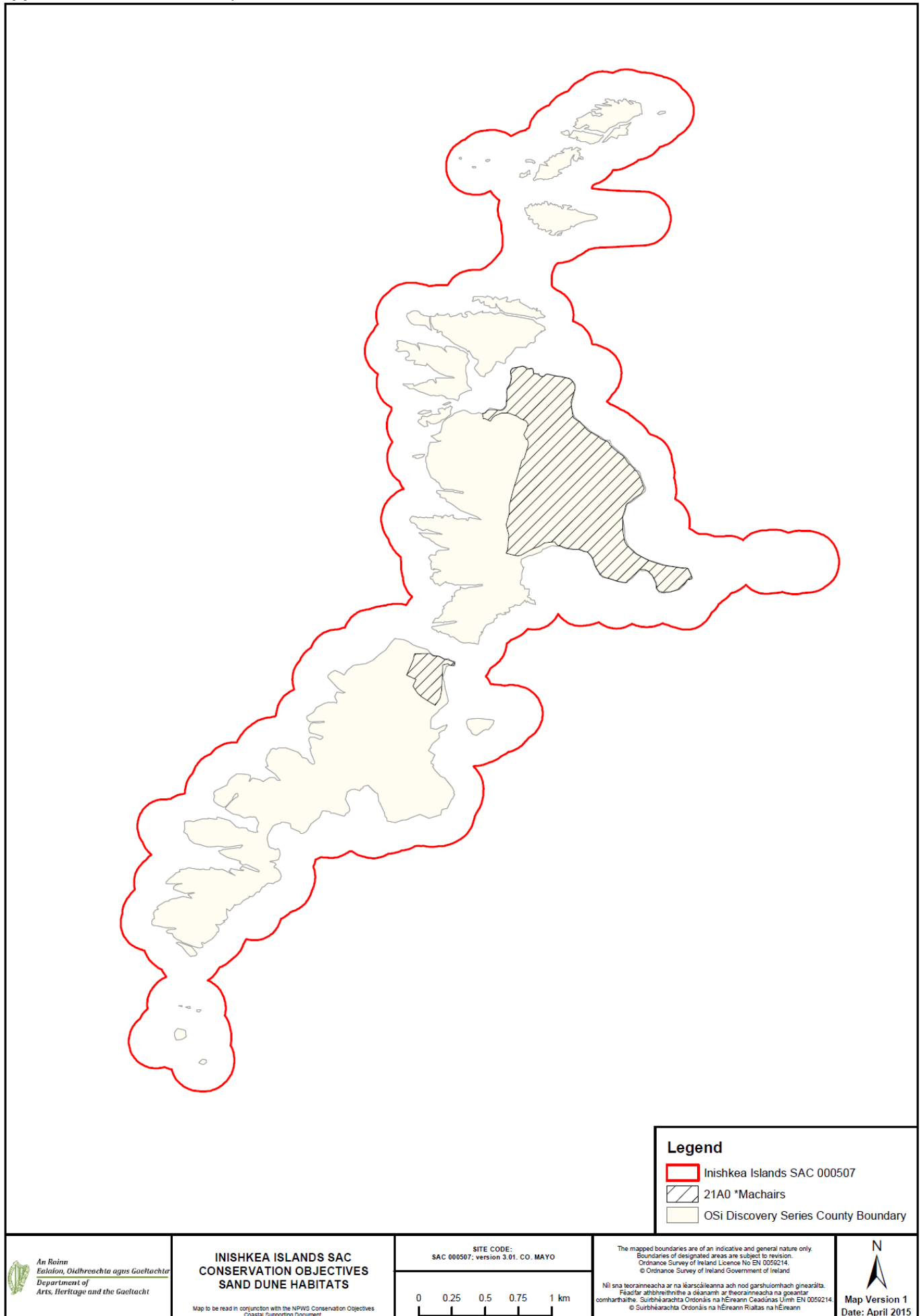
## **4 References**

Commission of the European Communities (2007). *Interpretation Manual of European Union Habitats – EUR 27*. DG Environment-Nature and Biodiversity, Brussels.

Gaynor, K. (2008). *The phytosociology and conservation value of Irish sand dunes*. Ph.D. Thesis, National University of Ireland, Dublin.

Ryle, T., Murray, A., Connolly, K. and Swann, M. (2009). *Coastal Monitoring Project 2004-2006*. Unpublished report to the National Parks and Wildlife Service, Dublin.

**Appendix I – Distribution map of sand dune habitats within Inishkea Islands SAC.**



## Appendix II – Inishkea Islands report and habitat map from the CMP (Ryle *et al.*, 2009)

### SITE DETAILS

CMP06 site name: **Inishkea Islands**

CMP06 site code: **123**

CMP Map No.: **120**

County: **Mayo**

Discovery map: **22**

Grid Reference: **F 567 225**

6 inch Map No.: **Ma 023**

Aerial photographs (2000 series): **Os 0430, Os 0432**

NPWS Site Name: **Inishkea Islands**

NPWS designation: pNHA: **507** cSAC: **507** SPA: **4004**

Ranger Area: **Mayo**

MPSU Plan: **Draft 2 Consultation 2000**

Report Author: **Melinda Swann**

### SITE DESCRIPTION

The Inishkea Islands are located off the west coast of the Mullet peninsula in Northwest County Mayo. They are situated approximately 4km from the mainland, and their underlying geology is comprised of Pre-Cambrian gneiss. The site is designated as a cSAC due to the presence of the Priority Habitat – Machair, as well as species occurring within the site that are listed under Annex II of the EU Habitats Directive, including *Halichoerus grypus* (Grey Seal) *Phoca vitulina*, (Common Seal) and *Petalophyllum ralfsii* (Petalwort).

This cSAC holds up to one third of the Irish breeding population of Grey Seals. The site includes a number of smaller islands, reefs and rocky outcrops. It is also of special significance to birds, and is an SPA and a Wildfowl Sanctuary. The islands hold internationally important numbers of wintering *Branta leucopsis* (Barnacle Goose), in addition to nationally important numbers of wintering *Charadrius hiaticula* (Ringed Plover), *Calidris alba* (Sanderling), *Calidris maritima* (Purple Sandpiper), *Arenaria interpres* (Turnstone) and *Pluvialis apricaria* (Golden Plover). The cSAC is also a very important area for breeding birds, and holds breeding populations of terns, waders, seabirds and other species. The numbers of breeding *Haematopus ostralegus* (Oystercatcher), *Charadrius hiaticula* (Ringed Plover) and *Calidris alpina* (Dunlin) are of national importance. A total of nine bird species that are listed under Annex I of the EU Birds Directive and two that are

listed in the Irish Red Data Book occur within the site. These include *Branta leucopsis* (Barnacle Goose), *Gavia immer* (Great Northern Diver), *Pluvialis apricaria* (Golden Plover), *Sterna paradisaea* (Arctic Tern), *Sterna hirundo* (Common Tern), *Sterna albifrons* (Little Tern), *Crex crex* (Corncrake), *Falco peregrinus* (Peregrine Falcon) and *Pyrhocorax pyrrhocorax* (Chough).

Inishkea North is low-lying and is dominated by machair vegetation, with dry grassland and rocky outcrops occurring on the western side of the island. The machair is of interest as it has formed on the northeastern side of the island. Machair usually forms when land is influenced by winds coming from a southwesterly direction and therefore it would be expected that the habitat would have formed on this side of the island. (This is also the case for Iniskea South (Database sitecode 206). A small brackish lake, Doon Lough, is situated at the north end of the island and is surrounded by marshy vegetation. On the western side of the island there are sheer cliffs which provide good nesting habitat for many sea bird species.

Inishkea South rises to an altitude of approximately 72m and is composed of heath vegetation on the higher ground. There is a small area of machair situated in the north-eastern part of the island, close to the derelict village.

Due to the strong influence of sea-spray, the machair and heath habitats grade into saltmarsh in places, particularly along the western fringes of the islands. Other habitats present within the site include open marine water, lowland dry grassland, wet grassland, boulder beaches, shingle and bedrock shores. Both islands are very prone to coastal erosion and sediment depletion. Overgrazing by sheep has added to the problem. The islands were inhabited up until 1932, but had to be evacuated following a tragic fishing accident, where a number of locals were drowned at sea. A large derelict village still remains on Iniskea North and is undisturbed. However, in recent years there has been an increase in visitors to the island during the summer months and this poses a major threat to nesting birds.

The current survey concentrates on the Annex I sand dune habitats and includes machair (priority habitat in Ireland). The areas of Annex I sand dune habitats recorded at Inishkea North and Inishkea South are shown in Table 123A. There were no aerial photographs available for use during the GIS mapping process of the Islands. Therefore a discovery map was used in this case, in conjunction with GPS points taken in the field.

**Table 123A** Areas of EU Annex I habitats mapped at Inishkea Islands

EU Code	EU Habitat	Area (ha)
<b>Inishkea North</b>		
H21A0	Machair	108
<b>Inishkea South</b>		
H21A0	Machair	7.7
	<b>Total Sand dune</b>	<b>115.7</b>

**Machair (H21A0)**Inishkea North

The machair habitat comprises 108ha on Inishkea North (Table 123A). The machair on this island is one of the best examples of this habitat in Ireland. The area of machair is quite extensive with a characteristic short sward appearance and high diversity of species. Sheep and cattle graze the machair and there is a large population of *Branta leucopsis* (Barnacle goose) which also visit during the winter months to graze. There is an area in the north east of the island, which is suffering the effects of overgrazing by sheep, and as a result has led to severe erosion of the vegetation.

The machair grades into dry coastal grassland and siliceous rock in the west of the island and there is a small lough located in the north, which adds to the diversity of the site. There are also old fields located on the higher ground to the west of the machair, and within these are areas containing wet grassland. The Annex II species *Petalophyllum ralfsii* (Petalwort) has been found east of the Doon Lough on a worn, sheep track (Lockhart, 1998). The species was not seen during the current survey. The weather was extremely hot and dry and so conditions were not optimal for the species.

The island offers good habitat for birds and there were high numbers of *Vanellus vanellus* (Lapwing) and *Calidris alpina* (Dunlin) noted nesting during the current survey.

The typical species of machair found at Inishkea North are *Lotus corniculatus* (Common bird's-foot-trefoil), *Bellis perennis* (Daisy), *Carex arenaria* (Sand sedge), *Galium verum* (Lady's bedstraw), *Plantago lanceolata* (Ribwort plantain), *Carex flacca* (Glaucous sedge), *Carex nigra* (Common sedge), *Prunella vulgaris* (Selfheal), *Trifolium repens* (White clover), *Thymus polytrichus* (Wild thyme), *Linum catharticum* (Fairy flax), *Cerastium fontanum* (Common mouse-ear), *Achillea millefolium* (Yarrow), *Sedum acre* (Biting stonecrop), *Aira praecox* (Early hair-grass), *Hydrocotyle vulgaris* (Marsh pennywort), *Agrostis stolonifera*

(Creeping bent), *Potentilla anserina* (Silverweed) and *Euphrasia officinalis* agg. (Eyebright).

Other species include *Anthyllis vulneraria* (Kidney vetch), *Trifolium pratense* (Red clover), *Ranunculus repens* (Creeping buttercup), *Luzula campestris* (Field wood-rush), *Poa pratensis* (Smooth meadow grass), *Poa annua* (Annual Meadow grass), *Ranunculus bulbosus* (Bulbous buttercup), *Leontodon saxatilis* (Lesser hawkbit), *Plantago coronopus* (Buck's-horn plantain), *Daucus carota* (Wild carrot), *Taraxacum* agg. (Dandelion), *Hypochaeris radicata* (Cat's-ear), *Polygala vulgaris* (Common milkwort), *Arenaria serpyllifolia* (Thyme-leaved sandwort), *Cardamine pratensis* (Cuckoo flower), *Veronica chamaedrys* (Germander speedwell), *Glaux maritima* (Sea-milkwort), *Anagallis tenella* (Bog pimpernel), *Plantago maritima* (Sea plantain) as well as the grasses *Festuca rubra* (Red fescue), *Festuca ovina* (Sheep's fescue) and *Anthoxanthum odoratum* (Sweet vernal-grass).

Bryophytes noted include *Rhytidiadelphus squarrosus*, *Rhytidiadelphus triquetrus*, *Homalothecium lutescens*, *Tortula ruraliformis*, *Eurynchium* spp. and *Calliergonella cuspidata*.

The negative indicators *Holcus lanatus* (Yorkshire fog) and *Senecio jacobaea* (Common ragwort) were noted during the survey, but were not abundant.

### **Machair (H21A0)** **Inishkea South**

The machair habitat comprises 7.7 ha on Inishkea South (Table 123A) and is located in the north east of the island. It is quite small in area and is relatively tightly grazed by sheep and rabbits as well as by *Branta leucopsis* (Barnacle geese) (Annex I) during the winter. Small fishing boats make regular trips to the island to bring day-trippers and some camping also occurs. There has been severe natural erosion at the seaward edge of the machair, which has been exacerbated by overgrazing by sheep and rabbits.

The typical species of machair found at Inishkea South are: *Lotus corniculatus* (Bird's-foot-trefoil), *Bellis perennis* (Daisy), *Carex arenaria* (Sand sedge), *Galium verum* (Lady's bedstraw), *Plantago lanceolata* (Ribwort plantain), *Prunella vulgaris* (Selfheal), *Trifolium repens* (White clover), *Thymus polytrichus* (Wild thyme), *Linum catharticum* (Fairy flax),

*Cerastium fontanum* (Common mouse-ear), *Achillea millefolium* (Yarrow), *Cirsium dissectum* (Meadow thistle) and *Euphrasia officinalis* agg. (Eyebright).

Other species include *Luzula campestris* (Field wood-rush), *Poa* spp. (Meadow grass), *Poa annua* (Annual Meadow grass), *Ranunculus bulbosus* (Bulbous buttercup), *Plantago coronopus* (Buck's-horn plantain), *Taraxacum* agg. (Dandelion) and *Festuca rubra* (Red fescue).

Bryophytes noted include *Homalothecium lutescens* and *Tortula ruraliformis*.

The only negative indicator noted on the machair is *Cirsium* spp. (Thistle spp.). However, it must be noted that there are extensive clumps of thistle located around the derelict houses to the south and they may spread into the machair in the future.

## **IMPACTS**

### Inishkea North

The main impacts on the machair habitat on the Inishkea Islands are given in Table 123B. The machair habitat on Inishkea North is grazed (Code 140) by sheep, geese and cattle and in some places there are areas which are over-grazed by sheep (Code 142). Some natural erosion (Code 900) occurs on the machair in the form of blowouts but this would be expected at such an exposed site. However, severe erosion (separate Code 900 in Table 123B) has occurred on the machair, in the southeast of the site, which is exacerbated by sheep grazing. The vegetation seems to be recovering slightly but a decrease in sheep numbers would further help the situation. Finally, increasing visitor numbers (Code 622) is leading to disturbance of the breeding birds on Inishkea north and needs to be addressed, although affects on the machair itself are minimal.

### Inishkea South

Rabbits, geese and sheep (Code 140) graze Inishkea South and the machair is mostly, overgrazed by rabbits (Code 146) and sheep (Code 142). Some camping (Code 608) occurs during the summer months and some of the houses are now being re-developed. This will further lead to recreational pressure on the habitat in the future. There is also some natural erosion (Code 900) occurring at the seaward side of the machair.

**Table 123B** Intensity and impact of various activities on sand dune habitats at Inishkea Islands



EU Habitat Code <sup>1</sup>	Activity Code <sup>2</sup>	Intensity <sup>3</sup>	Impact <sup>4</sup>	Area affected/ha	Location of Activity <sup>5</sup>
<b>Inishkea North</b>					
H21A0	140	B	0	107	Inside
H21A0	142	A	-1	1.6	Inside
H21A0	622	C	-1	Unknown	Inside
H21A0	900	C	0	0.2	Inside
H21A0	900	A	-1	1.6	Inside
<b>Inishkea South</b>					
H21A0	140	B	0	7.7	Inside
H21A0	142	B	-1	6	Inside
H21A0	146	B	-1	6	Inside
H21A0	608	C	-1	Unknown	Inside
H21A0	900	B	0	Unknown	Inside

<sup>1</sup>EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

<sup>2</sup>Description of activity codes are found in Appendix 3

<sup>3</sup>Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

<sup>4</sup>Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

<sup>5</sup>Location of activity: Inside = activities recorded within and directly impacting the sand dune habitat. Outside = activities recorded outside but adjacent to sand dune habitat that are impacting the sand dune habitat

## CONSERVATION STATUS

The conservation status of a site is assessed on the condition of the site and on baseline information. In some cases the assessment of habitats is also based on best scientific judgement. The main source of baseline information for this site was from the Natura 2000 report, the Biomar Survey (1996) and the MPSU management plan (2000). The site was not surveyed during the NHA project.

**Table 123C** Conservation status of Annex I sand dune habitats at Inishkea Islands

Habitat <sup>1</sup>	EU CONSERVATION STATUS ASSESSMENT			Overall EU conservation status assessment	Proposed Irish conservation status system <sup>2</sup>
	Favourable	Unfavourable - Inadequate	Unfavourable - Bad		
<b>Inishkea North</b>					
Machair (H21A0)		Extent Structure & functions Future Prospects		Unfavourable - Inadequate	Unfavourable - Declining
<b>Inishkea South</b>					
Machair (H21A0)	Extent	Structure & functions Future Prospects		Unfavourable - Inadequate	Unfavourable - Declining

<sup>1</sup>EU Codes as per Interpretation Manual

<sup>2</sup>Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)

Details of the numbers and pass/failure rates of monitoring stops used to assess habitat structure & functions at Inishkea North and South are shown in Table 123D.

### Machair (H21A0)

### Inishkea North

This island has one of the best examples of machair in the country and the habitat has been relatively undisturbed by anthropogenic activities. However, there has been some severe natural erosion, which has been exacerbated by overgrazing. The area affected is approximately 1.6ha of the overall machair habitat. Although some areas are now re-vegetating, the extent of the machair on Inishkea North is rated as *unfavourable-inadequate*. The Natura 2000 ranking is *excellent representativity*.

The monitoring process indicates that the machair habitat is mainly functioning well. However, one of the monitoring stops failed in the overgrazed area and so, the structure and functions parameter is rated as *unfavourable-inadequate*. A reduction in sheep grazing is recommended, to meet a *favourable* condition for the machair habitat. The Natura 2000 ranking is *excellent structure* (both islands). This assessment however, is without a complete botanical survey.

Quadrats taken from the Biomar machair survey have also been used to compare past and present condition of the site. The closest quadrats are used for comparison and this provides a good indicator of any change in species composition as well as sward height. The criteria used during the current survey (2006) were applied to quadrats in the machair survey (1996). Six quadrats were compared and all quadrats taken in 1996 passed the current monitoring criteria. Two of the quadrats were directly comparable, and four were very close to one another. It is interesting to note, that one of the quadrats in the current survey failed and another one had no bryophytes present, therefore there has been an apparent decline in condition in some areas of the habitat since 1996.

The future prospects are generally good for the habitat. However, as there is some overgrazing as well as an increase in recreational pressure it is expected that the habitat will further decline in condition. Therefore the future prospects of the habitat are rated as *unfavourable-inadequate*. The Natura 2000 ranking is *excellent prospects* (both islands), but points out that there may have been some overgrazing in recent years.

The overall EU conservation assessment is rated as *unfavourable-inadequate* and the Irish assessment is *unfavourable-declining*.

### Inishkea South

The machair is relatively minor on Inishkea South as it is confined to a small area in the north east of the island. The extent of the machair is considered *favourable* as there is no baseline information that indicates a definite loss in extent. However, the six-inch map may indicate a slight decrease in area, but this information is too old to allow a definitive decision.

The structure and functions parameter is rated as *unfavourable-inadequate*. Three monitoring stops passed their targets and one failed (Table 123D). The monitoring stop failed due to bare ground cover (>10%) and there were no bryophytes present. This indicates that the area is overgrazed resulting in a decline in condition of the habitat.

The future prospects for the machair on Inishkea South are rated as *unfavourable-inadequate*. This is due to the overgrazing by sheep and rabbits as well as an increase in recreational pressure.

**Table 123D** Monitoring stop totals and pass/failure rates of Annex I sand dune habitats at Inishkea Islands

	Monitoring stops		
Habitat	Pass	Fail	Conservation status
<b>Inishkea North</b>			
Machair (H21A0)	11	1	<b>Unfavourable-Inadequate</b>
<b>Inishkea South</b>			
Machair (H21A0)	3	1	<b>Unfavourable-Inadequate</b>

An overall EU conservation status of *unfavourable-inadequate* is assigned to the machair on Inishkea South (Table 123C). This is attributable to the *unfavourable-inadequate* structure and functions of this habitat and therefore the *unfavourable-inadequate* future prospects at the site.

The overall Irish conservation status is *unfavourable-declining*.

