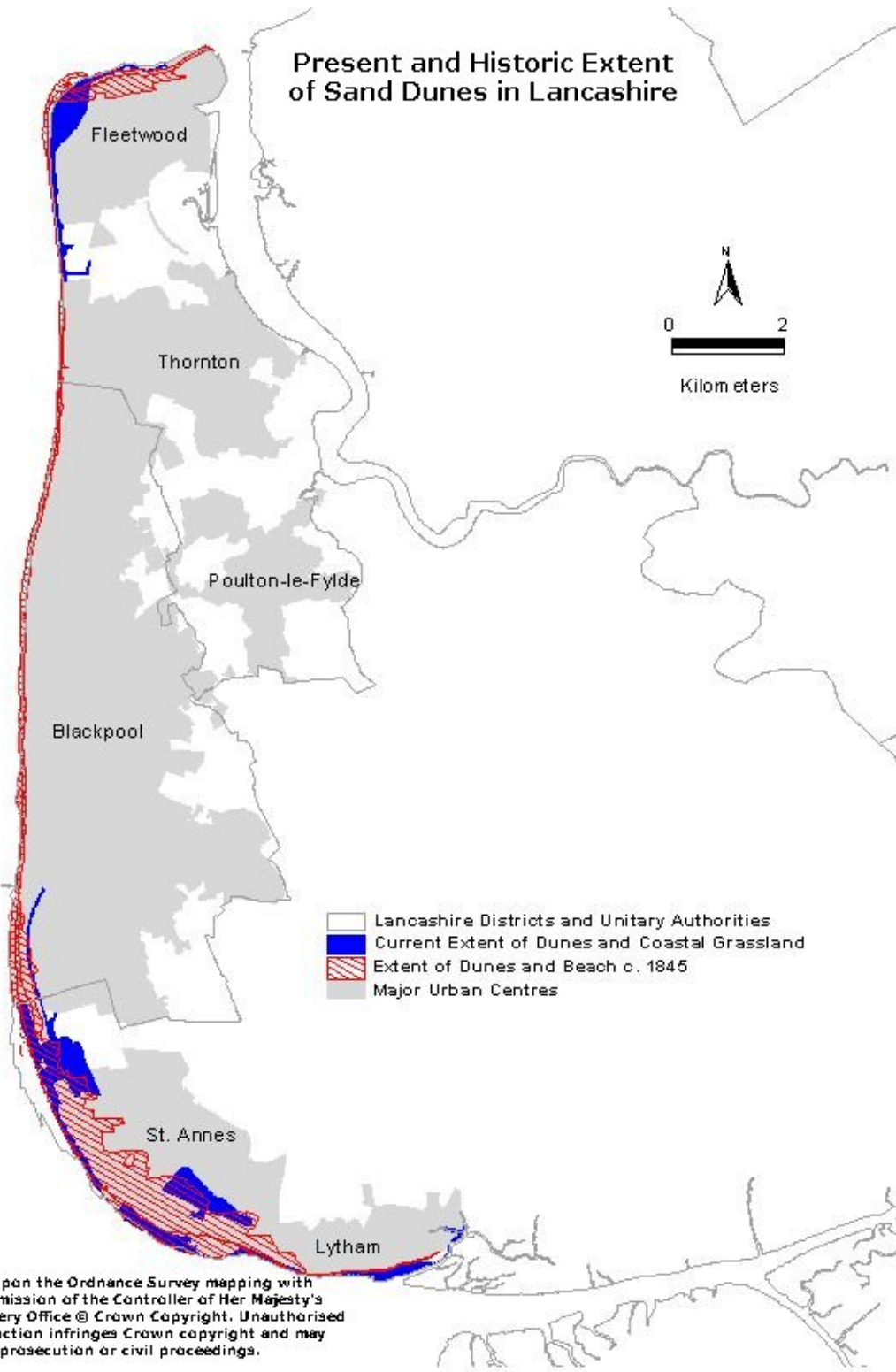


Sand Dunes



Sand dunes
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Present and Historic Extent of Sand Dunes in Lancashire



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Lancashire County Council 100023320 2007

Habitat Description

This plan covers wind-blown sand formations (both fixed and mobile) and the associated foreshore, slacks (areas of dune wetland), grassland, heathland and scrub.

In common with calcareous (lime-rich) dunes elsewhere in Britain, Lancashire's display a succession of vegetation types characteristic of different phases of dune formation but in a fragmented state.

Dunes are formed by plants trapping and binding dry, wind-blown sand. This starts at the strandline, where annuals, such as sea rocket and prickly saltwort, begin to arrest the inland progress of the sand.

Embryo dunes, or foredunes, form on the upper beach around sand couch and lyme-grass. As the dunes grow in height, these grasses are replaced by marram grass. Tall dunes with marram dominating are known as mobile (or yellow) dunes.

As they become more vegetated, dunes become more stable and 'fixed' in nature. Fixed dunes support a much higher diversity of species than mobile dunes and the dominant grass is typically red fescue. As the fixed dunes age they lose lime and develop a flora with common bent-grass and patches of heather (dune heathland). Dense clumps of scrub may develop also on older dunes comprised of willows and the introduced sea buckthorn.

Dune slacks are damp low-lying areas between dune ridges and they can be particularly rich in plant species including creeping bent-grass, creeping willow and a variety of sedges, rushes, orchids and mosses.

Over 280 vascular plant species have been recorded on the Lancashire sand dunes including several national rarities. Three UK endemic plants occur in dunes in Lancashire. These are Isle of Man cabbage, dune helleborine and a hybrid of Baltic rush.

Insects are numerous and varied in the dune systems, with over 150 species of butterflies and moths recorded.

Birds present invariably include skylark, and wheatear as well as rarities such as (at Lytham) stonechat.

National status

Coastal sand dunes are listed on Annex 1 of the EC Habitats Directive. In the Directive, fixed dunes and decalcified fixed dunes (dune heath) are considered priority habitats in Europe.

Coastal sand dunes are also a UK BAP priority habitat supporting many priority species.

There are 47,118 ha of sand dunes in Great Britain, 9,276 ha of which occur in England.

Regional status

About one third of the England's sand dunes occur in north west England. The Sefton dunes in north Merseyside, those around Morecambe Bay at Sandscale Haws and North Walney and those at Drigg in Cumbria are internationally significant but there are other important examples elsewhere along the coastlines of Merseyside, Cumbria and Lancashire

Local status

There is estimated to be 88.7 ha of sand dune habitat remaining in Lancashire (or just under 1% of the English sand dune resource). This is distributed as follows: 79.8 ha in Fylde Borough; 8.5 ha in Wyre and 0.4 ha in Lancaster.

Areas of sand-dune are thinly and discontinuously distributed along the Fylde coast, from Lytham in the south to the outskirts of Fleetwood in the north. There is also a tiny (0.4ha) dune remnant at Pott's Corner, Middleton Sands, north of the Lune Estuary.

There has been a drastic and tragic loss of Lancashire sand dunes in the past 150 years, due to the expansion of Blackpool and the building of St Anne's from 1875 onwards. The Blackpool to Lytham dunes are estimated to have occupied 505 ha in 1839 compared with 79.8 ha today, a decline of 84%. The remaining dune areas are fragmented and susceptible to recreational pressures, small-scale piecemeal developments and lack of appropriate management.

Dune slacks with standing water are scarce. At least one slack that held standing water during the winter no longer does so apparently as a result of adjacent development.

Important Sites

The largest intact sand dune system in the county is Lytham St Anne's Dunes SSSI (24.54 ha) which includes Lytham St Anne's Local Nature Reserve (16.25 ha).

Parts of the following Biological Heritage Sites (BHSs) contain sand dune habitats:

- Royal Lytham St Anne's Golf Course (50.1 ha);
- St Anne's Old Links Golf Course and Blackpool South Railway Line (47.5 ha);
- Lytham Foreshore Dunes & marsh (229.4 ha);
- Clifton Hospital Site, Lytham St Anne's (2.4 ha);
- Blackpool South Railway Line – Squires Gate Station to Lytham Road Bridge (4.5 ha);
- Queen's Promenade Coastal Grassland – Blackpool Shore Boating Pool to Little Bispham (10.3 ha);
- Fleetwood Promenade – Dune and Coastal Grassland (19.1 ha) [part of Morecambe Bay cSAC];
- Fleetwood Golf Course (44.4 ha).

Current factors affecting the Habitat

Phases of both coastal retreat and accretion have been reported along the Fylde coast over the last century. At present, the dune shoreline seems to be roughly in equilibrium with, possibly, some potential for the development of new dunes at Fairhaven, St Anne's and Fleetwood.

Dune water-tables vary greatly from year to year and during the course of a year, depending largely on winter rainfall. Years with low rainfall can adversely affect dune slack flora and fauna, whilst drying out can result in blow-outs producing new slacks. Human activity lowers the water-table through agricultural drainage and interception of precipitation falling on built surfaces. Dune water levels are not monitored currently in Lancashire.

Large parts of the Fylde dunes have been affected by past sand removal for building and industrial purposes. Indeed, what became Lytham St Anne's LNR was sand extracted in the 1930s and 1940s, sand dune vegetation re-colonising overburden and 'scrapes' left behind. Some commercial sand-winning still occurs (e.g. from Salters Bank in the Ribble Estuary) but it is not clear what impact, if any, this has on sand supply to the Fylde coast dunes.

Development on sand dunes has slowed but some losses were still occurring into the 1990s. Small-scale developments affected several BHSs, while the Lytham St Anne's Dunes SSSI boundary was amended to incorporate an access road, compounds and loading area for Ribble Estuary sand-winning.

In addition to the direct loss of habitat, such developments lead to further fragmentation of the sand dune resource, the introduction of invasive plants and predation and disturbance of fauna by domestic pets.

The dunes' upper beach and sandhills tend to be much used for informal recreation. Some degree of disturbance can be beneficial to prevent over-maturation of vegetation and to maintain small bare patches for dune invertebrates. However, in the absence of appropriate management, human trampling, horse riding and off-road vehicles can damage sensitive vegetation, leading to wind erosion and blown sand affecting habitats and buildings. On the Fylde coast, this problem is particularly acute on the seaward side of Pontin's Holiday Village.

Increasing use of dunes for dog walking may have an impact on ground-nesting birds, as well as leading to local soil enrichment and associated vegetation changes.

Golf is a major recreational user of Lancashire duneland. The presence of three large courses has saved extensive areas of semi-natural vegetation, including the largest remaining areas of dune heath, from built development. However, unless there is sensitive management of routine operations on the courses such as drainage, irrigation, tree-planting, mowing, fertilising and re-seeding there can be damage done to nature conservation interests.

Mechanical beach cleaning can destroy strandline and embryo dune vegetation, inhibiting the accretion of new dunes. This is important not only for the health of the dune system but also for coast protection.

Current predictions about climate change suggest that we can expect a sea-level rise of about 1 mm per annum in the foreseeable future together with an increase in the frequency of storms. These have major implications for coast erosion and mean that all possible encouragement must be given to accretive processes, including dune formation.

The building of seawalls has isolated some areas of sand dune and cut off, or reduced, the sand supply to them

Current Action / Mechanisms

All major areas of sand dune in Lancashire are covered by SSSI or BHS designations. This should afford them some degree of protection from inappropriate development.

In November 1998 a Shoreline Management Plan for Formby Point to Fleetwood was published. This aims to develop sustainable policies for coastal defence. There is a similar plan for Morecambe Bay (from Rossall Point to Walney Island).

A Site Management Plan for Lytham St Anne's LNR is in existence and a part-time warden at the site is employed by Fylde Borough Council. The warden undertakes annual monitoring of several important plant species and conducts guided walks from the Visitor Centre. The water levels in two of the slacks at the LNR have been monitored since 1968.

Control of sea buckthorn and the fencing and thatching of blow-outs has recently been undertaken on the Lytham St Annes SSSI by the British Trust for Conservation Volunteers (BTCV).

Royal Lytham St Anne's Golf Course produced a Woodland and Conservation Strategy in 1998 and a Conservation Management Plan was produced in 2000. as a result of the Strategy and Management Plan there has been some recent clearance of patches of white poplar and birch.

There are proposals to restore dunes owned by Blackpool Borough Council opposite Pontins Holiday Village.

Fylde Borough Council has recently issued a notice stating that action will be taken against unauthorised users of vehicles on the beaches or dunes. From January 2001 it has been an offence for dog owners not to remove their dogs' faeces from all public areas including the dunes. Waste bins have been installed.

Indicators of Habitat Quality

Sand dunes are moving towards favourable condition when:

- There is no loss in extent of habitat;
- Substrate composed of sand with low levels of major plant nutrients;
- Characteristic plant and animal communities are present (taking account of natural variation);
- Up to 25% bare sand is present in all habitats except mobile dune where higher percentages are acceptable;
- Levels of disturbance are rare to absent.

Table 1: NVC Communities associated with sand dunes in Lancashire

Few areas of the Lancashire sand dunes have been surveyed using National Vegetation Classification methodology. Some of the NVC communities thought to occur in the county are marked by an asterisk. Those that are not marked have been definitely recognised on Lytham St Anne's Local Nature Reserve.

Code	Community	Code	Community
SD2	<i>Cakile maritima</i> - <i>Honckenya peploides</i> strandline*	SD10	<i>Carex arenaria</i> dune
SD4	<i>Elytrigia juncea</i> foredune*	SD12	<i>Carex arenaria</i> - <i>Festuca ovina</i> - <i>Agrostis capillaris</i> dune grassland*
SD5	<i>Leymus arenarius</i> mobile dune	SD15	<i>Salix repens</i> - <i>Calliergon cuspidatum</i> dune slack
SD6	<i>Ammophila arenaria</i> mobile dune	SD16	<i>Salix repens</i> - <i>Holcus lanatus</i> dune slack
SD7	<i>Ammophila arenaria</i> - <i>Festuca rubra</i> semi-fixed dune	SD18	<i>Hippophae rhamnoides</i> dune scrub
SD8	<i>Festuca rubra</i> - <i>Galium verum</i> fixed dune	H11	<i>Calluna vulgaris</i> - <i>Carex arenaria</i> heath.
SD9	<i>Ammophila arenaria</i> - <i>Arrhenatherum elatius</i> fixed		

dune		
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Table 2a: Vascular plant and bryophyte species associated with sand dunes in Lancashire

Common name	Scientific name	Status
Plants of the strandline		
Sea rocket	<i>Cakile maritima</i>	
Prickly saltwort	<i>Salsola kali</i>	Ff4a
Frosted orache	<i>Atriplex laciniata</i>	Ff4a
Plants of embryo dunes		
Sand couch	<i>Elytrigia juncea</i>	
Lyme-grass	<i>Leymus arenarius</i>	
Plants of semi-fixed or mobile dunes		
Marram grass	<i>Ammophila arenaria</i>	
Sea bindweed	<i>Calystegia soldanella</i>	Ff3
Hound's-tongue	<i>Cynoglossum officinale</i>	Ff3
Sea holly	<i>Eryngium maritimum</i>	Ff4a
Isle of Man cabbage	<i>Coincya monensis</i> ssp. <i>monensis</i>	E, NS, Ff2
Portland spurge	<i>Euphorbia portlandica</i>	NS, Ff2
Sea spurge	<i>Euphorbia paralias</i>	Ff4a
Seaside pansy	<i>Viola tricolor</i> ssp. <i>curtsii</i>	Ff3
Dune fescue	<i>Vulpia fasciculata</i>	NS, Ff2
Plants of fixed dunes		
Red fescue	<i>Festuca rubra</i>	
Bloody crane's-bill	<i>Geranium sanguineum</i>	Ff4a
Common broomrape	<i>Orobanche minor</i>	Ff4a

Seaside centaury	<i>Centaurium littorale</i>	NS, Ff2
Green-flowered helleborine	<i>Epipactis phyllanthes</i>	NS, Ff2
Dune helleborine	<i>Epipactis leptochila</i> var. <i>dunensis</i> .	E, NS, Ff2

Plants of older (de-calcified) fixed dunes

Common bent-grass	<i>Agrostis capillaris</i>	
Heather	<i>Calluna vulgaris</i>	
Yellow bartsia	<i>Parentucellia viscosa</i>	
Slender parsley-piert	<i>Aphanes australis</i>	Ff4a
Fine-leaved sheep's-fescue	<i>Festuca filiformis</i> (<i>tenuifolia</i>)	Ff4a

Dune scrub plants

Willow spp.	<i>Salix</i> spp.	
Sea buckthorn	<i>Hippophae rhamnoides</i>	
Pyramidal orchid	<i>Anacamptis pyramidalis</i>	Ff3

Plants of dune slacks

Creeping bent-grass	<i>Agrostis stolonifera</i>	
Creeping willow	<i>Salix repens</i>	
Knotted pearlwort	<i>Sagina nodosa</i>	
Grass-of-Parnassus	<i>Parnassia palustris</i>	Ff4a
Small-fruited yellow-sedge	<i>Carex viridula</i> subsp. <i>viridula</i>	Ff3
Chaffweed	<i>Anagallis minima</i>	Ff3
Baltic rush hybrid	<i>Juncus balticus</i> x <i>J. inflexus</i>	E, Ff3
Variegated horsetail	<i>Equisetum variegatum</i>	NS, Ff2
Round-leaved wintergreen	<i>Pyrola rotundifolia</i>	NS, Ff2
Marsh helleborine	<i>Epipactis palustris</i>	Ff4

Mosses and Liverworts		
A moss	Rhynchostegium megapolitanum	

Table 2b: Animal species associated with sand dunes in Lancashire

Invertebrates		
Meadow brown butterfly	Maniola jurtina	
Common blue butterfly	Polyommatus icarus	
Grayling butterfly	Hipparchia semele	Le4
Cinnabar moth	Tyria jacobaeae	
White Satin moth	Leucoma salicis	
Portland moth	Actebia praecox	NS, Le2
Shore wainscot moth	Mythimna litoralis	NS, Le2
Sandhill rustic moth	Luperina nickerlii gueneei	E, NR
A bee fly	Phthiria pulicaria	NS
A stilleto fly	Dialineura anilis	NR, In1
Roesel's bush-cricket	Metrioptera roeselii	NS, Or2
A solitary bee (the vernal colletes)	Colletes cunicularius	NR, In1
A digger wasp	Podalonia hirsuta	NS
A digger wasp	Podalonia affinis	NR, In1
A jumping spider	Attulus saltator	NS
Striped snail	Ceruella virgata	Mo4
Birds		
Skylark	Alauda arvensis	UK & LSAP
Linnet	Carduelis cannabina	UK SAP
Meadow Pipit	Anthus pratensis	
Grey partridge	Perdix perdix	UK SAP

Stonechat	Saxicola torquata	
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Reptiles		
Common lizard	Lacerta vivipara	
Mammals		
Rabbit	Oryctolagus cuniculus	
Brown hare	Lepus europaeus	UK & LSAP

Objectives, targets and proposed actions for sand dunes in Lancashire

Broad Objective:	A. To protect the existing sand-dune resource from further losses and fragmentation due to direct or indirect human influence (c. 90 ha).			
Operational Objective	Action Required (Priority)	Partners	Time-scale	Type
1. Accurately record the duneland resource through modern mapping, aerial and fixed-point photography.	1. Establish and implement a programme of mapping, aerial and fixed-point photography for dune sites linked with Shoreline Management Plans. (High)	LCC, LAs, landowners, WT	S	RM
2. Confirm current extent of habitat & location of important sites.	1. Establish a definitive database of all sand dune sites over 0.5 ha to include details of owners and estimates of total area of resource on each site (High)	LCC, WT EN	M	RM
3. Ensure land managers and decision makers are aware of the location and importance of sites and management requirements	1. By 2005 liaise with all sand dune BHS landowners and land managers to promote the importance of sand dune as wildlife habitat. (Medium)	BHSP	O	A, LM
4. Prevent loss of sand dune through development.	1. Ensure that all relevant planning authorities are aware of important sites and have	LCC, LAs, EN, BHS P/ship	O	SS

	development policies that take account of these (High)			
5. Strengthen statutory protection of duneland on the Lancashire coast	1. Establish feasibility of further SSSI designations for the Lancashire coastal dunes (Medium)	EN	M	SS, P
Broad Objective:	B. Achieve favourable conservation status on all SSSI and BHS sand dunes by 2005 and 2010 respectively			
Operational Objective	Action Required (Priority)	Partners	Time-scale	Type
1. Strengthen existing, and establish new, management structures for Lancashire sand-dunes.	1. Promote integrated coastal zone management for the biodiversity objectives of this plan, working with existing structures and organisations. (High)	LAs, land owners, EA	O	A, P
	2. Establish a Coast Management Scheme similar to that on the Sefton Coast, linked to the Ribble Estuary Strategy. (High)	Source to Sea	M	A, P
	3. Initiate appropriate recreation management procedures on all dune areas subject to informal recreation to improve their value as wildlife habitat. (High)	LAs, land owners, Source to Sea	L	LM
2. Review management of SSSI sand dune to ensure that favourable status target of 2005 can be met.	1. Assess condition of sand dune SSSIs by 2002. (High)	EN	S	RM
	2. By 2002 update where necessary the existing Lytham St Annes LNR Management Plan. (Medium)	Fylde BC	S	LM
	3. Implement Management Plan work programme. (High)	Fylde BC, WT, BTCV	O	LM

	4. Seek positive management of sand dunes along promenade at Fleetwood and implement programme of works by 2005 (Medium)	EN, Wyre BC	M	LM
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Broad Objective:	B. Achieve favourable conservation status on all SSSI and BHS sand dunes by 2005 and 2010 respectively			
Operational Objective	Action Required (Priority)	Partners	Time-scale	Type
3. Work with site owners and managers to produce and begin implementation of management plans for all BHS sand dune sites by 2005	1. Establish procedure in 2002 for production of site management plans for sand dune BHSs. (High)	BHS P/ship	M	LM
	2. Initiate the writing and implementation of site management plans from 2002 onwards beginning with largest BHS sites (mainly golf courses). (High)	WT, Golf courses, LAs, land owners	L	LM
4. Promote best practice management for wildlife	1. Organise meetings/site visits promoting aspects of conservation management targeted at SSSI/BHS owners, managers and outside experts. (Medium)	Source to Sea, BHS P/ship	O	A, PR

Broad Objective:	C. To encourage the formation of 5 ha of new dunes by 2005.			
Operational Objective	Action Required (Priority)	Partners	Time-scale	Type
1. Encourage new dune formation.	1. Identify where dune formation is constrained by development or other activities. (Medium).	LCC, LAs, land owners	M	RM
	2. Reduce constraints to dune formation (e.g. by modifying beach cleaning methods, protecting embryo dunes from trampling and building sand-trapping fences) where appropriate. (Medium)	LAs, land owners	L	A, LM

Broad Objective:	D. To promote and encourage research, monitoring and public appreciation of the Lancashire duneland heritage.			
Operational Objective	Action Required (Priority)	Partners	Time-scale	Type
1. Raise public awareness and understanding of sand dune issues.	1. Use appropriate means (leaflets, meetings, guided walks, local press and radio etc) to raise awareness. (Medium)	LAs, WT	O	PR
2. Set up formal procedures for research, monitoring and interpretation.	1. Establish condition assessment / monitoring programme for dune sites linked to habitat indicators (High)	LAs, WT, HE/FE	M	RM
	2. Conduct National Vegetation Classification surveys on all important dune sites. (Low)	LAs, WT, HE/FE	L	RM
	3. Investigate the invertebrate biodiversity of key dune sites (Medium).	LAs, WT, Local Nats, HE/FE	L	RM
	4. Continue and extend monitoring of, and research into, habitats and notable species on the Lancashire dunes. (Medium)	LAs, WT, HE/FE	O	RM
	5. Set up environmental monitoring programmes for coastal erosion/accretion, recreational use of dunes and dune hydrology. (Medium)	LAs, WT, HE/FE, land-owners, EA	M	RM

Other Action Plans:

- Skylark SAP
- Belted beauty moth SAP
- Brown hare SAP

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