# Kilmuckridge-Tinnaberna Sandhills SAC
# (site code: 1741)
# Conservation objectives supporting document -coastal habitats

**NPWS**

**Version 1**

**July 2014**

**Table of Contents**


| | | Page No. |
|---|---|---|
| **1** | Introduction | **2** |
| **2** | Conservation objectives | **3** |
| **3** | Sand dune habitats | **3** |
| **3.1** | Overall objectives | **5** |
| **3.2** | Area | **6** |
| **3.2.1** | Habitat extent | **6** |
| **3.3** | Range | **6** |
| **3.3.1** | Habitat distribution | **6** |
| **3.4** | Structure and Functions | **7** |
| **3.4.1** | Physical structure: functionality and sediment supply | **7** |
| **3.4.2** | Vegetation structure: zonation | **8** |
| **3.4.3** | Vegetation structure: bare ground | **8** |
| **3.4.4** | Vegetation composition: plant health of dune grasses | **8** |
| **3.4.5** | Vegetation structure: vegetation height | **9** |
| **3.4.6** | Vegetation composition: typical species & sub-communities | **9** |
| **3.4.7** | Vegetation composition: negative indicator species | **10** |
| **3.4.8** | Vegetation composition: scrub/trees | **10** |
| **4** | References | **11** |
| Appendix I: | Distribution map of sand dune habitats. within Kilmuckridge-Tinnaberna Sandhills SAC | **12** |
| Appendix II | Kilmuckridge site report and habitat map from the Coastal Monitoring Project (Ryle *et al.*, 2009) | **13** |
| Appendix III | Tinnaberna site report and habitat map from the Coastal Monitoring Project (Ryle *et al.*, 2009) | **25** |


*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 (2014). Conservation Objectives: Kilmuckridge-Tinnaberna Sandhills SAC 001741. 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.

Kilmuckridge-Tinnaberna Sandhills SAC is a narrow coastal site that extends for almost four kilometres along the Wexford coastline, from three kilometres east of Kilmuckridge in the north to Ballynamona in the south. The SAC comprises a fine-grained sandy beach up to 50m wide, backed by steep clay cliffs at the southern end and sand dunes at the northern end. The site also includes areas of woodland, scrub and dry grassland. Three streams flow through the SAC to the sea.

Kilmuckridge-Tinnaberna Sandhills SAC (site code: 1741) is selected for two coastal habitats listed in Annex I of the Habitats Directive as follows (* denotes a priority habitat):

- Shifting dunes along the shoreline with *Ammophila arenaria* (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)*

This backing document sets out the conservation objectives for the two sand dune habitats listed above in Kilmuckridge-Tinnaberna Sandhills 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 these 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 was a comprehensive national baseline survey of all known sand dune systems in Ireland. A total of two sub-sites were surveyed, mapped and assessed within Kilmuckridge-Tinnaberna Sandhills SAC (Ryle *et al.*, 2009):

1. Kilmuckridge
2. Tinnaberna

As part of the Coastal Monitoring Project (CMP) detailed individual reports and habitat maps were produced for the two sub-sites and these are included in a set of Appendices to this document (Appendices II and III). One area of damaged fixed dunes (10.9ha), which is mapped in the Kilmuckridge sub-site as “agriculturally developed land (on sandy substrate)”, is currently subject to a restoration plan (Gaynor, 2010). This area is included in the target area for fixed dune habitat in the conservation objective.

The conservation objectives for the sand dune habitats in Kilmuckridge-Tinnaberna Sandhills are based on the findings of the individual reports for this SAC from the CMP and Gaynor, (2010), combined with the results of Gaynor (2008). It is thought that the sub-sites as surveyed by the CMP represents the total area of sand dunes within the SAC.

## 2 Conservation Objectives

A conservation objective aims to define the favourable conservation condition of a habitat or species at a particular site. Implementation of the objective 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) *

The two dune habitats indicated in bold above were recorded by Ryle *et al*. (2009) from Kilmuckridge-Tinnaberna Sandhills SAC, both of which are listed as Qualifying Interests for the SAC. Very small areas of Annual vegetation of driftlines, Perennial vegetation of stony banks and Embryonic shifting dunes were also recorded during the survey. See Appendix I for map.

These habitats include mobile areas at the front as well as more stabilised parts of dune systems.

Annual vegetation of drift lines is found on beaches along the high tide mark, where tidal litter accumulates. It is dominated by a small number of annual species (i.e. plants that complete their life-cycle within a single season). Tidal litter contains the remains of marine algal and faunal material, as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy, fragmented stands of vegetation that are short-lived and subject to frequent re-working of the sediment. The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache (*Atriplex prostrata*), frosted orache (*A. laciniata*), sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*) and prickly saltwort (*Salsola kali*).

Embryonic dunes are low accumulations of sand that form above the strandline. They are sometimes referred to as foredunes, pioneer dunes or embryo dunes, as they can represent the primary stage of dune formation. They are characterised by the presence of the salt-tolerant dune grasses sand couch (*Elytrigia juncea*) and lyme grass (*Leymus arenarius*), which act as an impediment to airborne sand. Strandline species can remain a persistent element of the vegetation.

Where sand accumulation is more rapid than in the embryonic dunes, marram grass (*Ammophila arenaria*) invades, initiating the transition to mobile dunes (Shifting dunes along the shoreline with *Ammophila arenaria*). Marram growth is actively stimulated by sand accumulation. These unstable and mobile areas are sometimes referred to as ‘yellow dunes’ (or white dunes in some European countries), owing to the areas of bare sand visible between the tussocks of marram.

Fixed dunes refer to the more stabilised area of dune systems, generally located in the shelter of the mobile dune ridges, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or ‘fixed’ carpet of vegetation dominated by a range of sand-binding species (Gaynor, 2008).

All of the dune habitats indicated above 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.

Detailed descriptions from the Coastal Monitoring Project (Ryle *et al.,* 2009) of each sand dune habitat found in the two sub-sites relevant to Kilmuckridge-Tinnaberna Sandhills SAC are presented in Appendices II and III.

A total of 28.76ha of Annex I sand dune habitat was mapped within Kilmuckridge-Tinnaberna Sandhills SAC, 28.26ha of which represents habitats that are listed as qualifying interests for this particular site. Note that one area of fixed dunes that was damaged by intensive farming activities between 2002 and 2010 (and now subject to a restoration plan (Gaynor, 2010)) is included in the fixed dunes area target.

### 3.1 Overall objectives

The overall objective for 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dune)' in Kilmuckridge-Tinnaberna Sandhills SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Fixed coastal dunes with herbaceous vegetation' in Kilmuckridge-Tinnaberna Sandhills SAC is to 'restore the favourable conservation condition'.

These objectives are 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. A baseline habitat map was produced for the sand dune habitats in Kilmuckridge-Tinnaberna Sandhills SAC during the Coastal Monitoring Project (CMP) (Ryle *et al*., 2009). The maps are included with the individual site reports in Appendices II and II at the end of this document. The total areas of each sand dune habitat within the SAC as estimated by Ryle *et al*. (2009) are presented by sub-site in the following table (note that an area mapped by the CMP as "agriculturally developed land (on sandy substrate)" and now undergoing restoration works, is included in the overall fixed dune area target). These figures were subsequently checked and adjusted to take into account some overlapping polygons and mapping errors. They are also clipped to the SAC boundary.

| **Habitat** | **Kilmuckridge** | **Tinnaberna** | **Total area within SAC** |
|---|---|---|---|
| Shifting dunes along the shoreline with *Ammophila arenaria* | 1.98 | 0.04 | 2.02 |
| Fixed coastal dunes with herbaceous vegetation | 15.34<br>10.90[1] | - | 26.24 |
| **Total** | **28.22ha** | **0.04ha** | **28.26ha** |

[1] Area undergoing restoration

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 at Kilmuckridge-Tinnaberna Sandhills is presented in Appendix I

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. Restoring the favourable conservation condition of the sand dune habitats in Kilmuckridge-Tinnaberna Sandhills 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, thus 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 coastline that encompasses this SAC appears to be actively accreting and the slumping of the clay cliffs at the southern end of the SAC also provides sand for the mobile dunes (Ryle *et al*., 209)

The target for this attribute is to maintain 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 soft cliff and strandline communities.

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 the fixed dunes. 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 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 including invertebrates, helping to increase biodiversity.

Large areas of bare sand occur in the area currently under restoration as sand is still actively being trapped here. These areas will decrease with time as the dunes become more stable and become vegetated.

The target is to achieve up to 10% bare sand. This target is assessed subject to natural processes.

### 3.4.4 Vegetation composition: plant health of dune grasses

The health of the dune grasses (particularly *Ammophila arenaria* and *Elytrigia juncea*) are assessed by the plant parts above the ground (they should be green) and the presence of flowering heads. This gives a clear indication of the status of the supply of blown sand, which is required for these species to thrive.

The target for this attribute is that more than 95% of the dune grasses should be healthy.

### 3.4.5 Vegetation structure: vegetation height

This attribute applies to the fixed dune habitat. 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).

Most of the dune system is described as structurally heterogeneous with a vegetation mosaic. (Ryle *et al.*, 2009). Grazing by rabbits (*Oryctolagus cuniculus*) occurs.

The destructive levels of grazing and supplementary feeding in the area currently under restoration ended in 2010.

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

### 3.4.6 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 polytrichus*), kidney vetch (*Anthyllis vulneraria*), wild pansy (*Viola tricolor*) and biting stonecrop (*Sedum acre*).

The undamaged dunes at Kilmuckridge have a well-developed typical dune flora. They are noted for their particularly diveres lichen flora (Ryle *et al*., 2009).

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

### 3.4.7 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.

Sea buckthorn (*Hippophae rhamnoides*) thickets occur on the fixed dunes in this SAC and may be spreading (Ryle et al., 2009). As part of the restoration works, weedy species are cropped from the site before they can set seed.

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

### 3.4.8 Vegetation composition: scrub/trees

This attribute only applies to the fixed dunes. 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.

Areas of woodland and mature scrub occur in proximity to the areas of open fixed dune, however, apart from the sea buckthorn (*Hippophae rhamnoides*) mentioned above, these appear to be relatively stable in area.

The target for this attribute therefore is that the cover of scrub and tree species should be under control or represent no more than 5% of the vegetation cover.

## 4. References

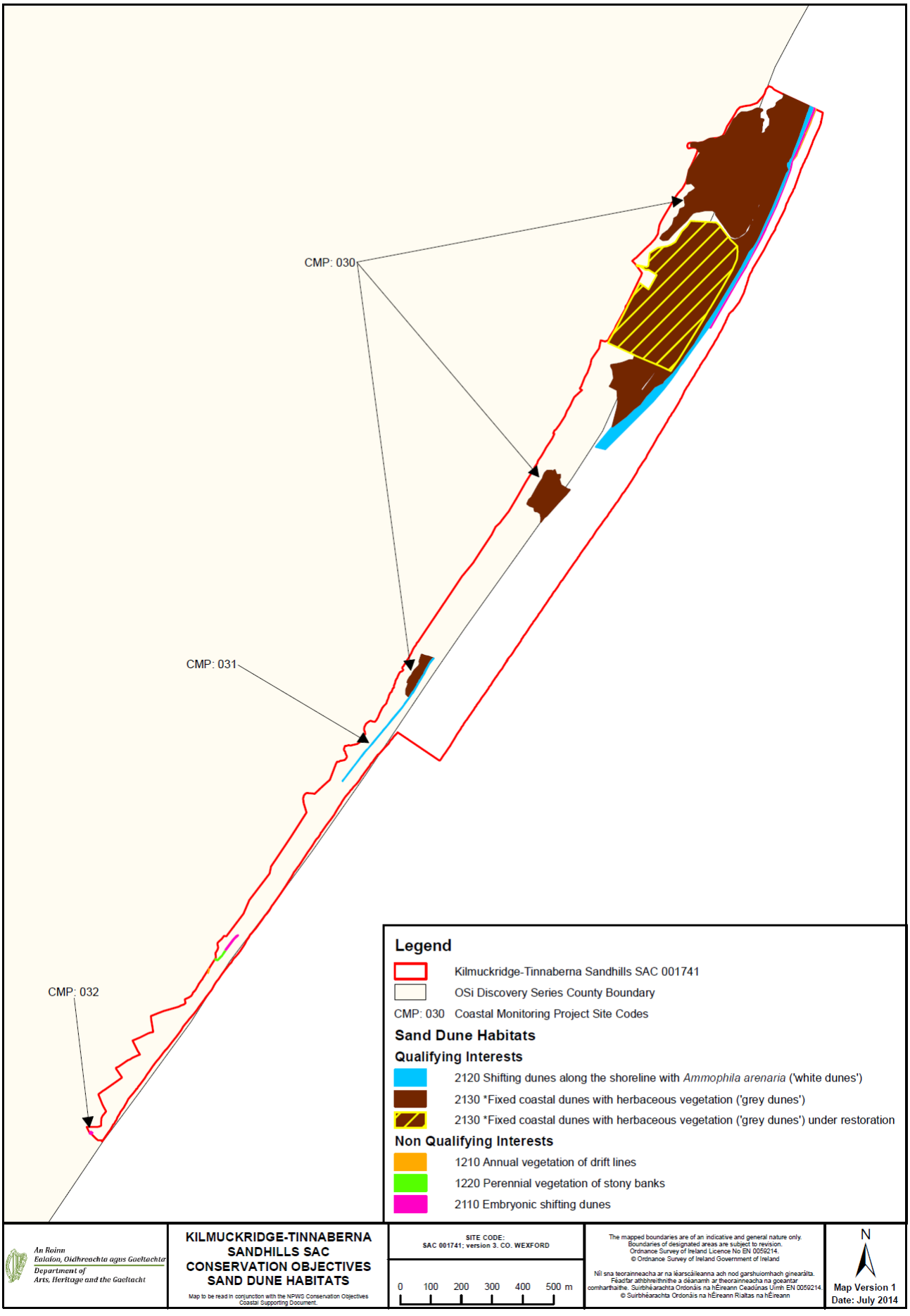
Commission of the European Communities (2007). *Interpretation Manual of European Union Habitats – EUR 27*. DG Environment-Nature and Biodiversity, Brussels.

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

Gaynor, K (2010) *Restoration plan for Tinnaberna Sandhills, County Wexford for the period November 2010 to November 2015*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, 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 Kilmuckridge-Tinnaberna Sandhills SAC



## Appendix II – Site report and habitat map for Kilmuckridge

**SITE DETAILS**

CMP04 site name: **Kilmuckridge** CMP04 site code: **030** CMP Map No.: **28**

County: **Wexford** Discovery map: **69** Grid Reference: **T 180 390**

6 inch Digital Photographs: **Wx 022 & 028**

Aerial photographs (2000 series): **O 5148-A, B, C; O 5088-B, C, D**

NPWS Site Name: **Kilmuckridge-Tinnaberna Sandhills**

NPWS designation: NHA: **1741** cSAC: **1741**

*1.1.1.1.1.1.1.1 Ranger Area: **Wexford South***

MPSU Plan: **Draft 2 – New Format (Controlled edition of 23/10/03)**

Report Author: **Tim Ryle**

**SITE DESCRIPTION**

Kilmuckridge is one of two sites, the other being Tinnaberna (CMP site 031) that comprise the single candidate Special Area of Conservation, Kilmuckridge-Tinnaberna sandhills (cSAC 1741). The length of the two combined sites is approximately 5 kilometres, and extends from the holiday resort of Morriscastle, southwards to the townland border of Tinnaberna and Ballynamona. Much of the site is narrow and remote, particularly along the Tinnaberna stretch, which is fronted by clay cliffs of varying height and slope. As a result of fine-grained sediments been carried along in a northerly direction, the beach widens dramatically progressing northwards towards Kilmuckridge.

For the purposes of this report, Kilmuckridge is taken to mean the northern end of the cSAC extending southwards from the holiday village of Morriscastle and includes all the low-lying sand dunes, which occur extend for a short distance beyond the southernmost area of dense *Hippophae*-dominated scrub as shown on CMP map 28. The site description for Tinnaberna (CMP site 031) only covers the small patches of sand dune vegetation that are found at the front of the glacial cliffs

The cSAC has been proposed for designation in part due to favourable condition of the shifting dunes and the priority fixed dune habitat. The red data book species,

*Matthiola sinuata* (sea stock) now considered extinct in Ireland, was originally known from the site. In addition, a number of other rare or unusual plants recorded add to the sites importance. These include *Equisetum* X *moorei* (Moore's horsetail) and *Silene noctiflora* (Night-Flowering catchfly). The horsetail, though seen at most of its known stations along the south-eastern coast, was not recorded here in 2004; while the catchfly is confined to the upper reaches of clay cliffs. One section of fixed dune surrounded by *Hippophae rhamnoides* (Sea buckthorn) scrub is of particular interest, as it is rich in lichens such as the rare *Rosaliniella cladoniae*.

As a major holiday resort, Wexford County Council maintains toilets, drinking water facilities and notice boards in and around Morriscastle beach. Facilities are less conspicuous further south, as there is a drastic diminution in the numbers of people visiting or using the beach including the sand dunes.

Table 30A shows the areas for habitats mapped at Kilmuckridge. Note that owing to impeded access, it was not possible to determine the full extent of the wet woodland and fixed dune habitat within the cSAC, including a large area of bared ground which has occurred since the year 2000 aerials were taken. This was done using the later 2005 series aerial orthophotographs, which reveal a dramatic and stark loss of fixed dune habitat.

Scrub, the majority of which is dominated by *Hippophae rhamnoides* (Sea buckthorn) and woodland, accounts for approximately 17.04ha and 3.499ha of the sand dune system (Map 28). This represents a significant reduction of fixed dune resource. Analysis of the year 2000 aerial photographs and the original cSAC site boundary reveal an accreting coastline at Kilmuckridge. It is one of only two sites in Wexford surveyed in 2004, Cahore Point North being the other, which is known to be actively accreting over the past number of years. The loss of fixed dunes to agricultural reclamation is estimated to account for 10.903ha. Another habitat that occurs within the sand dune area is marginal vegetation (0.823ha) which occurs alongside a small river.

The potential sand dune resource for this site is estimated to be 59.448ha. This is an estimate only and despite the impacts of agricultural management and the spread of *Hippophae* scrub is not static

**Table 30A** Areas of EU Annex I habitats mapped at Kilmuckridge

| EU Code | EU Habitat | Area(ha) |
|---|---|---|
| H1210 | Annual vegetation of driftlines | 0.182 |
| H2110 | Embryonic shifting dunes | 0.668 |
| H2120 | Shifting dunes along the shoreline with *Ammophila arenaria* | 2.881 |
| H2130 | Fixed coastal dunes with herbaceous vegetation | 22.094 |
| | **Total Sand dune** | **25.994** |
| | **Agriculturally developed land (on sandy substrate)** | 10.903 |
| | **Scrub, Woodland and other (on sandy substrate)** | 22.551 |
| | **Potential Sand Dune Resource** | **59.448** |

**Fixed Dunes (H2130)**

The fixed dunes at Kilmuckridge are relatively extensive (approximately 23ha). A note of caution, however, as much of the extent of fixed dune habitat has been estimated from aerial photographs as a result of prohibited access. In general the fixed dunes are structurally heterogeneous and a vegetation mosaic was apparent as indicated by differences in the stage of dune development from young to old and with blowouts, bits of scrub and a sward of varying height. Some of the typical species found were *Festuca rubra* (Red fescue), *Lotus corniculatus* (Common bird's-foot-trefoil), *Galium verum* (Lady's bedstraw), *Thymus polytrichus* (Wild thyme), *Viola tricolor* (Wild pansy) *Arrhenatherum elatius* (False oat grass) and *Centaurea nigra* (Knapweed). Species indicative of the maturing dune include *Carlina vulgaris* (Carline thistle) and *Rosa pimpinellifolia* (Burnet rose).

Negative indicator species included agricultural grasses such as *Lolium perenne* (rye grass) and *Hippophae rhamnoides* (Sea buckthorn), which occurs extensively in two areas and is apparently spreading. One area dominated by *Hippophae* but also with minor *Salix* spp. (Willow) and other species, occurring at the southern end of Kilmuckridge surrounds a lichen-rich area. In addition, the NHA survey notes indicated that the site was particularly diverse in terms of its lichen flora. The draft management plan (MPSU) for the site highlights the importance of this area with its cryptogammic flora within the cSAC.

A large part of the dune grassland has been considerably damaged through agricultural activities. It is estimated that approximately 9.747ha of dune grassland was bare of vegetation and used for cattle ranching. Comparison of the 2004 habitat estimations with the later 2005 series aerial photographs reveals that the ranching has continued and an additional area (1.156ha) of fixed dune appears to have been stripped of vegetation since the summer of 2004.

**Mobile Dunes (H2120)**

The quality and extent of the mobile dunes at Kilmuckridge was unmatched in most other sites surveyed in 2004 and dramatically illustrated the amount of accretion that has occurred at this site over the past few years. The greatest width was at the southern end of their range within this site, where the fresh unconsolidated dunes measured 20 metres in width, but progressing northwards the width narrowed slightly to 16 metres where embryonic dunes fronted them. In addition, a considerable amount of brushwood is carried in by the tides (K Gaynor - NPWS, pers. comm.). At the time of the survey, some of this brushwood had been gathered and placed parallel to the front of the dunes to trap the shifting sand and encourage the formation of mobile dunes.

The mobile dunes are characterised by *Ammophila arenaria* (Marram), *Daucus carota* (Wild carrot) and *Leontodon saxatilis* (Lesser hawksbit) with *Elytrigia juncea* (Sand couch) and *Leymus arenarius* (Lyme grass) overlapping in places.

**Embryonic Dunes (H2110)**

In contrast to its contiguous site at Tinnaberna (CMP site 031) further south, the embryonic dunes at Kilmuckridge are well developed and with healthy vegetation cover. *Elytrigia juncea* (Sand couch) is the main contributing species that was recorded, although Leymus arenarius (Lyme grass) was recorded in combination at a number of places.

**Strandline (H1210)**

There is little annual strandline vegetation recorded from Kilmuckridge and its vegetation largely consisted of *Cakile maritima* (Sea rocket) and *Salsola kali* (Prickly saltwort). It was only found occurring at the northern most stretch of Kilmuckridge, where it stretched for approximately 250 metres within the current cSAC site boundary and continued for another 200 metres towards Morriscastle. In total it occupied an area of 0.182ha (Table 30A).

## IMPACTS

The main activities impacting on the sand dunes at Kilmuckridge are listed in Table 30B. One of the difficulties in assessing the impacts at this site includes the fact that it is actively accreting and considerable amounts of sand dune habitat are outside the current cSAC. Therefore the impacts relate to inside the entire habitat rather than the habitat inside and outside of the cSAC. Another serious hindrance was that without permission to enter the land, and the use of 2000 aerial photographs, it was not possible to fully quantify the extent of some of the impacts. Quantifying impacts or at least approximations at their impact were possible however, using the limited 2005 series ortho aerials, which became available in late 2006.

**Table 30B** Intensity and impact of various activities on sand dune habitats at Kilmuckridge

| EU Habitat Code[1] | Activity Code[2] | Intensity[3] | Impact[4] | Area affected/ha | Location of Activity[5] |
|---|---|---|---|---|---|
| H2130 | 103 | A | -1 | 10.903 | Inside |
| H2130 | 403 | C | -2 | Unknown | Outside |
| H2130 | 501 | C | -1 | 0.1 | Inside |
| H2120 | 501 | C | -1 | Unknown | Inside |
| 21BB | 608 | B | -1 | Unknown | Outside |
| 21BB | 622 | C | -1 | Unknown | Inside |
| 21BB | 622 | A | -1 | 0.5 | Outside |
| 2130 | 954 | A | -1 | 17.04 | Inside |
| 21BB | 990 | A | 1 | 10.5 | Outside |

[1]EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

[2] Description of activity codes are found in Appendix 5

[3] Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

[4] Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

[5] 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

The overriding concern at Kilmuckridge is the continued decimation of a large area of the fixed dune habitat within the cSAC and extending to the landward side of the cSAC boundary, for the purposes of ranching cattle. This unauthorised destruction - agricultural reclamation of fixed dune habitat for the purposes of rearing livestock (code 103) is estimated from the aerial photographs as resulting in a loss of 10.903ha of fixed dune vegetation, with 1.156ha of that area clearly having been carried out after the 2004 survey (as seen on the 2005 series ortho photographs). Other than the fact that fixed dune vegetation occurs outside this fenced off area, the ground is no longer recognisable as fixed dune habitat as all the vegetation has been purposely cleared. The livestock are fed from large concrete-covered stands with supplemental feeding from ring feeders. The fixed dune will not recover without the full implementation by the NPWS and others of the site objectives as listed within the management plan.

Other activities which have been reported occurring alongside this but which could not be assessed during this survey include nutrient enrichment of small stream caused by leaching of material through the sandy substrate from silage pits at the back of the dunes (Gaynor, 2002).

Recreational activity is mainly concentrated at the northern end of the site, outside the site boundary, where the holiday resort of Morriscastle is located. The wide golden beach is ideal for sunbathers and walkers alike. It is extremely popular with holidaymakers from the large caravan-park (code 608) at Morriscastle during the summer months. While a number of pedestrian tracks were noted (code 501), particularly within the mobile dune habitat at Kilmuckridge, pedestrian traffic is not having a serious impact on the dunes as most walkers confine themselves to the beach.

A small number of dispersed houses are present at both sites (code 403), most however, are located at the back of the system or along the cliffs outside the cSAC boundary. Planting was not uncommon adjacent to dwellings and the invasion by scrub (code 954) is estimated as having a considerable impact, of approximately 17ha

of the habitat, both inside and outside of the current cSAC boundary. This relates to the spread of scrub and exotic species, in particular *Hippophae rhamnoides*. This will need to be quantified accurately, when the next set of aerial photographs becomes available.

Other natural processes (code 990) at Kilmuckridge are more positive. The ongoing progradation of the dunes has resulted in a significant increase, from the area originally included within the overall site boundary designation, in coastal habitats, in particular the embryonic and mobile dunes. This is in contrast to many of sand dune systems surveyed on the East Coast in 2004.

## CONSERVATION STATUS

Baseline information from the NATURA 2000 notes lists the occurrence of mobile and fixed dune habitat, and the information relates to the entire Kilmuckridge-Tinnaberna site. The comparative value is somewhat limited as this survey deals with each site separately. The results for the sand dunes at Kilmuckridge are shown in Table 30C. The results of the monitoring stops placed in the sand dune habitats at Kilmuckridge are shown in Table 30D.

**Table 30C** Conservation status of Annex I sand dune habitats at Kilmuckridge

| **Habitat**[1] | **EU Conservation Status Assessment** | | | | |
|---|---|---|---|---|---|
| | **Favourable** | **Unfavourable - Inadequate** | **Unfavourable - Bad** | **Overall EU conservation status assessment** | **Proposed Irish conservation status system**[2] |
| **Fixed Dunes (H2130)** | | Structure & Functions | Extent / Future Prospects | **Unfavourable -Bad** | **Destroyed – Partially Destroyed** |
| **Mobile Dunes (H2120)** | Extent / Structure & Functions / Future Prospects | | | **Favourable** | **Favourable - Enhanced** |
| **Embryonic Dunes (H2110)** | Extent / Structure & Functions / Future Prospects | | | **Favourable** | **Favourable - Enhanced** |
| **Annual Strandline (H1210)** | Extent / Structure & Functions / Future Prospects | | | **Favourable** | **Favourable - Maintained** |

[1] EU Codes as per Interpretation Manual
[2] Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)

**Fixed Dune (H2130)**

At Kilmuckridge, the beach is expanding to the seaward side of the site boundary, thereby increasing the area of annexed habitats, including the priority fixed coastal dune. Ordinarily, this expansion would be considered favourable enhancement of the habitat range. A number of impacts, however, are threatening the overall quality and conservation importance of the fixed dune habitat at the site. There has been a considerable loss of habitat due to agricultural intensification/reclamation (the true amount of which could not be quantified). Therefore the extent of the fixed dunes at Kilmuckridge is rated as *unfavourable-bad*.

All three monitoring stops taken at Kilmuckridge passed on the qualifying parameters (Table 30D). Species diversity was generally good, as was structural diversity. However, these stops are not considered representative of the overall fixed dune habitat at the site, as large areas of the fixed dunes have been colonised by *Hippohae*. In addition other areas were not accessible although it was clear that a large area of fixed dunes has been cleared of vegetative cover for agricultural purposes. Therefore, although structure and functions should be *favourable*, this is amended to *unfavourable-inadequate* as additional monitoring stops would undoubtedly give a more unfavourable rating for the condition of the habitat.

The future prospects of the fixed dunes at Kilmuckridge are *unfavourable-bad*. It is of concern that the destruction of the priority fixed dune habitat was reported upon as early as 2002 and a restoration programme was proposed (Gaynor, 2002). That this illegal activity has continued e.g. 2005 series aerial orthophotographs clearly show that additional land has been lost to agricultural destruction since the 2004 survey, needs to be addressed as a matter of urgency. The recovery of the damaged fixed dune grassland should be a priority target at the site and any restoration plan will need to be strictly monitored, though the monitoring period will be dependant on the restoration plan. In addition and to deter further destruction of the remaining priority habitat that has accrued outside the original site designation boundary, it is also suggested that a revision of the boundary perimeter on its seaward side be undertaken.

The overall EU conservation status assessment for the fixed dunes at Kilmuckridge is *unfavourable-bad*, which corresponds to *destroyed-partially destroyed* under the proposed Irish scheme (Table 30C). While a well-developed vegetation mosaic was present, it is of concern that a large area of the fixed dune, within the current cSAC boundary, has been fenced off and stripped of vegetation for holding cattle. This activity is seriously threatening the viability of the priority habitat, and for this reason the conservation status at the site is downgraded from favourable to unfavourable-bad.

**Table 30D** Pass/Fail results of monitoring stops for Annex I sand dune habitats at Kilmuckridge

| | **Monitoring stops** | | |
|---|---|---|---|
| **Habitat** | **Pass** | **Fail** | **Conservation status** |
| **Fixed Dunes (H2130)** | 3 | 0 | **Favourable*** |
| **Mobile Dunes (H2120)** | 2 | 0 | **Favourable** |
| **Embryonic Dunes (H2110)** | 2 | 0 | **Favourable** |
| **Annual Strandline (H1210)** | 1 | 0 | **Favourable** |

* This rating is modified to *unfavourable-inadequate* in light of the ongoing ecological destruction at the site and need for additional monitoring stops to be carried out.

### Mobile Dunes (H2120)

The extent of the mobile dunes is *favourable* (Table 30C). This habitat continues to increase in extent which is evident when the results of the 2004 map are overlain on the 2005 series aerial orthophotographs.

The structure and functions is rated as *favourable* as the two monitoring stops passed on all criteria (Table 30D). It would appear that there are few threatening activities, the quality and health of *Ammophila arenaria* (Marram) has favoured the continued expansion of the mobile dune habitat.

The future prospects of the mobile dunes is *favourable*, owing to a seemingly steady supply of windborne sediment (Table 30C).

The conservation status of mobile dunes was described in the NATURA 2000 dataform as moderate for the entire cSAC. This rating is upgraded and the overall EU conservation assessment of the mobile dunes at Kilmuckridge is *favourable*, which

equates to *favourable-enhanced* under the proposed Irish assessment system (Table 30C).

**Embryonic Dunes (H2110)**

The extent of the embryonic dunes is rated as *favourable* at Kilmuckridge (Table 30C). Progressing northwards they are accreting and there is a steady increase in the width and vegetation cover of the foredunes.

The embryonic dunes at Kilmuckridge are well developed. Both monitoring stops passed on structure and functions (Table 30D) which results in a *favourable* assessment.

The future prospects of this site are considered *favourable*. The continued input of windblown sand benefits the establishment and persistence of foredune vegetation.

Their overall EU conservation status is listed as *favourable*, owing to their accretionary status. The Irish conservation status is rated as *favourable-enhanced* (Table 30C).

**Strandline (H1210)**

There is little data with which to quantify the previous extent of this ephemeral habitat. Although not extensive, and prone to regular tidal destruction, the occurrence of annual strandline at this accreting site is considered *favourable*.

A single monitoring stop passed on the structure and functions criteria, resulting in a *favourable* assessment.

The future prospects of the habitat are considered f*avourable* and despite regular inundation by tidal surges, the beach is wide enough to enable strandline vegetation to re-establish itself.

For this reason the overall EU conservation status is considered *favourable* (Table 30C). The Irish conservation status is rated as *favourable-maintained*.


Coimisiún Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government
National Parks and Wildlife Service

**Coastal Monitoring Project 2004-2006**

**Tinnaberna**

CMP code: 030

**Kilmuckridge-Tinnaberna Sandhills (SAC 1741)**

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

0 200 400 600 800 Meters

Date of production: 25/11/2008
Map version: 1

Original Drawing Size: 297 x 420 (A3)
Scale 1:23213

N

## Appendix III – Site report and habitat map for Tinnaberna

**SITE DETAILS**

CMP04 site name: **Tinnaberna** CMP04 site code: **031** CMP Map No.: **29**

County: **Wexford** Discovery map: **69** Grid Reference: **T 170 375**

6 inch Digital Photographs: **WX 022 & 028**

Aerial photographs (2000 series): **O 5148-A & B & C; O 5088-B & C & D**

NPWS Site Name: **Kilmuckridge-Tinnaberna Sandhills**

NPWS designation: NHA: **1741** cSAC: **1741**

Ranger Area: **Wexford South**

MPSU Plan: **Draft 2 – New Format (Controlled edition of 23/10/03)**

Report Author: **Tim Ryle**

**SITE DESCRIPTION**

Tinnaberna is a relatively long and narrow site that is backed by clay cliffs of varying height and slope. It is contiguous with two other coastal sites (Kilmuckridge CMP site 030) which extends southwards for approximately 4.5 kilometres from Morriscastle in the north to the townland border of Tinnaberna and Ballynamona (CMP site 032). Together Kilmuckridge and Tinnaberna comprise the single candidate Special Area of Conservation – Kilmuckridge-Tinnaberna Sandhills (cSAC 1741).

For the purposes of this report, the site at Tinnaberna relates to the strand beneath the glacial cliffs at the southern half of the cSAC, while Kilmuckridge is taken to mean the northern end of the cSAC and includes all the low-lying sand dunes, which extend for a short distance beyond the southernmost area of dense *Hippophae*-dominated scrub.

The cSAC has been proposed for designation in part due to favourable condition of the shifting dunes and the priority fixed dune habitat. The red data book species, *Matthiola sinuata* (sea stock) now considered extinct in Ireland, was originally known from the site. In addition, a number of other rare or unusual plants recorded add to the sites importance. These include *Equisetum* X *moorei* (Moore's horsetail) and *Silene*

*noctiflora* (Night-Flowering catchfly). The horsetail, though seen at most of its known stations along the South-eastern coast, was not recorded here in 2004; while the catchfly is confined to the upper reaches of clay cliffs. One section of fixed dune surrounded by *Hippophae rhamnoides* (Sea buckthorn) scrub is of particular interest, as it is rich in lichens such as the rare *Rosaliniella cladoniae*.

Tourist facilities at Tinnaberna provided by Wexford County Council are less conspicuous than at Kilmuckridge, as there is a drastic diminution in the numbers of people visiting or using the beach including the sand dunes within the boundary of the designation. A number of small areas for parking cars have been provided at various locations which allow access onto the narrow strand which runs along the foot of the cliffs at Tinnaberna.

Table 31A shows the areas for habitats mapped at Tinnaberna. Though many of the species typically found on dune grassland were recorded from the glacial cliffs, no priority fixed dune was recorded at Tinnaberna. Some of the typical species found were *Festuca rubra* (Red fescue), *Lotus corniculatus* (Common bird's-foot-trefoil), *Galium verum* (Lady's bedstraw), *Thymus polytrichus* (Wild thyme), *Viola tricolor* (Wild pansy) *Arrhenatherum elatius* (False oat grass) and *Centaurea nigra* (Knapweed).

1.1.1.2 Table 31A **Areas of EU Annex I habitats mapped at Tinnaberna**

| EU Code | EU Habitat | Area(ha) |
|---|---|---|
| H1210 | Annual vegetation of driftlines | 0.004 |
| H1220 | Perennial vegetation of stony banks | 0.004 |
| H2110 | Embryonic shifting dunes | 0.009 |
| H2120 | Shifting dunes along the shoreline with *Ammophila arenaria* | 0.038 |
| | ***1.1.2 Total Sand dune*** | **0.055** |

**Mobile Dunes (H2120)**

Unlike Kilmuckridge, where the mobile dunes are extensive and actively accreting, there are no real mobile dunes at Tinnaberna. Dominated by *Ammophila arenaria* (Marram), other species included *Daucus carota* (Wild carrot) and *Leontodon saxatilis* (Lesser hawkbit) with minor amounts of *Elytrigia juncea* (Sand couch) also recorded. They largely occur on sand that becomes available after slumping of the

sandy cliff faces. As such it is not known how persistent that the mobile dunes are and in 2004 an area of only 0.038ha was recorded (Table 31A).

**Embryonic Dunes (H2110)**

Embryonic dunes are not extensive at Tinnaberna and like the mobile dunes were most often associated with freshly eroded sand. They occupy an area estimated to be 0.009ha. The dominant grass is *Leymus arenarius* (Lyme grass) on the small embryonic type dunes, formed by continuous recycling of sediment at the foot of the glacial cliffs. The other common species that was noted was *Elytrigia juncea* (Sand couch). In addition, extensive patches of windblown sand were not noted and most of the sand accumulated further north at Kilmuckridge.

**Strandline (H1210) & Perennial Shingle vegetation (H1220)**

Both annual vegetation of driftlines and perennial vegetation were recorded at Tinnaberna, though they were discontinuous, narrow in width and often occurred on or near freshly eroded sediments at the foot of the glacial cliffs or near small rivulets.

The typical species for the annual strandline included *Salsola kali* (Prickly saltwort) and *Cakile maritima* (Sea rocket). A patch of *Eryngium maritimum* (Sea holly) was noted along strandline adjacent to one small stream. Additional species which are generally considered as constituents of the perennial vegetation of stony banks included *Tripleurospermum maritimum* (Sea mayweed), *Rumex crispus* (Curled dock) and *Atriplex* spp. (Orache)

**IMPACTS**

A small number of activities are recognised to be impacting at Tinnaberna and these are listed in Table 31B. Recreational activity at this cSAC is mainly concentrated at the northern end of the site at Kilmuckridge, where the beach is more extensive. The majority of visitors come to Kilmuckridge and a number of caravan parks have been developed to cater for these holiday-makers. Further south at Tinnaberna the relatively remote and narrow beach fronting the cliffs is mainly used by walkers (code

501). Most people access the site from the small car park at the southern boundary of Tinnaberna site.

**Table 31B** Intensity and impact of various activities on sand dune habitats at Tinnaberna

| EU Habitat Code[1] | Activity Code[2] | Intensity[3] | Impact[4] | Area affected/ha | Location of Activity[5] |
|---|---|---|---|---|---|
| 21BB | 501 | C | 0 | Unknown | Inside |
| 21BB | 900 | A | 0 | Unknown | Inside |
| 21BB | 954 | C | -1 | 0.019 | Inside |

[1]EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

[2] Description of activity codes are found in Appendix 5

[3] Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

[4] Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

[5] 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

In general, while the clay-dominated cliffs at Tinnaberna are vulnerable to natural erosion (code 900), with small-scale land slumping was observed in places. Given the paucity of Annex I coastal habitats and the relatively small numbers of people who make use of the narrow beach, the installation of hard-engineered coastal defences to curtail erosion would be prohibitively expensive and unsightly. They would likely reduce the already narrow strand could in places. It is unlikely that this would be considered, however, unless a housing development or similar were to be developed in the future on land at the top of the cliffs.

A small area of scrub (code 954) has spread into an area of slumping glacial sand. It is not considered a significant threat given the absence of sand dune habitat at Tinnaberna.

## CONSERVATION STATUS

Baseline information from the NATURA 2000 dataform lists the occurrence of mobile and fixed dune habitat, although this information relates to the entire Kilmuckridge-Tinnaberna site. The conservation status of these and other Annex I coastal habitats surveyed in 2004 at Kilmuckridge and Tinnaberna are assessed separately.

Table 31A highlights the paucity of annexed coastal habitats at Tinnaberna, which is largely comprised of glacial cliffs, many of which are patchily vegetated. No fixed dune habitat was recorded from Tinnaberna, although less steeply sloped areas of the cliffs have similar species assemblages to fixed dunes. In addition, although marram was occasionally recorded occurring at the foot of the cliffs, particularly on areas where slumping had previously occurred, only a small area of mobile vegetation was recorded in 2004, hence no conservation assessment is made.

The cliffs are succumbing to natural erosion and as it is unlikely that any significant increase of coastal habitat will occur as there is little deposition of organic material let alone fresh sand occurring along this narrow, level stretch of beach. Monitoring stops were not deemed necessary and the results of the conservation assessment for Tinnaberna are shown in Table 31C.

**Table 31C** Conservation status of Annex I sand dune habitats at Tinnaberna

| **Habitat**[1] | **EU Conservation Status Assessment** | | | **Overall EU conservation status assessment** | **Proposed Irish conservation status system**[2] |
|---|---|---|---|---|---|
| | **Favourable** | **Unfavourable - Inadequate** | **Unfavourable - Bad** | | |
| **Embryonic Dunes (H2110)** | Structure & Functions* / Future Prospects | Extent | | **Unfavourable - Inadequate** | **Unfavourable - Unchanged** |
| **Perennial Shingle (H1220)** | Structure & Functions* / Future Prospects | Extent | | **Unfavourable - Inadequate** | **Unfavourable - Unchanged** |
| **Annual Strandline (H1210)** | Structure & Functions* / Future Prospects | Extent | | **Unfavourable - Inadequate** | **Unfavourable - Unchanged** |

[1] EU Codes as per Interpretation Manual
[2] Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)
* Structure and Functions assessment is based on best scientific judgement

### Embryonic Dunes (H2110)

Unlike Kilmuckridge, embryonic dunes at Tinnaberna are almost absent and were sporadically distributed along the foot of the cliffs. Their extent is rated as *unfavourable-inadequate*, which is in part owing to the irregular input of fresh sand that becomes available.

In terms of structure and functions, the embryonic dunes at Tinnaberna are no different from embryonic dunes recorded elsewhere and are therefore ranked as *favourable*. Species assemblage is consistent and the structural characteristics of the habitat were noted.

The future prospects are *favourable* as the amount of fresh sand that is periodically made available for the vegetation, is assured as erosion of the sandy cliffs continues.

In overall terms the conservation assessment for the embryonic dunes is *unfavourable-inadequate* which is *unfavourable-unchanged* under the Irish assessment scheme.

**Perennial Shingle vegetation (H1220)**

The extent is rated as *unfavourable-inadequate* as there is no real comparative data with which to estimate a loss or increase in habitat. The habitat was recorded only in a small number of places, particularly where small stream inlets were noted at the foot of the Tinnaberna cliffs.

Although not extensive and in places not wholly vegetated, the structure and functions of the habitat are regarded as *favourable* owing to the occurrence of the typical species.

The future prospects are rated as *favourable* as it is not likely that there will be a dramatic change in the distribution of the shingle at this site.

Overall the EU Conservation assessment for the habitat is rated as *unfavourable-inadequate*, which corresponds to *unfavourable-unchanged* under the proposed Irish assessment scheme (Table 31C).

**Strandline (H1210)**

A primitive strandline is found in a number of places stretching southwards from Kilmuckridge towards Tinnaberna. Within the area mapped as Tinnaberna, it is not

extensive however, and is prone to tidal destruction. For this reason, the extent of the habitat is rated as *unfavourable-inadequate*.

The structure and functions are rated as *favourable*, as the typical species and structural characteristics of the habitat were noted at Tinnaberna.

The future prospects are rated as *favourable*, as although the site is prone to tidal inundation, the annual vegetation is capable of re-establishing itself.

The conservation assessment for the annual strandline vegetation at Tinnaberna is ranked as *unfavourable-inadequate*. This equates to *unfavourable-unchanged* under the Irish assessment (Table 31C)


Coimisiún, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government
National Parks and Wildlife Service

**Coastal Monitoring Project 2004-2006**

**Kilmuckridge**

CMP code: 031

**Kilmuckridge-Tinnaberna Sandhills (SAC 1741)**

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)

0 100 200 300 400 Meters

Date of production: 25/11/2008
Map version: 1

Original Drawing Size: 297 x 420 (A3)
Scale 1:9891

N