NatureScot
Scotland's Nature Agency
Buidheann Nàdair na h-Alba

CULBIN BAR SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE

Site details

Site name:	Culbin Bar
Map:	https://sitelink.nature.scot/site/8238
Location:	Highlands and Islands
Site code:	UK0019807
Area (ha):	580.99
Date designated:	17 March 2005

Qualifying features

Qualifying feature	SCM assessed condition	SCM visit date	UK overall Conservation Status
Coastal shingle vegetation outside the reach of waves (Perennial vegetation of stony banks) [H1220]	Favourable Maintained	6 June 2014	Unfavourable - Bad
Atlantic salt meadows (Atlantic salt meadows *Glauco-Puccinellietalia maritimae*) [H1330]	Favourable Recovered	12 June 2014	Unfavourable - Bad
Shifting dunes (Embryonic shifting dunes) [H2110]	Favourable Maintained	June 2014	Unfavourable - Bad

Notes:
Assessed condition refers to the condition of the SAC feature assessed at a site level as part of NatureScot's Site Condition Monitoring (SCM) programme.
Conservation status is the overall condition of the feature throughout its range within the UK as reported to the European Commission under Article 17 of the Habitats Directive in 2019.

Overlapping protected areas:

Culbin Sands, Culbin Forest and Findhorn Bay Site of Special Scientific Interest (SSSI), Moray and Nairn Coast Ramsar site, Moray and Nairn Coast SPA, Moray Firth SAC.

Key factors affecting the qualifying features

Coastal shingle vegetation outside the reach of waves
This habitat occurs on shingle structures which develop when a sequence of foreshore beaches is deposited at the limit of high tide. More permanent ridges are formed as storm waves throw pebbles high up on the beach, from where the backwash cannot remove them. Several beaches may be piled against each other and extensive structures can form.

The ecological variation in this habitat type depends on stability, the amount of fine material accumulating between pebbles, climatic conditions, width of the foreshore, and past management of the site. The ridges and lows formed also influence the vegetation patterns, resulting in characteristic zonation of vegetated and bare shingle.

Historically, Culbin Bar formed part of the same shingle aggregation as Lower River Spey-Spey Bay to the east. Although sea-level rise has separated the sites, they are still linked, being maintained by the same coastal processes. Culbin Bar and the Lower River Spey-Spey Bay are individually, the two largest shingle sites in Scotland and together form a shingle complex unique in Scotland. They represent perennial vegetation of stony banks in the northern part of its range in UK. As at 2019, Culbin Bar is over 8 km long. It has a series of shingle ridges running parallel to the coast with shingle recurves (hooks) at the rear of bar. The ridges support good examples of northern heath on shingle. Strand vegetation is limited to the hooks at the rear of the bar. Species such as sea sandwort *Honckenya peploides* and sea campion *Silene uniflora* are found. Locally dominant species on the ridges include heather *Calluna vulgaris,* crowberry *Empetrum nigrum* and formerly juniper *Juniperus communis*. The natural westward movement of the bar deposits new ridges for colonisation. This movement has not been constrained by human activities, and Culbin Bar is an example of a system with natural structure and function.

The only issue affecting this feature at Culbin Bar SAC is colonisation by invasive species such as rosebay willow herb. Apart from the control of these invasive species the current management policy for this habitat is one of non-intervention.

NatureScot's programme of Site Condition Monitoring has found the feature to be in favourable condition.

Further information about coastal shingle vegetation outside the reach of waves can be found here.

Atlantic salt meadows

This habitat develops when halophytic (salt-tolerant) vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. This vegetation forms the middle and upper reaches of saltmarshes, where tidal inundation still occurs but with decreasing frequency and duration. A wide range of community types is represented and the saltmarshes can cover large areas, especially where there has been little or no enclosure on the landward side. The vegetation varies with climate and the frequency and duration of tidal inundation.

The saltmarsh in Culbin Bar SAC forms part of one of the largest and most diverse extents of saltmarsh in northeast Scotland, which extends from Culbin to Findhorn Bay. It is primarily upper and lower saltmarsh characterised by *Festuca rubra* and *Puccinellia maritima* respectively. The natural westerly movement of the bar results in consequent erosion of the nearby saltmarsh, which in turn is compensated by the development of new saltmarsh in other areas. The non-qualifying habitat glasswort and other annuals colonising mud and sand is also found, one of two examples in Moray and Nairn. There is no grazing by domestic stock at this site. Recreational use is however an ongoing issue affecting this feature.

The feature was previously (2001) assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable declining condition at this SAC due to physical damage to the saltmarsh by recreational users such as four by fours, trail bikes and horse riders. While damage is still an issue in the SSSI, this is largely limited to the saltmarsh outside the SAC boundary. Evidence of previous damage to the SAC remains, but the most recent assessment found the SAC feature to be in favourable condition.

Further information about Atlantic salt meadows can be found here

Shifting dunes

This habitat exists in a highly dynamic state and is dependent on the continued operation of physical processes at the dune/beach interface. It is the first type of vegetation to colonise areas of incipient dune formation at the top of a beach. In most cases shifting dunes are transient and will either be displaced by marram-dominated vegetation as the dunes develop or will be washed away by storms. The continued supply of new sand from the beach plain into the dune system is vital to the continued existence of this habitat, even if this sand is derived from within the same system. The habitat type is of exceptional importance as an indicator of the general structural and functional 'health' of a dune system. Creation of new dune habitat, and indeed the long-term survival of the dune system at which it occurs, is often dependent upon the survival of this habitat type.

The shifting dunes at this SAC have formed on the shingle 'bar'. Within the bar, the shifting dunes are located at and around the eastern tip, on both its front and rear edges and in bays to the rear and, especially, in recurves of sand and/or shingle, sitting just above the saltmarsh, to the rear of the bar, in both the west and east. The extent and location of shifting dunes at Culbin will fluctuate naturally, with losses due to erosion and new deposits occurring in other areas. Widespread colonisation of trees and scrub from the adjacent Culbin Forest inhibits the natural mobility of sand and is the issue affecting this feature at Culbin Bar SAC. Control of invasive trees and scrub, and giant hogweed on the site is ongoing to ensure the impact on dune mobility is kept to a minimum. NatureScot's programme of SCM has therefore found the shifting dunes feature of the SAC to be in favourable condition.

Note should be made that there are other dune habitats both within the SAC and wider Culbin area and not all are in favourable condition, the main reason being the presence of invasive species.

Further information about shifting dunes can be found here

Conservation Priorities

There are no priority qualifying features within the site and no apparent management conflicts between the qualifying features. If any conservation management conflicts between the qualifying features were to arise consideration should first be given to, coastal shingle vegetation outside the reach of waves the primary reason for site selection.

In practice, there is unlikely to be any conflict between management of the qualifying features of Culbin Bar SAC. Habitat and species distribution is mainly determined by environmental conditions.

Any management for Culbin Bar SAC, or assessment of plans or projects subject to a Habitats Regulations Appraisal, will also need to take account of the overlapping SPA/SAC designations' features.

Overlapping SPA features are osprey, bar-tailed godwit, pink-footed goose, greylag goose, redshank and a non-breeding waterfowl assemblage which also includes red-breasted merganser, dunlin, oystercatcher and wigeon.

Partial overlapping SAC features are sub-tidal sandbanks and bottlenose dolphin.

None of these other features are prioritised over any of the Culbin Bar SAC features, nor vice versa. Management for these features is largely compatible.

Conservation Objectives for all qualifying features

1. To ensure that the qualifying features of Culbin Bar SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status
Favourable Conservation Status (FCS) is considered at a European biogeographic level. When determining whether management measures may be required to ensure that the conservation objectives for this site are achieved, the focus should be on maintaining or restoring the contribution that this site makes to FCS. When carrying out appraisals of plans and projects against these conservation objectives, it is not necessary to understand the status of the feature in other SACs in this biogeographic region. The purpose of the appraisal should be to understand whether the integrity of the site (see objective 2) would be maintained. If this is the case then its contribution to FCS across the Atlantic Biogeographic Region will continue to be met. Further details on how these appraisals should be carried out in relation to maintaining site integrity is provided by objective 2 (including parts a, b, and c). If broader information on the feature is available then it should be used to provide context to the site-based appraisal. Note that "appropriate" within this part of the conservation objectives is included to indicate that the contribution to FCS varies from site to site and feature to feature.

2. To ensure that the integrity of Culbin Bar SAC is maintained by meeting objectives 2a, 2b and 2c for each qualifying feature.
The aim at this SAC is to maintain the qualifying habitats in a favourable condition as a contribution to their wider conservation status. Therefore any impacts to the objectives shown in 2a, 2b or 2c below must not persist so that they prevent the achievement of this overall aim. When carrying out appraisals of plans or projects the focus should be on maintaining site integrity, specifically by meeting the objectives outlined in 2a, 2b and 2c. If these are met then site integrity will continue to be maintained. Note that not all of these will be relevant for every activity being considered. Any impacts on the objectives shown in 2a, 2b or 2c below must not persist so that they prevent the maintenance of site integrity. Temporary impacts on these objectives resulting from plans or projects can only be permitted where they do not prevent the ability of a feature to recover and there is certainty

that the features will be able to quickly recover.

This objective recognises that the qualifying habitats are exposed to a wide range of drivers of change. Some of these are natural and are not a direct result of human influences. Such changes in the habitats' extent, distribution or condition within the site which are brought about by natural processes, directly or indirectly, are normally considered compatible with the site's conservation objectives. An exception to this is when the favourable condition of a habitat is dependent on halting or managing natural succession. An assessment of whether a change is natural or anthropogenic, or a combination of both, will need to be looked at on a case by case basis.

Conservation Objectives for coastal shingle vegetation outside the reach of waves

2a. Maintain the extent and distribution of the coastal shingle vegetation outside the reach of waves habitat within the site

The extent of the coastal shingle outside the reach of waves habitat has been estimated at 116 ha. The area figure has been taken from the Standard Data Form. This should be maintained (within a reasonable range taking into account natural changes).

Coastal shingle outside the reach of waves is ephemeral with extent dependent on variations in seed sourcing and the provision of organic growing medium and nutrient, and it is vulnerable to storm damage even when established, as the usual substrate typically occurs in exposed situations. Therefore, restoration of extent should only be applied where changes can be attributed to human intervention.

2b. Maintain the structure, function and supporting processes of the coastal shingle vegetation outside the reach of waves habitat

This habitat occurs on shingle structures which develop when a sequence of foreshore beaches is deposited at the limit of high tide. More permanent ridges are formed as storm waves throw pebbles high up on the beach, from where the backwash cannot remove them. Several beaches may be piled against each other and extensive structures can form but periodic movement of the shingle can occur during storm events which can result in the natural movement of the bar creating new ridges for colonisation.

This habitat will generally have a range of zonation patterns ranging from the areas which tolerate periodic movement through to the more stable areas and this natural structure and function should be maintained.

The natural mobility and transition of the coastal shingle outside the reach of waves should be maintained and not disrupted by coastal defences, artificial (man-made) linear constraints, or extraction of sand or gravel.

At this site the continued control of invasive scrub and other species e.g. Scots pine and Corsican pine from Culbin Forest, sycamore, giant hogweed and rosebay willowherb *Chaemerion angustifolium* is required, to maintain the habitat. The RSPB control these species through the work programme detailed in the Culbin Sands Reserve Management Plan.

2c. Maintain the distribution and viability of typical species of the coastal shingle vegetation outside the reach of waves habitat

This habitat typically has a range of habitat zones present within the shingle community from

unstable strand, through pioneer vegetation to stable strand vegetation, grassland, heath and scrub. On this site all of these habitat zones are found.

Typical species that colonise the strand vegetation on this site are cleavers *Galium aparine*, orache *Atriplex spp*, Scots lovage *Ligusticum scoticum*, sea sandwort *Honckenya peploides*, curled dock *Rumex crispus*, thrift *Armeria maritima,* sea campion *Silene uniflora*

Typical species that colonise the vegetated shingle above the strand include marram *Ammophila arenaria*, fescue sp. *Festuca* spp, false oat-grass *Arrhenatherum elatius*, wavy hair-grass *Deschampsia flexuosa*, heather *Calluna vulgaris*, gorse *Ulex europaeus*, broom *Cytisus scoparius.* Kidney vetch *Anthyllis vulneraria* is also found, especially in the last one hundred metres of the outer-end of the vegetated shingle, and in the adjacent dune.

Excessive tracking/trampling by visitors or vehicles can contribute to a deterioration in the habitat structure, leading to a reduction or loss in the typical/indicator species for this habitat and could lead to erosion of the coastal shingle. This is currently not an issue on this habitat at Culbin Bar SAC.

Colonisation of the coastal shingle by invasive species, such as Corsican pine, rosebay willowherb, giant hogweed, thistles *Cirsium* species, stinging nettle *Urtica dioica* and common ragwort *Senecio jacobea*, could result in loss of the typical species. Control is carried out by the RSPB, informed by NatureScot. Although a typical species, gorse cover has also become too high and is to be reduced.

Conservation Objectives for Atlantic salt meadows

2a. Maintain the extent and distribution of the Atlantic salt meadows habitat within the site

The extent of the feature Atlantic salt meadows has been estimated at 145 ha. The area figure has been taken from the Standard Data Form. This should be maintained (within a reasonable range taking into account natural changes).

Saltmarshes are dynamic systems with cycles of erosion and accretion within a given period that may span decades. Some systems may also have fixed landward boundaries where adjacent land use has encroached on former saltmarsh habitat, and this provides a clear inland boundary. On other systems, the transition can be gradual, with no fixed limit to the system.

The area and distribution of saltmarsh at Culbin Bar fluctuates naturally alongside sand dunes and mud and sand flats.

This conservation objective is considered to be met if the conditions to ensure the habitats' long-term existence are in place.

Further inland, and outside of the SAC boundary, is Culbin Forest. This plantation woodland acts as a fixed boundary, there may be opportunities to review woodland extent in the future to allow natural expansion of salt marsh inland.

2b. Maintain the structure, function and supporting processes of the Atlantic salt meadows habitat

Atlantic salt meadows are found in sheltered embayments and estuaries and in the lee of barrier islands and spits, as mud can accumulate only in relatively low energy environments where wave action is limited. It lies inland of littoral inshore sediment and/or rock.

Landward, there may be a transition to other habitats such as cliff, dune, shingle, machair, reedbed, fen or carr containing brackish ditches.

The location, character, and dynamic behaviour of saltmarshes is governed by four physical factors: sediment supply, tidal regime, wind-wave climate and relative sea level. Within the saltmarsh creeks and pans of varying size and density are typical features of this habitat. Pans are isolated areas of standing water which may or may not remain full at all stages of the tide. Creeks are natural drainage channels which fill and empty on each tide. Creeks also absorb tidal energy and assist with the delivery of sediment into the saltmarsh. The maintenance of the dynamic behaviour of the saltmarsh with its associated creeks and pans is crucial to maintain the structure and function of this habitat.

Physical damage to the marsh surface by large animals (e.g. horses) or vehicles can cause erosion of the saltmarsh, indicated by internal dissection and enlargement of the drainage network. This can ultimately lead to the creation of mud basins. Trail bikes, 4x4 vehicles, and horse riders have contributed to habitat damage at Culbin Bar SAC in the past. Unauthorised vehicle use on the saltmarsh will continue to be monitored. The RSPB and Forest and Land Scotland have implemented visitor management policies for this site as part of the wider Culbin area.

The saltmarsh at Culbin Bar is not grazed by livestock; grazing by rabbits, hares and deer is low level and not problematic.

The natural mobility and supply of the sediment for the habitat should be maintained and not disrupted by coastal defences or artificial (man-made) linear constraints. This is currently not an issue at Culbin Bar SAC.

2c. Maintain the distribution and viability of typical species of the Atlantic salt meadows habitat

The sward structure and species composition of Atlantic sea meadows is closely related to the type and level of grazing. Typical species of this habitat vary depending on the location within the system.

For the upper saltmarsh zone, typical species are: red fescue *Festuca rubra*, saltmarsh rush *Juncus gerardii*, sea milkwort *Glaux maritima*, sea arrow-grass *Triglochin maritimum*, sea plantain *Plantago maritima,* orache. *Atriplex* sp., sea aster *Aster tripolium*, thrift *Armeria maritima*, saltmarsh flat sedge *Blysmus rufus*, creeping bent *Agrostis stolonifera*, autumn hawkbit *Leontodon autumnalis*, glauous sedge *Carex flacca*, distant sedge *Carex distans*, long-bracted sedge *Carex extensa*, sea rush *Juncus maritimus*, turf fucoids.

For the lower saltmarsh zone, typical species are: common saltmarsh grass *Puccinellia maritima*, sea arrow-grass *Triglochin maritimum*, sea plantain *Plantago maritima*, sea milkwort *Glaux maritima*, sea aster *Aster tripolium*, scurvygrass *Cochlearia* sp., sea-spurrey. *Spergularia* sp., thift *Armeria maritima*, turf fucoids.

Excessive tracking/trampling by visitors / vehicles can contribute to a deterioration in the habitat structure, leading to a reduction or loss in the typical/indicator species for saltmarsh and could lead to conversion to other habitats. This is an ongoing issue at Culbin Bar and will be monitored.

This habitat also supports osprey, bar-tailed godwit, redshank, red-breasted merganser, dunlin, oystercatcher, wigeon, pink-footed goose, greylag goose.

Conservation Objectives for shifting dunes

2a. Maintain the extent and distribution of the shifting dunes habitat within the site
The extent of the shifting dune feature has been estimated at 1 ha. The area figure has been taken from the Standard Data Form. This should be maintained (within a reasonable range taking into account natural changes). This habitat, by its very nature, is restricted in the area it can occupy and as dune systems are dynamic its extent will be subject to natural change. Shifting dunes are ephemeral with extent dependent on continued supply of new sand from the beach plain into the dune system. Restoration of extent should only be applied where changes can be attributed to human intervention. This is not currently an issue at Culbin Bar SAC. This conservation objective is considered to be met if the conditions to ensure the habitats' long-term existence are in place.

2b. Maintain the structure, function and supporting processes of the shifting dunes habitat
This habitat type rarely occurs in isolation, because it may initiate dune succession. Ridges of sand accumulate as dunes above beaches where onshore winds have blown loose beach sand inland, so that there must be a supply of sand and a strong wind for dune formation, as well as low-lying land. The ridges either re-align themselves to changes in wind direction or become partially or completely stabilised by vegetation. An important attribute of this habitat is that some change is an essential part of the system. Many characteristic plants of dune systems are reliant on some sand movement, and dunes form a natural buffer against coastal erosion, performing best when they are allowed to adjust themselves to changing natural forces. The sand supply from the beach and from offshore can fluctuate, and the dunes react to this by advancing or retreating, so that any attempt to interfere with this process will have consequences for sediment movement over a wider area. An appreciation of the behaviour of sediment is thus essential to the understanding of the dune habitat. Dune dynamism should not be confused with coastal erosion. The natural mobility and transition of the shifting dunes and continuity with adjacent associated habitats should be maintained and not disrupted by coastal defences, artificial (man-made) linear constraints, or extraction of sand. At Culbin Bar, the widespread presence of trees and scrub on the dunes is inhibiting sand mobility. Shifting dunes are transient and can be displaced by marram/scrub dominated vegetation as the dunes develop or they will be washed away by storms. Non-native invasive species should not be present, for example, giant hogweed. These species can have direct effects upon the natural plant communities through competition. They may also have more subtle effects as the niche they fill is different and this may directly or indirectly affect the rest of the ecosystem. At Culbin Bar SAC the shifting dune habitat have been colonised by vigorous native species such as Scots pine, gorse and rosebay willowherb. Management of both non-native and native scrub growth is required at Culbin Bar, so that scrub cover on the dunes is low to allow sand mobility to be maintained. The extent of scrub

growth should be monitored and reviewed if necessary.

This habitat is particularly vulnerable to trampling by beach users and to mechanical cleaning of beaches, as this can cause erosion and loss of structure and extent. This is currently not an issue at Culbin Bar.

2c. Maintain the distribution and viability of typical species of the shifting dunes habitat

This habitat is relatively species-poor and has a limited range of floristic variation. It comprises areas of foredune vegetation with abundant or dominant sand couch *Elymus farctus* and associated strandline vegetation. Strandline species such as sea rocket *Cakile maritima* are also found, along with lyme-grass *Leymus arenarius* and marram *Ammophila arenaria*.

Other typical strandline species include sea sandwort *Honckenya peploides,* orache *Atriplex* sp*,* prickly saltwort *Salsola kali,* cleavers *Galium aparine,* sea mayweed *Tripleurospermum maritimum* and common couch *Elytrigia repens*.

Colonisation of the shifting dunes by invasive species, such as rosebay willowherb, giant hogweed and gorse would result in the loss of typical species. Control is carried out by the RSPB, in consultation with NatureScot.

Conservation Measures

Culbin Bar is part of Culbin Forest, Culbin Sands and Findhorn Bay Site of Special Scientific Interest and management changes described on the SSSI list of Operations Requiring Consent must have prior consent from NatureScot (SNH).

Current and recommended management for

- **coastal shingle vegetation outside the reach of waves**
- **Atlantic salt meadows**
- **shifting dunes**

Issue	Measure	Responsible party
Coastal defences	Ensure that coastal defences and/or linear features do not disrupt the natural mobility of the features and the transition to associated habitats	Land managers, NatureScot, Highland Council, Moray Council
Excessive tracking/trampling by visitors / vehicles	Ensure tracking/trampling is minimal to prevent loss of habitat and/or typical species. Encourage responsible access, and avoid promotion of inappropriate trails and events. Vehicle use on the saltmarsh will continue to be monitored.	Land managers, NatureScot, RSPB, Forest and Land Scotland, Highland Council, Moray Council, Recreational groups
	Implement and review visitor management policies	RSPB, Forest and Land Scotland

Colonisation by vigorous native species e.g. ragwort, rosebay, tree species and gorse	Ensure colonisation of habitats by vigorous native species, such as rosebay willowherb and ragwort, tree or scrub growth is minimal to prevent impacts to the shifting dune and coastal shingle features. Review management and monitor extent of colonisation.	Land managers, NatureScot
Colonisation by vigorous Invasive Non-Native Species (INNS)	Ensure colonisation of habitats by vigorous INNS, such as giant hogweed is prevented Monitor extent of colonisation.	Land managers, NatureScot
Colonisation by invasive species	Develop a strategy for control of invasive species between the land managers. This could include trying to reduce the available seed source close to the site boundary.	Land managers, NatureScot
Habitat Management	Maintain plans as required, for example RSPB Culbin Sands Reserve plan, to ensure that any issues affecting the qualifying features are being addressed.	NatureScot, RSPB, Forest and Land Scotland, Land managers.
	Identify funding streams to aid collaborative management between land managers.	
	Encourage the natural processes of habitat structure, morphology and development through a policy of non-intervention.	
Adjacent land uses – Atlantic salt meadows	Explore any opportunities to review the extent of the commercial plantation, which lies outside the SAC, to allow natural inland expansion of salt marsh habitat beyond the SAC boundary.	NatureScot, Forest and Land Scotland
Research and monitoring	To identify emerging impacts on the habitats and their causes, in order to understand the long term issues, and to inform future management of the habitat across Scotland.	NatureScot, Academic institutes
Climate change	Work with land managers to develop a strategy to increase resilience and reduce barriers to landward migration of coastal habitats resulting from sea level rises.	NatureScot, Land managers

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Approved on 18 June 2020 by:

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International Designations	Tayside & Grampian