



Sand Dune and Shingle Network

Eighth Newsletter, March 2010

Introduction

Welcome to the eighth newsletter of the Sand Dune and Shingle Network. In this newsletter we have reports of workshops and study tours, an introduction to our work with the England coastal Biodiversity Integration Group and announcement of forthcoming events as well as our regular round-up of coastal habitat news.

We were pleased to support Charlie Stratford of the Centre for Ecology and Hydrology in setting up the Sand Dune Hydrology Workshop, held on the Sefton Coast from 10th to 11th March. The workshop was held within the framework of the Interreg IVB [IMCORE](#) project and addressed some of the current and future issues which need to be considered by dune managers in relation to conservation of humid dune slacks.

In March we met with Albert Salman, Director General of the Coastal & Marine Union to discuss how we could make progress with promoting the European Dune Network. The current informal network can trace its roots back to the European Dune Conference organised by Albert in 1987 which established the European Union for Dune Conservation and Coastal Management (EUDC). A few years later the EUDC broadened its scope to become the European Union for Coastal Conservation (now the Coastal & Marine Union-EUCC).



The Council of the Coastal & Marine Union has now given its support with an aim to launch a new initiative by the end of the year. We would like to hear from anyone who would be interested in being involved in developing the European network.

You may have noticed that we are also trying to broaden the scope of our network by referring to it from now as the Sand Dune and Shingle Network. Whilst the focus will remain on UK issues, as stressed at our launch event in 2007, we also want to attract and support members from a wider area.

Paul Rooney, Network Director
John Houston, Network Officer
Charlotte Durkin, Network Assistant

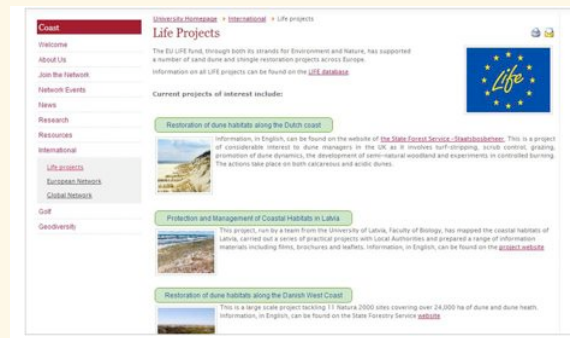
dunes@hope.ac.uk
www.hope.ac.uk/coast

Network and membership news

By Charlotte Durkin

New look for the website

The first phase of updating the website is almost complete. We intended this phase to be a 'clean up' to ensure the smooth running and accessibility of the site. Some layouts have been changed and there has been a re-organisation of some sections. Some new sections have been added, one on golf with details of our 'Making Links' project and an 'About Us' section combining information from previously disparate sources around the site. More photographs have been added to improve the visual appeal of the site and make it easier to find pages of interest.



The second phase of the website update will involve adding new sections and material on emerging themes of interest to our members. The new golf section has some links relating to the Menie Links development, as well as some more general information about links golf courses. We hope to develop some resources for golf course managers on specific topics – e.g. turf stripping and scrub control but need the input of members on what would be the most useful topics to cover. A new section on LIFE projects has been added to the site, where we provide some information and links to LIFE-Nature projects. Our work to help disseminate this information has been given the blessing of the European Commission.

In our 'Case Studies' section we hope to publish material relating to aspects of sand dune management, from geomorphology to grazing. There appears to be a bit of a black hole on the web when it comes to sourcing resources for this work. Papers or web resources on sites undertaking specific management tasks are infrequent and often very light on details. We would ask that if any members know of any projects which could be used as case studies, or come across links to papers, that they pass details on to us. We also hope to add a page on geo-diversity and geo-conservation in the future. As always we are open to suggestions from members, both about the functioning of the site and the subject matter we cover.

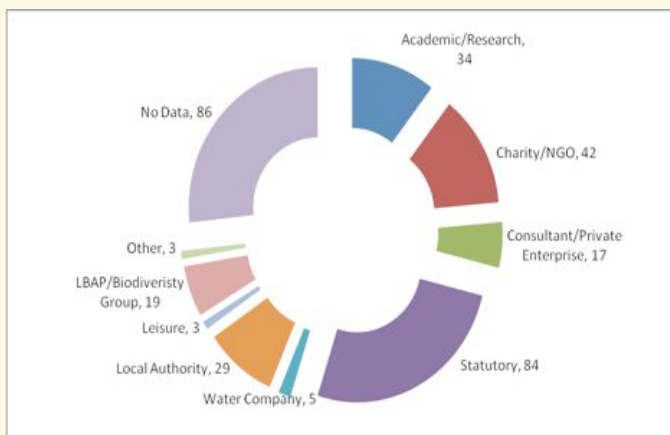
Developing the membership

We currently have 158 members and 164 non members to whom we forward the newsletter. If you are one of the 164, think about filling in the (very short!) form as we can provide you with information relevant to your subject area and interests and include you in any future thematic sub-divisions of the network.

In terms of the habitat members are interested in:-

Sand Dune	149
Shingle	97
Both	84
No data	160

The background of members is wide (Employer, number of members)



Our contacts come from 25 countries.

United Kingdom		Western Europe		International		Eastern Europe/Baltic	
England	132	Italy	10	Israel	4	Lithuania	5
Scotland	23	Germany	8	N Z	4	Finland	2
N Ireland	9	Spain	6	S Africa	1	Sweden	1
Wales	29	Netherlands	32	Mexico	2	Estonia	1
Isle of Man	2	Belgium	15	USA	1	Latvia	3
UK (other)	4	France	5			Poland	1
		Portugal	1				
		Ireland	2				
		Denmark	2				
	199		81		12		13

This analysis has allowed us to see what sectors we are representing and those that are under-represented or absent. We have recently been targeting new sectors by publishing articles, both general about the network and in depth about aspects of dune and shingle habitats, in various magazines. Our first has been published in The Chartered Forester with another submitted to The Ranger.

Network activity

The 'Making Links' project

We have recently sent out details of our 'Making Links' project to many links golf courses in the UK and Republic of Ireland, to make contact in the first instance. This has received some favourable responses, with those in Ireland seemingly most keen to get involved with the initiative. The next stage for us is to organise an event which could bring together sand dune conservationists and golf course managers as well as representatives of other golf-environment initiatives. We aim to collect some information in the meantime on what the golf world perceives as the biggest issues in terms of the sustainable management of golf courses. This will inform our focus for the event and also what resources we might develop to bridge the gap between sand dune conservation and links golf.

Alien species

Sally Edmondson at Liverpool Hope University continues her study of the impact of alien species on coastal dunes and continues to welcome any reports from network members. Please have a look at the questionnaire on the front page of our website or contact Sally on edmonds@hope.ac.uk.

Occasional papers

One of the outputs of the network will be a series of Occasional Papers to be published by Liverpool Hope University Press. These will cover a range of topics and will be based on workshops, study tours and reviews. The first two papers, available on the website shortly, are a report of the Shingle Workshop held in September 2008 and an introduction to the dunes of North Holland based on the study tour of February 2009.

Reports are in production for the Sea Buckthorn workshop of September 2009 and the study tour of South Holland in March 2010.

Good practice guidance for coastal vegetated shingle

A Guide to the Management and Restoration of Coastal Vegetated Shingle contains good practice guidelines for the management of coastal vegetated shingle. It focuses on flood management works and their effect on shingle; covering the following subject areas:

- Physical and ecological attributes of coastal vegetated shingle.
- Importance of shingle structures in flood management.
- Nature conservation legislation.
- Threats to coastal vegetated shingle from flood management and other works.
- Guidance on managing threats to coastal vegetated shingle.
- Restoration opportunities.
- Monitoring.

<http://naturalengland.etraderstores.com/NaturalEnglandShop/EN%20-%20MAR%2005-03-002>

Introducing the coastal Biodiversity Integration Group

In 2008 Natural England and the England Biodiversity Group launched a new framework for delivering priority habitats and species conservation in England [view report](#). The re-launch of a national biodiversity initiative recognised that much had been achieved through the England Biodiversity Strategy (2002) but there is still much to do. The new framework was also a response to the conservation challenges given in the updated list of habitats and species of principal importance in England published under Section 41 of the Natural Environment and Rural Communities Act (2006).

The new initiative builds on the strengths of the UK Biodiversity Action Plan (BAP) but broadens it to embrace an ecosystem approach to biodiversity enhancement across whole landscapes. The new approach also considers the need to plan for change in response to the changing climate.

The new framework is organised around four main components;

1. England Biodiversity Strategy workstreams addressing the needs of sectors (e.g. coastal) and also cross-cutting issues
2. Biodiversity Integration Groups (BIGs) to bring together habitat and associated species interest. The integration groups will focus on driving the delivery of habitat and species targets. They will act as an interface between national policy and regional and local delivery by helping to develop priorities.
3. Targeted species recovery is still important for many species although, wherever possible, action for species should be linked to habitat work through the biodiversity integration process
4. Regional and local delivery will continue to be supported and the biodiversity integration groups will work more closely with regional and local partnerships.

Natural England is the lead body for the England Biodiversity Strategy. The Sand Dune and Shingle Network has been invited to join the coastal Biodiversity Integration Group as 'habitat champion' for sand dunes. Other 'champions' are Sue Rees of Natural England for shingle, Amy Parrott of the Environment Agency for saltmarshes and Phil Dyke of the National Trust for cliffs and islands.

The main work in recent months has been advising on the identification of Integrated Biodiversity Delivery Areas (IBDA) in England. IBDA are areas where significant biodiversity gains can be made across a wider landscape. The approach has been to seek the views of the integration groups, taxonomic specialists and regional groups to draw up an initial map of target areas based on the existing National Character Areas. The selection process has not been easy as perhaps not surprisingly the top sites identified by, for example the upland group, were

different from those from the coastal group. The final stage in the mapping exercise was through discussions at regional workshops where agreement was sought on the final areas to be included. One of the aims of the process was to identify some key areas where partnership projects can draw down funding, from, for example, the Heritage Lottery Fund, to make a significant difference to biodiversity conservation.

The process is all quite new and we are finding our feet but it does help to focus our interest on supporting delivery of conservation action on the ground. We have made a start by compiling a list of all regional and local biodiversity contacts for the coast and we will be collating information on current levels of activity. We will also use our newsletter to disseminate information about the work of the coastal BIG.

Managing for species has been given a new focus through the framework. Natural England's [Research Report NERR024](#), managing for species: integrating the needs of England's priority species into habitat management outlines how species conservation will be integrated with habitat conservation.

For further information please visit <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/biostrategy.aspx>

Related publications of interest

[NE233 - Lost life: England's lost and threatened species \(NE233\)](#)



Produced to coincide with the International Year of Biodiversity, this Lost life report identifies nearly 500 animals and plants that have

become extinct in England – practically all within the last two centuries. It also highlights how habitat loss, inappropriate management, environmental pollution and pressure from non-native species have all played a part in the erosion of England's biodiversity.

Natural England



Many beetle species have been lost in the UK. the tiger beetle remains vulnerable ©John Houston

Current issues in the Netherlands

By Charlotte Durkin

In March 2010 Liverpool Hope University organised a study tour to The Netherlands for students, staff and accompanying professionals. The visit explored areas of South Holland and Zeeland including the islands of Schouwen, Vorne and Goeree and areas of the mainland coast including the dune waterworks of Amsterdam and The Hague.

The visit showed that there is much in common with the Netherlands in terms of habitat and species and management issues. The Netherlands however, has significantly larger and less fragmented systems than in the UK and these systems are valued in an entirely different way from our own, especially as sea defences and important water abstraction areas. This means that policy making and managing the public interface with the dunes has a different basis in the Netherlands. Nevertheless, there are some important features which the UK can learn and adapt to our own situations.

The first day was spent in Kenemmerland National Park to look at projects aimed at the re-mobilisation of formerly stabilized dunes. The aim is to re-instate the natural geomorphic processes which controlled succession and habitat development prior to artificial stabilisation. The main obstacle to stimulating large scale processes was cited as peoples' "emotions" by the former Director Dr Fred Van der Vegte. The coast and more importantly the protective dunes are obviously tied up in people's feelings and fears about inundation from the sea, meaning attempts to 'de-stabilise' dunes can be seen as reckless. Taking time to talk through people's concerns, inviting them for tours, coffee mornings and information days is all helpful in addressing these fears.



Zuid Kennermerland National Park © John Houston

The Amsterdam Waterworks Dunes offered an insight into the complexities of satisfying multiple land uses – water abstraction, recreation, nature conservation and nearby bulb cultivation. The project 'De Zilk' involved hydrological and ecological modeling and EIA assessments to determine the feasibility of multi aim land use in the area. The final scenario involved creating valuable dune slack habitats by raising the water level in one area, whilst simultaneously lowering it in an area of bulb cultivation. The project appears to have been successful.

Also discussed on the Amsterdam waterworks Dunes were examples of ongoing experimentation and monitoring with dune slacks, invasive species, grazing and scrub removal. For example, mowing, sod-cutting, grazing and any combination of these methods are employed and monitoring contributes to long term records vital for informing future decision making.

Visits to the islands of Schouwen, Goeree and Vorne involved discussions with both the State Forestry Service (Staatsbosbeheer) and Natuurmonumenten (the Dutch equivalent of the National Trust). Staatsbosbeheer is engaged in a large LIFE-Nature project at several sites throughout the Dutch dune coast and examples of projects to restore acid dune grasslands, introduce grazing and remove conifer plantations to allow dune rollback were seen.



Kwade Hoek © John Houston

On the island of Goeree natural processes dominate at the Kwade Hoek area where there are natural transitions between sand dune and saltmarsh habitats. Kwade Hoek is one of the few sites along the Dutch coast where natural processes still dominate and the natural character of the site has been enhanced by the lowering of the frontal dune ridge and creation of breaches and overwash points. The site is an exception to the general Dutch policy which dictates that the 1990 coastline must be maintained. This process is part of a policy of inviting nature's processes to take over. This is a stark contrast to the activities taking place on the island of Vorne further north where a scheme costing many millions nourishes the beach with sand dredged offshore to build out the coastline.

The Dune Waterworks of The Hague has been compared to the Sefton Coast in Merseyside due to the large metropolitan areas on the periphery and at times encroaching onto the dunes. The Meijendel dune area is situated in one of the most densely populated areas of Holland. Each year about 1 million visits are made to the area with some 45 % of all visitors visiting by car. The water company responsible for the site has established a car park where it is free to park at the edge of the dunes, has reduced parking in the centre and has introduced a fee to park at weekends. The main aim for recreation is the maintenance and development of a broad range of nature oriented recreation. However, the most valuable landscape as perceived by visitors, are the artificial infiltration ponds which does not correspond with the most valuable nature conservation landscapes.

A report of the study tour is in preparation.

Sand Dune Hydrology Workshop

Report by Charlotte Durkin

The workshop was organised by Charlie Stratford of the Centre for Ecology and Hydrology (CEH) and attracted about 30 participants from the UK, Belgium and the Netherlands. Participants included scientists, academics, consultants, site managers, local authorities and statutory agencies. This workshop will hopefully be the first in a series to be run as part of our first thematic sub-group of the network: hydrology.

The workshop objective was to assess the current status of sand dune hydrology research and to identify and prioritise areas for future collaborative work. It was held in Southport, an ideal location due to the dynamic nature of the coast and the importance of wetland habitats within the Sefton Coast Special Area of Conservation.



Workshop discussions at Ainsdale Sand Dunes National Nature reserve © Derek Clarke

Nick Robins of the British Geological Survey (BGS) opened the workshop with a look at the issues on four UK dune systems.

Braunton Burrows, a spit dune system in North Devon, where there has been a long-term and significant decline in rainfall.

Whiteford Burrows, a spit system on the Gower Peninsular in South Wales, which has seen an increased hydraulic gradient because of ongoing and severe coast erosion along the central part of the system. The system might be beginning to heal itself but the effect so far has been to transform wet dune slacks to dry slacks.

Newborough Warren, a hindshore and spit system on Anglesey, North Wales, has complicated hydrology and is therefore difficult to model. Afforestation is thought to affect the slacks, but not in isolation and there is no firm evidence to suggest that removing the trees would raise water levels enough to return the slacks to their former levels.

Ainsdale Sand Dunes, part of the Sefton Coast hindshore system, has the longest data set of all sites with monitoring from 1972 showing intermittent wet and dry periods. Mapping the contours of the water table clearly show some curvature, indicating decreased water table levels under pine trees and the Formby Golf Course.

The complexity of our sand dune systems prompted discussion over the usefulness of 'generic' models, as opposed to site-specific analysis. Can the things we learn at one site really be applied to others? For example, the conceptual model of hydrological and hydrogeological controls on humid dune slack formation (Davy et al. 2006) did not apply at any of the four sites described above because of the presence of impermeable layers in the profile.

The importance of including studies on water chemistry was stressed by several participants including Debbie Allen of BGS. Studies in this area are looking at flow between slacks, residence time of groundwater, groundwater flow and water chemistry.



Monitoring aspects of geohydrology in the field © Debbie Allen

on anecdotal evidence and short runs of data. One of the questions raised from work done at Newborough Warren is whether the vegetation is in equilibrium with the hydrological regime, i.e. does it follow the cycles measured from water table monitoring or are other factors, e.g. grazing, more important.

Presentations by Graham Weaver (Natural England) and John Houston (Liverpool Hope University) showed that dune slacks are particularly rare and threatened habitats at the national and European level and that 'modification of hydrology' is cited as a threat in every EU Member State. Clearly, there is a need to increase the understanding of the threats across several countries to help develop conservation strategies for restoration. In the most recent reporting at EU level only three countries considered that the future prospects for the habitat looked reasonable. The statutory nature conservation objective for the UK is to maintain a full range of successional stages and characteristic species associated with dune slacks. Achieving this is a little more difficult!

The target driven approach to conservation including national and EU reporting is not a conducive environment in which to foster long term research with far reaching aims. Management appears to take place over short cycles with different approaches in favour at different times – a holistic and cohesive monitoring system which would essentially underpin conservation work at all sites is lacking. Problems associated with funding, continuity of staff, lack of communication between policy makers and researchers/scientists may all be partially to blame for this situation.

Continuing the European perspective Ab Grootjans described how, in a rather unusual situation, a pioneer slack community was maintained for a period of over 70 years. Some pioneer species, through adaptation to anoxic conditions, can 'manage' their environment to keep it young. Dutch studies are also looking at the phenomenon of sudden shifts in vegetation communities and the possible causes, for example one very dry year. Can a sudden drop in water levels lead to irreversible changes in vegetation communities?

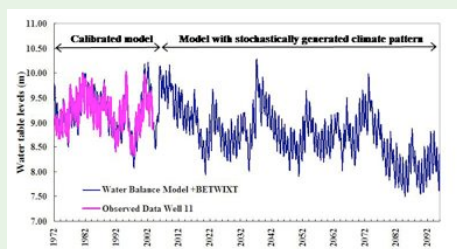
Mark Whiteman of the Environment Agency outlined the second phase of the development of eco-hydrological guidelines for dune habitats which will be published in

Laurence Jones of the Centre for Ecology and Hydrology (CEH) explained how the hydrological controls on dune slacks are less well understood than those on other wetlands with comparatively little research having been done. There is insufficient information available on water table tolerances associated with some slack communities and what there is, is based

2010. The guidelines will be associated with the dune slack communities identified in the National Vegetation Classification (SD13-SD17) and will also refer to the five slack types (A-E) identified in the first phase of the work. One of the conclusions is that vegetation community presence (NVC type) is not explained by water alone and the recommendations will support the need for the collection of groundwater data and long term monitoring. This is supported by work at Newborough Warren by Laurence Jones (CEH) who showed that one vegetation community, SD14, could be maintained along an age gradient suggesting that successional age is not the dominant control of vegetation in slacks. Further work is being carried out through the PhD study of Angela Curreli of Bangor University.

Graham Lymberry's presentation on the Sefton Coast highlighted the need to work with natural changes and consider adaptation to these changes now. The Sefton Coast is trying to reach a state of equilibrium, with erosion at Formby Point being matched by accretion to the north and south. Although people on the coast have responded in the past to these forces, future changes have the potential to be more drastic and there is more invested in fixed infrastructure. However, under some climate change predictions, it is not actually the urban areas on the coast which are under most immediate threat, but rather the loss or deterioration of habitats due to coastal squeeze and changes to dune hydrology. Whilst most attention is focused on the direct impact of sea level rise there will also be potential threats to the dune ecosystem from changes in patterns of precipitation which affect the water table and the wetland habitats of the dune system.

Derek Clarke of Southampton University showed that Ainsdale Sand Dunes NNR is a valuable site not only for its biodiversity, but for being one of the only sites where long term data is available. In the long term data set for water table levels (1972-2007), it was highlighted that the variability of levels over different timescales means that short studies could draw different conclusions depending on which years they are carried out. Workshop delegates agreed that a lack of long term data for many parameters is one of the primary constraints on our knowledge of and ability to respond to environmental change on sand dune systems.



Derek Clarke, graph showing recorded and predicted rainfall for Ainsdale

Derek has developed a model designed to simulate water table behaviour in relation to climate change predictions, for the Ainsdale site. A large number of variables such as porosity, area of dune slacks and tree cover inform the model with the key driver, accounting for 35-45% of model variability, being rainfall. This was generated stochastically in line with current climate change predictions for precipitation. A large range of scenarios resulted and the number of

times each scenario fell within a given range was plotted to show the likelihood of broader situations occurring. Some conclusions were drawn for Ainsdale:

- The ground water levels are likely to fall by 1- 1.5 m in the next 90 years
- Slack floors will largely dry out
- Coastal erosion will lower water tables
- Coastal accretion may provide potential new areas for slack development
- Sites best suited to a given ecosystem will change impacting on geographical site designation
- The water table under pinewoods is 0.5-1.0 m lower than that for the open dunes.

Alongside the presentations, delegates actively discussed the pertinent issues one of which centred around what we regard as a reference condition, or what it is we are all aiming for. It was agreed that certainly in the UK there are constraints on our systems in terms of being self maintaining, but prescriptive management is not something to aim for. In terms of habitat viability, species richness and biodiversity, understanding and influencing hydrology is key. Intervening near the top of the management hierarchy in this way can have a positive impact in creating sustainable sand dune systems.

An outcome of the meeting is a desire to continue these discussions in follow-up meetings and through the dune network. The hydrology thematic group will be headed up by a core focus group who will be responsible for influencing research and collaboration within the discipline. Charlie Stratford will form part of this group and has identified the key issues from workshop discussions:

- Better information required on the water requirements of dune species, both in terms of quantity and quality. Also the effect of atmospheric chemistry on species.
- A need to develop our understanding of what a 'reference condition' is in order to better direct what we are aiming for.
- Analysis of the ecosystem services provided by sand dunes and how different drivers and management practices affect these.
- Better exchange of information between researchers and managers, particularly translating scientific results into management recommendations.
- An ongoing need for more extensive biological and hydrological records plus increasing publicity in order to attract additional datasets.
- Future discussions should include geomorphologists and coastal engineers as their understanding is a key part of sand dune evolution.
- Further promotion of dune slack hydrology and identification of mechanisms through which to achieve this.
- Overall, we should be aware that whilst research and management will continue we should always try to prevent things being done which we will regret in the future.

The core hydrological focus group are now looking at how to direct their research in order to answer some of these issues. For further information on the hydrology thematic group, contact the network dunes@hope.ac.uk or on any of the issues raised at the workshop contact Charlie Stratford, Wetland Hydrologist CEH: +44 (0) 1491 692413/cstr@ceh.ac.uk

UK National Ecosystem Assessment

The NEA is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity.

Coastal Margins and the UK National Ecosystem Assessment (NEA)

To paraphrase Monty Python, Ecosystem Services can be thought of as 'What has the environment ever done for us? They are defined as the Goods and Services we obtain from the environment, things like drinking water, food, mitigation of hazards such as flooding and provision of habitat for biodiversity. The concept of Ecosystem Services is continually evolving, with an increasing desire to try and put some sort of value on the services, famously done by Constanza et al. (1997), where the estimated value of Ecosystem Services globally was in the order of \$33 trillion. However, these approaches have come under some criticism. The Ecosystem Services defined in the Millennium Assessment came under the following four broad groups (with examples):

Provisioning Services: provision of food, fibre, fuel, bio-materials, water

Cultural Services: aesthetic, cultural heritage/ sense of place, education, health, recreation, spiritual/religious, tourism

Regulating Services: climate regulation, hazard control (flood/erosion), pests & disease, pollination, pollution (noise/toxic), air/soil/water quality

Supporting Services: soil formation, nutrient cycling, water cycling, primary production

Defra and other organisations have sponsored a 'Millennium Assessment' for the UK, called the National Ecosystem Assessment. This is collating information on the Ecosystem Services provided by 'Broad habitats' in the UK, and putting a value on them. The 'Coastal Margins', comprising sand dunes, machair, shingle, saltmarsh, sea cliffs and coastal lagoons are one of these broad habitats. The UK NEA is developing the concepts further by recognising the distinction between those 'Final' Ecosystem Services which actually provide a defined 'good' or 'service', and the Intermediate Ecosystem Services which are necessary for the Final Service to occur. For example, the Supporting Services describe the processes necessary for plant growth on the foreshore, which helps bind the sand forming embryo dunes and ultimately providing a very important service of Coastal Defence.

The distinction is important, particularly when it comes to the issue of valuation, as putting values on both the Intermediate and Final Services leads to double counting. You can only value the Final Service. It is also recognised that there is an element of 'human capital' required to obtain the



benefit from a service. For example, a sand dune aquifer may provide water, but we need purification equipment and a distribution infrastructure before we can get the drinking water from a tap. Therefore, the NEA also aims to separate the direct and the human capital components of the value we get from ecosystems. Another important development is that economists are moving away from putting a 'Total Economic Value' on services, because the value per unit area depends on how much there is left, and these values change in a range of ways. As an example, the per-unit-area value of a plot of building land will decrease as the plot gets smaller because it reduces the building options until it eventually becomes too small to build on and ceases to have any value for that service. Conversely an area of urban parkland may increase in value as an amenity resource if other parklands disappear because it becomes a more socially-valued resource.

Compared with other UK habitats, the Coastal Margins provide their own unique set of Ecosystem Services. The draft chapters so far have shown that the most important services provided by Coastal Margin habitats are likely to be Coastal defence and Amenity/tourism. The chapter also discusses threats and options for sustainable management within the context of Ecosystem Services thinking.

The Coastal Margins chapter is now being improved after the internal review stage and will be submitted for external review at the end of April. However, the second stage process of valuation of services is still under way. For sand dunes and shingle we need to collate some fairly basic information to quantify services such as coastal defence, tourism, agricultural production, forestry across the UK. If you are interested in knowing more, or can provide some of this information please contact Laurence Jones (LJ@ceh.ac.uk) 01248 374517. We hope to provide further updates and discussions in the next newsletter.

Constanza R., et al. (1997) The value of the world's ecosystem services and natural capital. *Nature* 387; 253–260.

Coastal Access in England

By John Houston

The Marine and Coastal Access Act 2009 gives the Secretary of State and Natural England a duty to secure a long distance walking trail around the coast of England, together with appropriate 'spreading room'. It will take Natural England about 10 years to put this in place. A national coastal audit report, published in 2009, showed that about a third of the English coastline has no legally secure, satisfactory path. The audit also highlighted the crucial importance of coastal change, estimating that 13% of existing coastal paths would be lost to erosion over the next 20 years. The Act, therefore, enables Natural England to propose that paths 'roll back' automatically as coastal change occurs. This is an unprecedented legal step, and provides the means to resolve a long-standing problem for managers of coastal access.

The Act has required Natural England to set out its methodology (called the scheme) to show how access rights will be managed. Natural England recently carried out a public consultation on the proposed Scheme. Further information is available <http://www.naturalengland.org.uk/ourwork/enjoying/places/coastalaccess/default.aspx>.

John Houston (Network Officer) submitted a response to the consultation with particular reference to dunes. His response is as an individual but we may wish to take up a number of the issues raised for discussion within the network.

On the framework for alignment

In terms of the landscape character of sand dunes great care will be needed not to detract from these wild places. Already we have seen paths more appropriate to urban settings constructed on sand dunes. There needs to be careful guidance and good practice examples of how the route can be accommodated within such landscapes.

On implementation

In the overview of the implementation process there is no mention of advice on suitable surfacing materials. The choice obviously has an impact on cost and some standard techniques might be inappropriate. In parts of the dune system there may not be a need for a surfaced path and it is good to see that this principle is recognised in the scheme. Would Natural England staff who 'walk the course' be given sufficient training in the principles of recreation management on sand dunes?

On key principles of public interest

The trail should not be established where it leads to a requirement for the stabilisation of naturally mobile dunes, blowouts or where it interferes with the development of wet slacks. The draft scheme refers primarily to roll-back of the coastal edge rather than the need to maintain dynamics within the dune system. In some dune systems there may be ideas for managed de-stabilisation to encourage more mobile conditions and the impact of 'sand-rain' may also need to be considered in more dynamic dune systems. The impact of 'sand-rain' which builds up the ground height over a wide area will also need to be a consideration in more active dune systems.



How does the coastal access scheme deal with large erosion features within dune systems? © John Houston

On striking an appropriate balance

The guidance on informal management techniques for sand dunes given in the BTCV manual (1986) should be reviewed and be updated in line with the coastal access proposals. Specific guidance for dunes and beaches could be developed for some of the common informal management techniques.

On coastal land cover and landforms

There could be some elaboration of issues of natural dune dynamics within the dune system and how the access routes must work with conservation objectives to allow an increase in bare sand in dune systems. Under disturbance to wildlife the risks to reptiles could be added (e.g. sand lizards) and there would also be concern of the impact of the route on the invertebrates of coastal dunes. Some paths can provide habitat but wide paths can be barriers to species movement.

Considering sandy beaches there is a need to address the pattern of recreation on dune systems and beaches together including the main routes to and from beaches which will cross the coastal route. Monitoring of visitor use and behaviour can help to identify natural desire lines.

Update

Natural England has now considered all the comments received on the consultation and a final version of the Scheme has now been approved by the Secretary of State.

The approved [Scheme](#) and a [Consultation Summary Report](#) are available on Natural England's [website](#).

International news and networks

OURCOAST

OURCOAST is a three-year project commissioned by the European Commission to support and ensure the exchange of experiences and best practices in coastal planning and management. Information can be found on the Commission's ICZM [web-pages](#).

Please visit the project pages for copies of the newsletters and an outline of the project

Coastal networks

We will start to add links to coastal networks to our webpages.

CoastNet

CoastNet is a UK coastal network which supports good practice in Integrated Coastal Zone Management in the UK. See www.coastnet.org.uk

Coastal and Marine Union –EUCC

The Coastal and Marine Union –EUCC is the largest coastal network in Europe dedicated to conserving healthy seas and attractive coasts for both people and nature. EUCC is a membership organisation, covering all coasts and seas in the European Union and beyond. The main website address is www.eucc.net. Information is also available through the Coastal Guide on www.coastalguide.org and the German branch (EUCC-D) has developed a website dedicated to providing information from EUCC coastal databases on www.eucc-d.net (see also <http://databases.eucc-d.de/en/> and www.coastalpractice.net).

IGU Commission on Coastal Systems

Norb Psuty of Rutgers University is the editor of the International Geographical Union's Commission on Coastal Systems newsletter. Copies of the newsletter and other announcements from the CCS are found at <http://www.igu-ccs.org>.

ACZISC

The Atlantic Coastal Zone Information Steering Committee (ACZISC) based at Dalhousie University, Halifax, Nova Scotia, publishes a monthly update of coastal news mainly from Canada but also including other reports, news and announcements of conferences from throughout the world. Information is available <http://aczisc.dal.ca>.

New Zealand

Continuing our links with New Zealand some interesting information can be found on the [website](#); the Te Ara Encyclopedia of New Zealand. The site gives some background information to the problems of loss of habitats and native species leading to the protection of the remaining dune areas.

Impact of atmospheric nitrogen deposition on lichen-rich, coastal dune grasslands

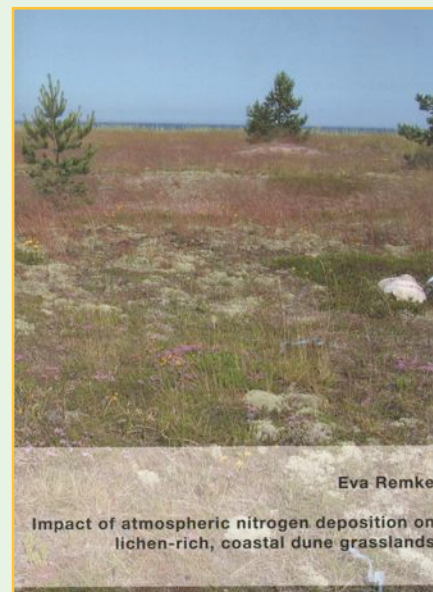
We would like to congratulate Eva Remke on completion of her PhD on the impact of nitrogen deposition on Baltic dunes. Her study set out to determine the present-day levels of atmospheric nitrogen deposition, the effects of deposition on dry coastal dunes, the processes affected by elevated nitrogen deposition and the observed difference between highly N-affected and N-unaffected lichen-rich dune grasslands.

Her findings were that atmospheric nitrogen loads are low to moderate, 5-8 kg N ha⁻¹ yr⁻¹, in a European perspective in the Baltic coastal region and some areas, such as the Estonian and Lithuanian coasts, are close to background levels of deposition.

At these moderate loads dry coastal dunes become dominated by a dense sward of sand sedge *Carex arenaria*, leaving almost no room for other species. The conclusion is that the critical loads for these acid dunes are probably lower than those derived from studies along the North Sea, about 5-10 kg N ha⁻¹ yr⁻¹.

Under pristine conditions, lichen-rich dune grasslands are self-sustaining oligotrophic systems. Slow growing lichens and mosses take up and store most of the atmospheric nitrogen deposition, but only about 10% is taken up by soil and vegetation with the remainder probably lost through leaching and volatilisation. Increased nitrogen loads lowers the pH, organic matter accumulates, taller-growing grasses are favoured and their growth is encouraged by positive feedbacks. The result is the replacement of short grassland species by taller species.

Remke, E. (2009). Impact of atmospheric nitrogen deposition on lichen-rich, coastal dune grasslands. PhD thesis. Radboud University Nijmegen. ISBN: 978-90-9024991-9



PhD cover. © Eva Remke

Recent research papers of interest to network members

Vegetation

A. T. Kuiters et al. (2009). *Plant diversity, species turnover and shifts in functional traits in coastal dune vegetation: Results from permanent plots over a 52-year period*. Journal of Vegetation Science 20 (6): 1053 – 1063

J. Thiele et al. (2010). *Competitive displacement or biotic resistance? Disentangling relationships between community diversity and invasion success of tall herbs and shrubs*. Journal of Vegetation Science 21 (2): 213-220
DOI: 10.1111/j.1654-1103.2009.01139.x

A.M. Olsauskas, & R. Urboniene (2009). *Vegetation Development in Different Landscape Element of the Lithuanian Mainland Seacoast* in Rural Development 2009 Proceedings, Vol 4, Book 2, Proceedings : 171-175.

K.F. Nordstrom et al. (2009) *Characteristics of coastal dune topography and vegetation in environments recently modified using beach fill and vegetation plantings, Veneto, Italy*. Environmental Management 44 (6): 1121-1135
DOI: 10.1007/s00267-009-9388-3

A.E. Rubio-Casal et al. (2010) *Contrasted tolerance to low and high temperatures of three tree taxa co-occurring on coastal dune forests under Mediterranean climate*. Journal of Arid Environments 74 (4): 429-439
DOI:10.1016/j.jaridenv.2009.10.004

Smith, P.H. (2009). *Distribution, status and ecology of Blysmus compressus (L.) Panx. ex Link on the Sefton Coast sand-dunes, Merseyside*. Watsonia 27: 339-353

Alien Species

R.A. Jørgensen et al. (2009). *Invasion of coastal dunes by the alien shrub Rosa rugosa is associated with roads, tracks and houses*. Landscape and Urban Planning 93 (3-4) : 194-200
DOI:10.1016/j.landurbplan.2009.07.006

M.L. Carranza et al. (2010). *Landscape-scale patterns of alien plant species on coastal dunes: the case of iceplant in central Italy*. Applied Vegetation Science 13 (2): 135-145.
DOI: 10.1111/j.1654-109X.2009.01065.x

J. Garcia-de-Lomas et al. (2010). *Invasiveness of Galenia pubescens (Aizoaceae): A new threat to Mediterranean-climate coastal ecosystems*. Acta Oecologica-International Journal of Ecology 36 (1): 39-45.
DOI:10.1016/j.actao.2009.09.007

Management technique

K. Plassmann et al. (2010). *Effects of long-term grazing management on sand dune vegetation of high conservation interest*. Applied Vegetation Science 13: 100–112.
DOI: 10.1111/j.1654-109X.2009.01052

Coastal management and policy

I.P.D. Gangai & S. Ramachandran (2010). *The role of spatial planning in coastal management—A case study of Tuticorin coast (India)*. Land Use Policy 27: 518–534
DOI:10.1016/j.landusepol.2009.07.007

Monitoring and mapping

P. Kempeneers et al. (2009). *Synergy of airborne digital camera and lidar data to map coastal dune vegetation*. Journal of Coastal Research: Special issue 53: 73-82

L.B. Clemmensen & L. Nielsen (2010). *Internal architecture of a raised beach ridge system (Anholt, Denmark) resolved by ground-penetrating radar investigations*. Sedimentary Geology 223 (3-4): 281-290.
DOI: 10.1016/j.sedgeo.2009.11.014

J. A. Millington et al.(2009). *The role of long-term landscape photography as a tool in dune management*. Journal of Environmental Engineering and Landscape Management 17(4): la-lh

Hydrology

L.M. Zavala et al. (2009). *Fire-induced soil water repellency under different vegetation types along the Atlantic dune coastline in SW Spain*. Catena 79: 153–162.
DOI:10.1016/j.catena.2009.07.002

Antonellini, M. & Mollema, P.N. (2009). *Impact of groundwater salinity on vegetation species richness in the coastal pine forests and wetlands of Ravenna, Italy*. Ecological Engineering: In press
DOI:10.1016/j.ecoleng.2009.12.007

Geomorphology

Houser, C. (2009). *Synchronization of transport and supply in beach-dune interaction*. Progress in Physical Geography 33 (6): 733-746
DOI: 10.1177/0309133309350120

M. Koprowski, et al. (2010). *Tree reactions and dune movements: Slowinski National Park, Poland*. Catena 81: 55-65
DOI:10.1016/j.catena.2010.01.004

R. Povilanskas (2009). *Spatial diversity of modern geomorphological processes on a Holocene dune ridge on the Curonian Spit in the South-East Baltic*. Baltica 22 (2): 77-88.

J. Boeyinga et al. (2010). *The effects of a bypass dunefield on the stability of a headland bay beach: A case study*. Coastal Engineering 57 (2): 152-159
DOI:10.1016/j.coastaleng.2009.10.002

Archaeology/geodiversity

A.R. Bicket et al. (2009). *A multiscale geoarchaeological approach from the Laurentine shore (Castelporziano, Lazio, Italy)*. Geomorphologie-Relief Processus Environnement. In press.

E.A. Koster (2009). *The "European Aeolian Sand Belt": Geoconservation of Drift Sand Landscapes*. Geoheritage 1:93–110.
DOI: 10.1007/s12371-009-0007-8

Featured Article

Climate change;

E.G. Coombes & A.P. Jones (2010). **Assessing the impact of climate change on visitor behaviour and habitat use at the coast: A UK case study.** Global Environmental Change, In Press.

DOI:10.1016/j.gloenvcha.2009.12.004



This article uses a case study from the UK to examine the impact of climate change on visitor behaviour and the implications for biodiversity. Using the case study sites of Cley and Holkham, which feature dune and shingle habitats, it shows that climate change could impact on levels of recreational disturbance to wildlife by increasing numbers and modifying the type of visitors using the sites. The results of the analysis show that visitor numbers are likely to increase as a result of climate change but the impact of greater visitor numbers on coastal habitats may not be directly proportional to the overall increase. This is because the greatest rise in numbers is predicted to be visitors sun bathing and relaxing who have a relatively low impact on habitats. Dog walkers, who walk the longest distances and use a wider range of habitats, have the highest impact but are likely to see the smallest increase in visitor numbers.

Managing flood and coastal change

<http://www.defra.gov.uk/environment/flooding/manage/index.htm>

The UK Government is developing an adaptation toolkit to assist communities in adapting to change where constructing defences is not the most appropriate means of managing flood and coastal erosion risk. Up to £28 million has been made available in the period 2008-2011 to support the adaptation toolkit which will put adapting to climate change at its core, recognising that we cannot protect against all flood events or coastal erosion using traditional engineering approaches.

Under the theme of adaptation to coastal change Draft Guidance on Community Adaptation Planning and Engagement has been also published. The guidance itself does not deliver adaptation or provide funding, but it does provide ways to open up space for dialogue about these matters.

Adaptation to coastal and climate change is an area of interest for the network and we are keen to highlight examples from sand dune and shingle coasts. For example Sefton Council has received funding as one of 15 coastal change pathfinder authorities to address some of the issues arising from coast erosion at Formby Point, view them [here](#).

For an interesting look at the impacts of rising sea levels in the UK have a look at http://www.buildingfutures.org.uk/assets/downloads/Facing_Up_To_Rising_Sea_Levels.pdf

International Workshop on the Management of Dune Polder and Dune Marshland Transition Zones

Pavillon du Zoute, Knokke-Heist (Belgium)
Thursday 7 October 2010



Thursday 7 October 2010, Pavillon du Zoute, Bronlaan 4, Knokke-Heist, Belgium

Registration fee 50 EUR

Transition zones between dunes and polders, as well as between dunes and marshlands, form a very particular gradient-rich physical environment: the gradients from fresh to salt water, from dry to wet, from sand to clay, from nutrient rich to nutrient poor, result in the presence of specific habitats and species. In many cases these habitats are part of the Natura-2000 network. In many locations however, the transition zones are interrupted by buildings or

dikes. A number of European countries are making efforts to maintain, restore and develop these very rare dune polder and dune marshland transition zones. Their experiences call for a wider dissemination, in order for the different European member states to learn from each other and to encourage similar initiatives.

The objective of this workshop is to exchange management experiences and innovative management techniques by bringing together administrators and researchers of dune polder and dune marshland transition zones in Europe. The final aim is to produce a report with recommendations, stimulating the growth of a new dynamic for the restoration of these transition zones in Europe.

The confirmed speakers are Sam Provoost (Belgium), Anton van Haperen (Netherlands), Guillaume Lemoine (France) and Sue Rees (England).

http://www.natuurenbos.be/nl-BE/Projecten/Zeno/International_Workshop.aspx

This newsletter has been compiled by John Houston and Charlotte Durkin
Contact dunes@hope.ac.uk
Cover Photo: Murlough Dunes, Northern Ireland © Paul Corbett

The UK Sand Dune and Shingle Network is based at Liverpool Hope University and is supported by the Higher Education Funding Council for England and Natural England.

