

NPWS

Dunbeacon Shingle SAC
(site code: 002280)

**Conservation objectives supporting document-
Coastal habitats**

Version 1

December 2017

Contents

1	Introduction.....	2
2	Conservation Objectives.....	2
3	Perennial vegetation of stony banks.....	3
3.1	Overall Objective.....	3
3.2	Area.....	4
3.2.1	Habitat area	4
3.3	Range.....	4
3.3.1	Habitat distribution	4
3.4	Structure and Functions	5
3.4.1	Physical structure: functionality and sediment supply.....	5
3.4.2	Physical structure: disturbance	5
3.4.3	Vegetation structure: zonation	5
3.4.4	Vegetation composition: communities and typical species.....	6
3.4.5	Vegetation composition: negative indicator species	7
3.4.6	Vegetation composition: non-native species.....	7
4	References.....	7
	Appendix I – Distribution map of perennial vegetation of stony banks within Dunbeacon Shingle SAC	8
	Appendix II – Rossmore (Dunbeacon) site report and habitat map from the Vegetated Shingle Monitoring Project (VSM)	9

Please note that the opinions expressed in the site report from the Vegetated Shingle Monitoring Project (VSM) 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 (2017) Conservation Objectives: Dunbeacon Shingle SAC 002280. Version 1.0. National Parks and Wildlife Service, Department of Culture, 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 (European Commission, 2013). 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.

Dunbeacon Shingle SAC is a small Special Area of Conservation (SAC) located approximately 3km southwest of Durrus, Co. Cork, on the southern side of Dunmanus Bay.

Dunbeacon Shingle SAC (site code: 002280) is selected for 1220 Perennial vegetation of stony banks. The habitat is the sole Qualifying Interest for this SAC.

The mapped distribution of perennial vegetation of stony banks in Dunbeacon Shingle SAC is presented in Appendix I.

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.

This supporting document sets out the conservation objective for perennial vegetation of stony banks in Dunbeacon Shingle 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 perennial vegetation of stony banks (vegetated shingle) are based in part on the findings of the Vegetated Shingle Monitoring Project (VSM) (Martin *et al.*, 2017), which was carried out in 2016 on behalf of the National Parks and Wildlife Service (NPWS). This document should be read in conjunction with that report.

Vegetated shingle within Dunbeacon Shingle SAC was also recorded during the National Shingle Beach Survey (NSBS), which was carried out in 1999 on behalf of NPWS (Moore and Wilson, 1999).

The VSM surveyed, mapped and assessed a single sub-site associated with Dunbeacon Shingle SAC (Martin *et al.*, 2017):

Rossmore (Dunbeacon) (VSM site code 017)

As part of the VSM, a detailed individual site report and a habitat map were produced for the Rossmore (Dunbeacon) sub-site and these are included in Appendix II at the end of this document.

It is important to note, however, that other areas of the Annex I habitat may be present within the SAC.

The conservation objective for perennial vegetation of stony banks in Dunbeacon Shingle SAC is based on the findings of the VSM.

3 Perennial vegetation of stony banks

The following definition of perennial vegetation of stony banks habitat in Ireland is based on the data collected during the VSM (Martin *et al.*, 2017) and is an adaptation of the definitions used in European Commission (2013) and NPWS (2013).

Perennial vegetation of stony banks occurs along the coast where shingle (cobbles, pebbles, and gravel $\geq 2\text{mm}$) has accumulated to form elevated ridges or banks above the high tide mark. The majority of the rocky material should be between 2mm and 256mm in diameter to be considered in this habitat category. On the upper beach, the pioneer community can be characterised by perennial species such as sea beet (*Beta vulgaris* subsp. *maritima*), sea-kale (*Crambe maritima*), rock samphire (*Crithmum maritimum*), cleavers (*Galium aparine*), yellow-horned poppy (*Glaucium flavum*), sea pea (*Lathyrus japonicus*), wild radish (*Raphanus raphanistrum* subsp. *maritimus*), curled dock (*Rumex crispus*), sea campion (*Silene uniflora*), perennial sow-thistle (*Sonchus arvensis*) and sea mayweed (*Tripleurospermum maritimum*). The majority of the area within this pioneer community is usually bare shingle. At the top of the beach, and moving inland, a wider range of vegetation types can be found at larger shingle sites including a lichen-rich community and coastal forms of grassland, heath and scrub. The grassland community can be characterised by grass species such as common bent-grass (*Agrostis capillaris*), creeping bent-grass (*A. stolonifera*), false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*), spreading meadow-grass (*Poa humilis*), sand couch (*Elytrigia repens*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*) and crested hair-grass (*Koeleria macrantha*), field wood-rush (*Luzula campestris*), and broadleaf herbs such as yarrow (*Achillea millefolium*), thrift (*Armeria maritima*), common mouse-ear (*Cerastium fontanum*), wild carrot (*Daucus carota*), autumn hawkbit (*Leontodon autumnalis*), common bird's-foot trefoil (*Lotus corniculatus*), buck's-horn plantain (*Plantago coronopus*), ribwort plantain (*P. lanceolata*), silverweed (*Potentilla anserina*), common sorrel (*Rumex acetosa*), dandelion (*Taraxacum officinale* agg.), lady's bedstraw (*Galium verum*), red clover (*Trifolium pratense*) and white clover (*T. repens*). The scrub community can be characterised by the woody species honeysuckle (*Lonicera periclymenum*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus* agg.), gorse (*Ulex europaeus*) and the climber hedge bindweed (*Calystegia sepium*). These more inland communities have less bare shingle and vegetative cover usually dominates. The majority of the grassland and scrub communities are rooted within soil, whereas the pioneer community is usually rooted in gravel, sand or organic matter (e.g. decomposing seaweed and other plant material). Once the soil layer on top of the shingle is more than 30cm deep, the community is no longer defined as perennial vegetation of stony banks.

3.1 Overall Objective

The overall objective for 'Perennial vegetation of stony banks' in Dunbeacon Shingle SAC is to 'maintain the favourable conservation condition'.

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

3.2 Area

3.2.1 Habitat area

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target for favourable condition is that there is no decrease from the established baseline. Bearing in mind that coastal systems are naturally dynamic and subject to change, even within a season, this target is assessed subject to natural processes, including erosion and succession.

The area of perennial vegetation of stony banks recorded by the VSM in the Rossmore (Dunbeacon) sub-site was 0.17ha (Martin *et al.*, 2017).

It is important to note that further areas of the habitat may be present within the SAC.

The target is that the habitat area should be stable or increasing, subject to natural processes, including erosion and succession.

3.3 Range

3.3.1 Habitat distribution

The recorded location of the surveyed vegetated shingle site in Dunbeacon Shingle SAC, as mapped by Martin *et al.* (2017), is presented in Appendix I.

The Rossmore (Dunbeacon) sub-site comprises a vegetated shingle spit (Martin *et al.*, 2017).

The NSBS (Moore and Wilson, 1999) classified the perennial vegetation of stony banks in the NSBS sub-site Rossmore as a vegetated shingle spit and it is defined as a spit following Chapman (1976).

The NSBS (Moore and Wilson, 1999) ranked each surveyed site as either High, Medium or Low interest, based on site representativity, species diversity, habitat diversity and the presence of rare or scarce species. The Rossmore sub-site was ranked as a 'High interest' site by the NSBS (Moore and Wilson, 1999) due to it being an excellent system and virtually undisturbed. A 'High interest' ranking denoted a site that is of high conservation value and perhaps of interest botanically or geomorphologically (Moore and Wilson, 1999).

It is important to note that further areas of the habitat may be present within the SAC.

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

3.4 Structure and Functions

A fundamental aim of shingle conservation is to facilitate natural mobility. Shingle beaches are naturally dynamic systems, making them of geomorphological interest, as well as ecological interest. They are constantly changing and shingle features are rarely stable in the long-term.

3.4.1 Physical structure: functionality and sediment supply

The health and on-going development of the habitat relies on a continuing supply of shingle sediment. This may occur sporadically as a response to storm events rather than continuously. Interference with the natural coastal processes, through offshore (or onshore) extraction or coastal defence structures in particular, can interrupt the supply of sediment and lead to beach starvation.

The shingle in the Rossmore (Dunbeacon) sub-site comprises cobble, pebble and gravel as defined using a modified version of the particle size ranges defined in Fossitt (2000). In the Rossmore (Dunbeacon) sub-site, gravel is the major component for stop 2, while pebble is the major component in stop 4 (Table 1).

Table 1. Shingle composition (as defined in Fossitt (2000) with minor modifications) of perennial vegetation of stony banks in the Rossmore (Dunbeacon) sub-site during the VSM 2016. Percentage (%) cover shown, recorded to the nearest 5%. Only stops with exposed shingle could contribute to the data presented.

	Stop 2	Stop 4
Boulder (>256 mm)	0	0
Cobble (>64-256 mm)	0	30
Pebble (>16-64 mm)	35	60
Gravel (2-16 mm)	65	10

The target is to maintain, or where necessary restore, the natural circulation of sediment and organic matter, without any physical obstructions.

3.4.2 Physical structure: disturbance

Damage to the habitat due to disturbance was assessed as a negative indicator by Martin *et al.* (2017). Disturbance can include damage from heavy trampling, vehicle damage and removal of substrate.

The target is that no more than 20% of the habitat is affected by disturbance.

3.4.3 Vegetation structure: zonation

Ecological variation within this habitat type depends on stability, the amount of fine material accumulating between the pebbles, climatic conditions, width of the foreshore and past management of the site. The ridges and lows also influence the vegetation patterns, resulting in characteristic communities and zonations of bare and vegetated shingle. In the frontal, less stable areas of shingle, the vegetation tends to be dominated by short-lived salt-tolerant perennials (pioneer community). Where the shingle is more stable, it becomes more vegetated and may include grassland, heathland and scrub communities, depending on the exact nature of the site. The

presence of lichens indicates long-term stability of the shingle structure. Further information on the communities of perennial vegetation of stony banks is found in Martin *et al.* (2017).

The VSM (Martin *et al.*, 2017) recorded two communities of perennial vegetation of stony banks in the Rossmore (Dunbeacon) sub-site - a pioneer community and a grassland community. The most abundant community was the grassland community, found towards the back of the system.

Vegetated shingle is part of a naturally dynamic coastal system. In order to ensure the ecological functioning of all of the vegetated shingle communities present, it is vital to maintain the zonations and transitions to other habitats, including lagoon, saltmarsh and sand dune habitats.

Transitions to intertidal and saltmarsh habitats occur in the Rossmore (Dunbeacon) sub-site.

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

3.4.4 Vegetation composition: communities and typical species

The degree of exposure, as well as the coarseness and stability of the substrate, determines species diversity. Typical species lists for the three main vegetated shingle communities (pioneer, grassland and scrub) are presented in Martin *et al.* (2017).

As mentioned earlier, the shingle in the Rossmore (Dunbeacon) sub-site includes two communities of perennial vegetation of stony banks that were recorded during the VSM (Martin *et al.*, 2017) – a pioneer and a grassland community. The grassland community is more extensive and runs the length of the shingle spit in the sub-site. The pioneer community is found fringing the grassland community around the periphery of the spit (Martin *et al.*, 2017).

Table 2 presents the typical species recorded within the pioneer and grassland communities of perennial vegetation of stony banks in the Rossmore (Dunbeacon) sub-site.

Table 2. Typical species recorded within the pioneer and grassland communities of perennial vegetation of stony banks in the Rossmore (Dunbeacon) sub-site. Negative and non-native species are excluded from the list.

Pioneer community	Grassland community
<i>Agrostis stolonifera</i>	<i>Agrostis stolonifera</i>
<i>Atriplex prostrata</i>	<i>Atriplex prostrata</i>
<i>Beta vulgaris</i> subsp. <i>maritima</i>	<i>Festuca rubra</i>
<i>Calystegia sepium</i>	<i>Lotus corniculatus</i>
<i>Cochlearia officinalis</i>	<i>Poa humilis</i>
<i>Festuca rubra</i>	<i>Potentilla anserina</i>
<i>Fumaria capreolata</i>	<i>Rumex crispus</i>
<i>Juncus gerardii</i>	<i>Silene uniflora</i>
<i>Potentilla anserina</i>	<i>Sonchus arvensis</i>
<i>Rumex crispus</i>	<i>Trifolium repens</i>
<i>Sonchus arvensis</i>	<i>Tripleurospermum maritimum</i>
<i>Suaeda maritima</i>	

No notable species or features were recorded in the Rossmore (Dunbeacon) sub-site during the VSM (Martin *et al.*, 2017).

The target for this attribute is to ensure that the occurrence of typical species within the range of vegetated shingle communities is maintained.

3.4.5 Vegetation composition: negative indicator species

Negative indicator species can include species indicative of changes in nutrient status e.g. nettle (*Urtica dioica*), and species not considered to be typical of the habitat, e.g. bracken (*Pteridium aquilinum*). The list of negative indicator species commonly found in the habitat is presented in Appendix I of Martin *et al.* (2017).

The VSM (Martin *et al.*, 2017) did not record any negative indicator species within the vegetated shingle habitat in the Rossmore (Dunbeacon) sub-site.

The target for negative indicator species is that no species is present in more than 60% of stops and the combined cover in any individual stop is 25% or less.

3.4.6 Vegetation composition: non-native species

Non-native species can be invasive and have deleterious effects on native vegetation. Low targets are set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances.

The VSM (Martin *et al.*, 2017) did not record any non-native species within the vegetated shingle habitat in the Rossmore (Dunbeacon) sub-site.

The target for non-native species is that no species is present in more than 20% of stops, the combined cover in any individual stop is 1% or less, and the cover across the whole site 1% or less. At a site level, if a non-native species has been under-recorded, or not recorded, via the stops the percentage cover for the species across the site should be recorded and assessed.

4 References

Chapman, V.J. (1976) Coastal Vegetation. Pergamon Press, Oxford.

European Commission (2013) Interpretation Manual of European Union Habitats – EUR 28. DG Environment-Nature and Biodiversity, Brussels.

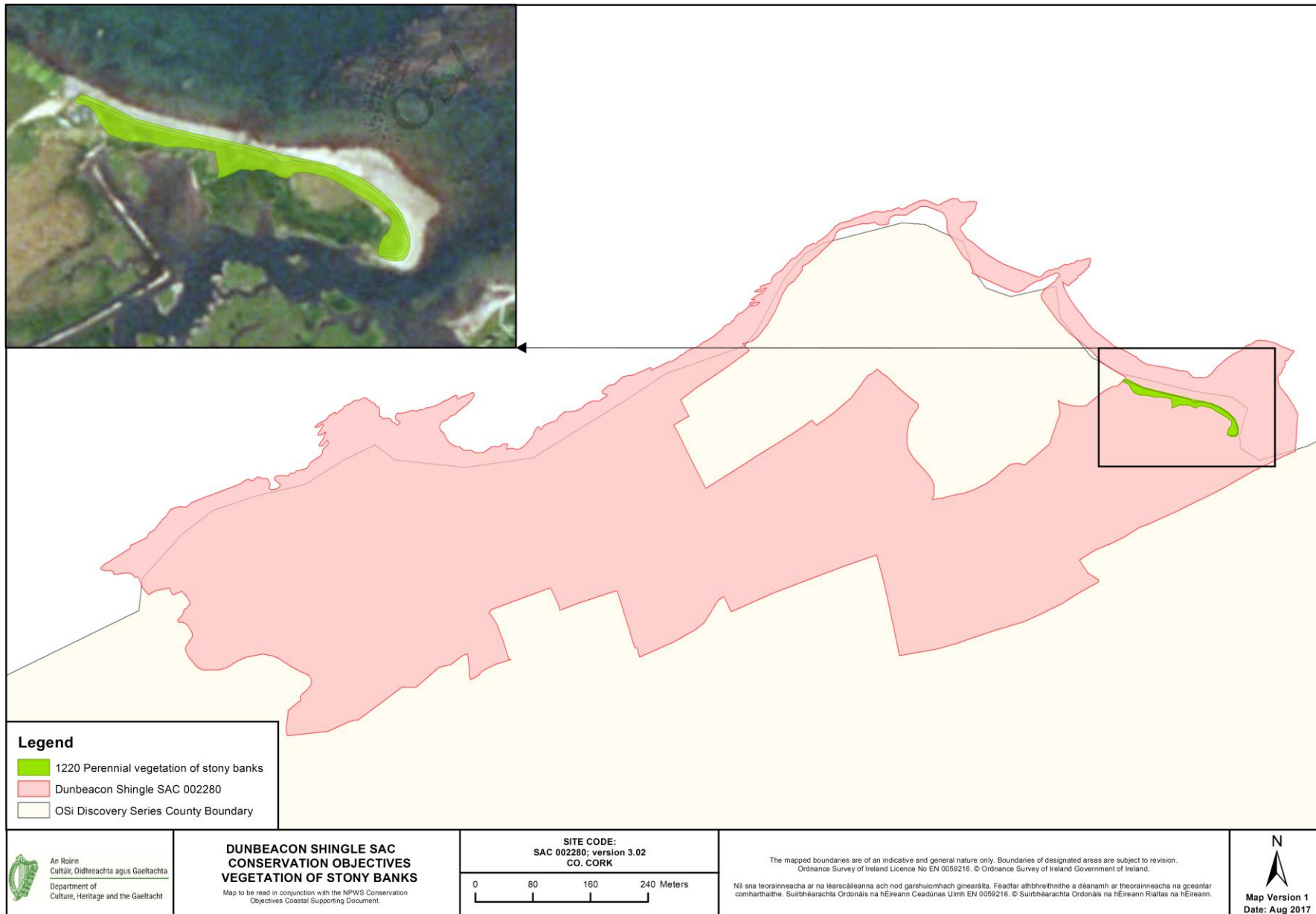
Fossitt, J.A. (2000) A guide to habitats in Ireland. The Heritage Council, Kilkenny.

Martin, J.R., Daly, O.H. and Devaney, F.M. (2017) Survey and assessment of vegetated shingle and associated habitats at 30 coastal sites in Ireland. Irish Wildlife Manuals, No. 98. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin.

Moore, D. and Wilson, F. (1999) National Shingle Beach Survey of Ireland 1999. Unpublished report to National Parks and Wildlife Service, Dublin.

NPWS (2013) The status of EU protected habitats and species in Ireland. Volume 2. Habitat Assessments. Version 1.1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

Appendix I – Distribution map of perennial vegetation of stony banks within Dunbeacon Shingle SAC



Appendix II – Rossmore (Dunbeacon) site report and habitat map from the Vegetated Shingle Monitoring Project (VSM)

SITE 017 ROSSMORE (DUNBEACON)

The following individual site report should be read in conjunction with the main report (Martin *et al.*, 2017). Please note that NSBS refers to the National Shingle Beach Survey (NSBS) (Moore & Wilson, 1999), CMP refers to the Coastal Monitoring Project (Ryle *et al.*, 2009), SDM refers to the Sand Dunes Monitoring Project (Delaney *et al.*, 2013) and VSM to the Vegetated Shingle Monitoring Project (Martin *et al.*, 2017).

The shingle at this location is referred to as Site 110 Rossmore by the NSBS.

1 SITE DESCRIPTION

Rossmore (Dunbeacon) is a small site located approximately 3 km southwest of Durrus, Co. Cork, on the southern side of Dunmanus Bay. Rossmore (Dunbeacon) is a vegetated shingle spit and is part of the Dunbeacon Shingle SAC (002280) (NPWS, 2014). This site was not surveyed by either the CMP or the SDM. It was, however, surveyed during the NSBS for the Annex I habitat **1220 Perennial vegetation of stony banks**, though no conservation assessment was made. It was ranked as a ‘High interest’ site by the NSBS due to it being an excellent system and virtually undisturbed.

Annex I habitats associated with the **1220 Perennial vegetation of stony banks** surveyed at Rossmore (Dunbeacon) include **1410 Mediterranean salt meadows (*Juncetalia maritimae*)** (NPWS, 2015) that is present among the extensive area of saltmarsh on the landward side of the shingle habitat. No noteworthy species or features were recorded at Rossmore (Dunbeacon) during the VSM.

Rossmore (Dunbeacon) is mainly used for fishing activities.

2 CONSERVATION ASSESSMENTS

2.1 Overview

Rossmore (Dunbeacon) was surveyed on the 17th of August 2016. **1220 Perennial vegetation of stony banks** was recorded during the NSBS, and again during the VSM. The **1220 Perennial vegetation of stony banks** has two vegetation communities present - a pioneer community and a grassland community. The results of the conservation assessment of **1220 Perennial vegetation of stony banks** are presented in Table 1.

Table 1. Conservation assessment results for **1220 Perennial vegetation of stony banks** surveyed at Rossmore (Dunbeacon), Co. Cork.

Habitat	Area	Structure & Functions	Future Prospects	Overall result
1220 Perennial vegetation of stony banks	Favourable	Favourable	Unfavourable -Inadequate	Unfavourable -Inadequate

2.2 1220 Perennial vegetation of stony banks habitat assessment

The conservation status of the Annex I habitat **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) is discussed below. As this habitat was not previously assessed, no trend can be ascribed

to the conservation status. Areas recorded in 2016 are compared with the 1995 aerial photograph series. Due to the quality of these aerial photographs, only gross changes in area are noticeable. It should be borne in mind that natural processes such as erosion, deposition and succession are primary drivers of change on coastal habitats.

2.2.1 Area

The area of each vegetation community of Annex I **1220 Perennial vegetation of stony banks** is presented in Table 2. The grassland community is more extensive and runs the length of the shingle spit. The pioneer community is found fringing the grassland community around the periphery of the spit. Based on 1995 aerial photographs there has been no change in the proportion of vegetation communities of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon), nor has there been any change in area of the habitat as a whole. It should be noted that due to the quality of the aerial photographs taken in 1995, only gross changes in area would be noticeable. Area was assessed as Favourable (stable) during the VSM.

Table 2. Areas of the vegetation communities of Annex I **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) based on aerial photographs (APs) from 1995 for baseline areas and areas mapped during the VSM.

Habitat	1995 APs (ha)	Vegetated Shingle Monitoring Project (ha)
1220 Perennial vegetation of stony banks		
Pioneer community	0.03	0.03
Grassland community	0.14	0.14
Total	0.17	0.17

2.2.2 Structure and Functions

Structure and Functions were assessed for **1220 Perennial vegetation of stony banks** recorded at Rossmore (Dunbeacon) during the VSM. Table 3 shows the results of the Structure and Functions assessment.

Table 3. Annex I **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) for which Structure and Functions were assessed, with the number of monitoring stops, assessment criteria and the number of criteria that failed.

Habitat	No. monitoring stops	Total no. assessment criteria	No. failed criteria
1220 Perennial vegetation of stony banks	4	7	0

1220 Perennial vegetation of stony banks had none of its criteria fail. The coastal defences criterion was allowed to pass based on expert judgement as the area of coastal defences around the road and where the fishing equipment is stored on the shingle habitat is very small and at the periphery of the **1220 Perennial vegetation of stony banks**. Structure and Functions of **1220 Perennial vegetation of stony banks** were assessed as Favourable during the VSM.

2.2.3 Future Prospects

Impacts and activities recorded at Rossmore (Dunbeacon) are presented in Table 17.4. Impact codes are assigned according to Ssymank (2011). Three negative impacts were recorded as being present at Rossmore (Dunbeacon) during the VSM, though all only affected a small area of the **1220 Perennial**

vegetation of stony banks. These included one high-intensity impact – the storage of fishing equipment on the shingle, and tracks (medium intensity) and the presence of litter (low intensity). Coastal defences were recorded as a medium intensity neutral impact. There were no positive impacts recorded at Rossmore (Dunbeacon).

Table 4. Impacts recorded in Annex I **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) in 2016. Source refers to whether the impact being scored originates inside or outside the Annex I habitat being assessed.

Habitat code	Impact code	Impact description	Intensity	Effect	Percent of habitat	Source
1220	D01.01	Paths, tracks, cycling tracks	Medium	Negative	1	Inside
1220	E05	Storage of materials (fishing equipment)	High	Negative	1	Inside
1220	H05.01	Garbage and solid waste	Low	Negative	<1	Inside
1220	J02.12.01	Sea defence or coast protection works, tidal barrages	Medium	Neutral	<1	Inside

No impacts were recorded for **1220 Perennial vegetation of stony banks** during the NSBS. Future prospects were assessed as Unfavourable-Inadequate during the VSM.

2.2.4 Conservation assessment

Area and Structure and Functions were assessed as Favourable, while Future Prospects were assessed as Unfavourable-Inadequate. The conservation status of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) was assessed as Unfavourable-Inadequate.

3 DISCUSSION

3.1 Species lists for 1220 Perennial vegetation of stony banks communities

Two communities of **1220 Perennial vegetation of stony banks** were recorded during the VSM. Table 5 presents the positive indicator species recorded within the pioneer and grassland communities of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon).

Table 5. Positive indicator species recorded within the pioneer and grassland communities of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon). Negative and non-native species are excluded from the list.

Pioneer community	Grassland community
<i>Agrostis stolonifera</i>	<i>Agrostis stolonifera</i>
<i>Atriplex prostrata</i>	<i>Atriplex prostrata</i>
<i>Beta vulgaris s. maritima</i>	<i>Festuca rubra</i>
<i>Calystegia sepium</i>	<i>Lotus corniculatus</i>
<i>Cochlearia officinalis</i>	<i>Poa humilis</i>
<i>Festuca rubra</i>	<i>Potentilla anserina</i>
<i>Fumaria capreolata</i>	<i>Rumex crispus</i>
<i>Juncus gerardii</i>	<i>Silene uniflora</i>
<i>Juncus species</i>	<i>Sonchus arvensis</i>
<i>Potentilla anserina</i>	<i>Trifolium repens</i>
<i>Rumex crispus</i>	<i>Tripleurospermum maritimum</i>
<i>Sonchus arvensis</i>	
<i>Suaeda maritima</i>	

3.2 Shingle vegetation substrate and composition

The vegetation of the **1220 Perennial vegetation of stony banks** grassland community is rooted within a soil substrate (stops 1 and 3), while the pioneer community vegetation is rooted within a gravel-soil mix for stop 2 and a sand-soil mix for stop 4. The shingle comprises cobble, pebble and gravel as defined using a modified version of the particle size ranges defined in Fossitt (2000). Gravel is the major component for stop 2, while pebble is the major component in stop 4 (Table 6).

Table 6. Shingle composition (as defined in Fossitt (2000) with minor modifications) of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) during the VSM 2016. % cover shown, recorded to the nearest 5%. Only stops with exposed shingle could contribute to the data presented.

	Stop 2	Stop 4
Boulder (>256 mm)	0	0
Cobble (>64-256 mm)	0	30
Pebble (>16-64 mm)	35	60
Gravel (2-16 mm)	65	10

3.3 Stabilising effects of permanent structures

Any anthropogenic structures which prevent the natural habitat migration of **1220 Perennial vegetation of stony banks** must be looked upon unfavourably. There is a small area of **1220 Perennial vegetation of stony banks** at Rossmore (Dunbeacon) which is impacted upon by coastal defences. These defences are artificially stabilising the spit and **1220 Perennial vegetation of stony banks** habitat. Following the approach undertaken by the SDM most permanent built infrastructure, such as coastal defences and coastal roads, that were in place on the 1995 aerial photographs and had not undergone significant modifications or improvements since 1995 were scored as neutral.

3.4 Climate change

Due to the extensive erosion of coastal systems within Ireland during the winter storms of 2013/14 and evidence that an increase in Atlantic storms over the last few decades could be due to climate change (Masselink *et al.*, 2016), the impact of climate change on **1220 Perennial vegetation of stony banks** should be assessed. Based on comparisons between the VSM mapping recorded in 2016 and aerial photography taken in 2010 it appears that the area of **1220 Perennial vegetation of stony banks** at this site is unchanged and any impacts from storm activity have been minor. The impact of climate change has not been assessed for this site as it would be more appropriate if an assessment of this impact was made at the national level.

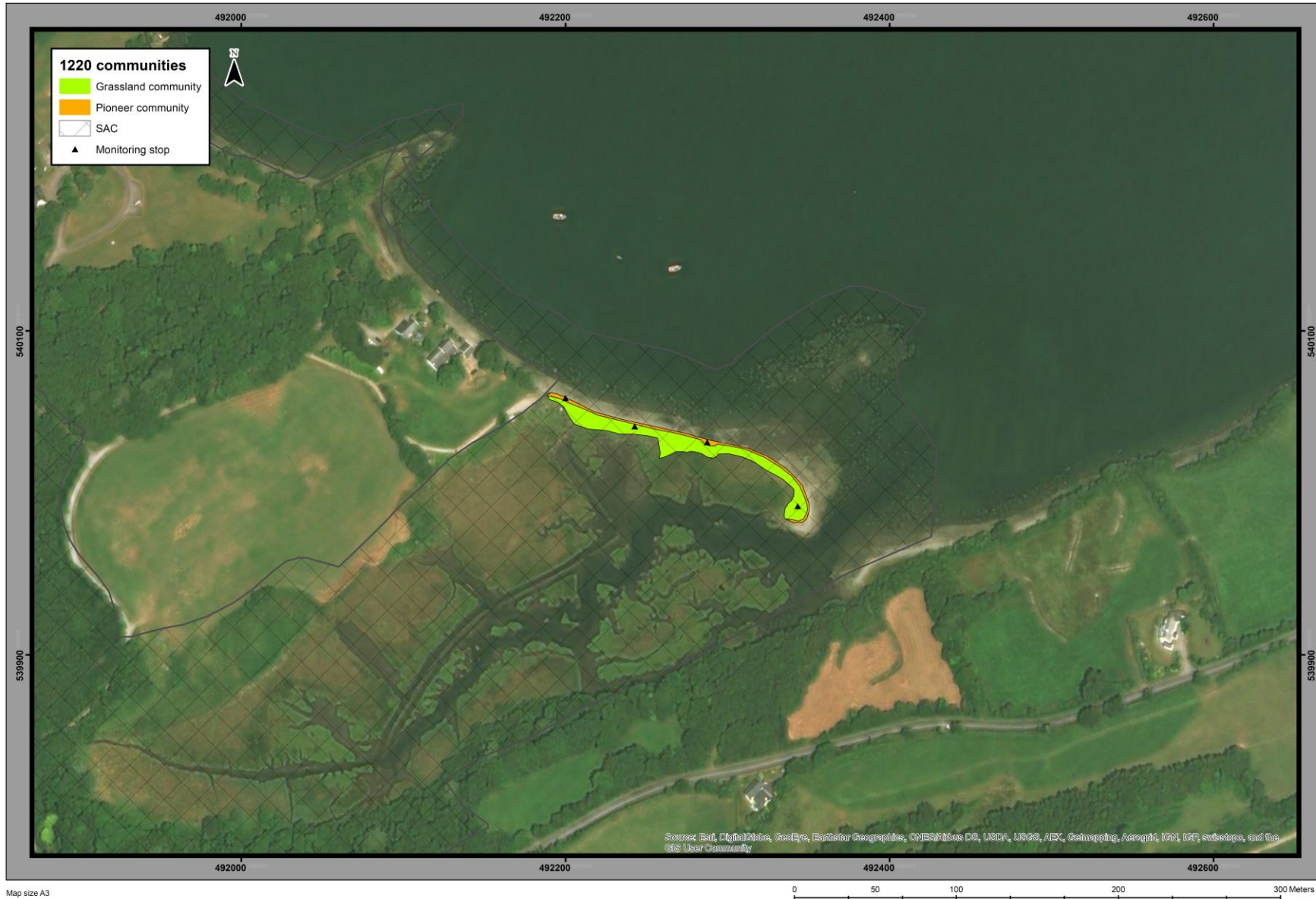
3.5 Other impacts

Rossmore (Dunbeacon) is mainly utilised for fishing activities. The track into the west of the site facilitates access to fishing boats and the small area of coastal defences serves to stabilise the shingle in the vicinity of the track. The practice of storing fishing equipment on areas of the **1220 Perennial vegetation of stony banks** should be stopped and fishermen should be made aware of the negative impacts of litter and rubbish at the site.

A site-specific management plan addressing the issues discussed in sections 3.3 and 3.5 would help improve the Future Prospects of **1220 Perennial vegetation of stony banks**, and this would ultimately improve the overall conservation assessment for the habitat.

4 REFERENCES

- Delaney, A., Devaney, F.M, Martin, J.M. and Barron, S.J. (2013) Monitoring survey of Annex I sand dune habitats in Ireland. *Irish Wildlife Manuals*, No. 75. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.
- Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.
- Martin, J.R., Daly, O.H. and Devaney, F.M. (2017) Monitoring and assessment of EU Annex I habitat 1220 Perennial vegetation of stony banks at 30 sites. *Irish Wildlife Manuals*, No. 98. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin.
- Masselink, G., Castelle, B., Scott, T., Dodet, G., Suanez, S., Jackson, D. and Floc, F. (2016) Extreme wave activity during 2013/2014 winter and morphological impacts along the Atlantic coast of Europe. *Geophysical Research Letters* 43: 2135–2143.
- Moore, D. and Wilson, F. (1999) *National Shingle Beach Survey of Ireland*. Unpublished report to the National Parks and Wildlife Service, Dublin.
- NPWS (2014) SAC site synopsis for SAC 002280 Dunbeacon Shingle. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin. <http://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002280.pdf>. Accessed September 2016.
- NPWS (2015) Natura 2000 Standard Data Form, Site 002280. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland. <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002280.pdf>. Accessed September 2016.
- Ryle, T., Murray, A., Connolly, K. and Swann, M. (2009) Coastal Monitoring Project 2004-2006. A report submitted to the National Parks and Wildlife Service, Dublin.
- Ssymank, A. (2011) Reference list threats, pressures and activities (final version). http://bd.eionet.europa.eu/activities/Natura_2000/Folder_Reference_Portal/Ref_threats_pressures_FINAL_20110330.xls. Accessed July 2016.



Map size A3