

Introduction

Welcome to the third UK Sand Dune and Shingle Network Newsletter. In case you missed them copies of the first and second newsletters are available on our website www.hope.ac.uk/coast under 'Project News'.

The major event since the February newsletter has been the international dune conference which we held from 31 March -3 April in Liverpool.

Over 85 delegates from four continents and fourteen European countries enjoyed two days of talks and discussions and over 50 people managed to stay for an excursion to the Sefton Coast. The conference was a milestone in the series of European dune conferences which began with the first European Dune Symposium in Leiden in 1987. The occasional dune conferences give old hands a chance to meet and share experience, new participants a chance to make contacts and can help launch students on a career in coastal conservation. The atmosphere at the meetings of the 'European dune network' is always friendly and informal; yet we gather together many of the most experienced and respected practitioners for lively debate.

Most of the conference papers will be published in two special editions of the *Journal of Coastal Conservation*. We would like to thank the participants of the conference for making it a success.

In this newsletter we continue with our mix of articles and information on sand dune and shingle management in the UK, news of upcoming events, links to publications and international news.

Conference Summary

Changing Perspectives in Coastal Dune Management: 31 March -3 April 2008, Liverpool.

The conference was organised by the UK Sand Dune and Shingle Network with the support of the Higher Education Funding Council for England (HEIF3 Fund), Natural England and EUCC- The Coastal Union. The meeting was based on two days of presentations and a field excursion to the Sefton Coast, Merseyside.



The keynote presentation by Professor Norb Psuty of the Institute of Marine and Coastal Studies, Rutgers University, New Jersey tackled the question 'Global climate change: an opportunity for coastal dunes?'. Taking a worldwide overview of the subject he postulated that "unlike the problems

facing shorelines that will be inundated and eroded by the encroaching water levels, the coastal foredune system and its accompanying morphology might find conditions favourable to retention and even enhancement in the coming decades and centuries". Further "under the driver of sea-level rise and sediment mobilisation, spits and barrier islands should become sites of increased alongshore sediment transport and should present new spatial situations conducive to foredune enhancement".

Will changing climate and changing sea-levels help to trigger new phases of geomorphologic activity along our shorelines? If this is the case it supports the value of accepting coastal change to allow natural processes to continue to reshape the coastline. But what might be the impact of climate change on the dune systems?

Helen Rendell (University of Loughborough) has studied historical records of storminess in western Europe. Studies of historic sand drift may reveal implications for future management of coastal dunes. Most present-day dune managers in northwest Europe consider dunes to be in a stable (or over-stable) phase and would initially welcome climate change impacts which increased mobility and bare sand in the systems.



However, taking the lessons of history, particularly the widespread dune mobility associated with the Little Ice Age (1570-1900) she cautions against active destabilisations of fixed dunes (at least on a large scale). "Given that Atlantic storminess has remained more or less unchanged over the last 150 years, modern dune management strategies which consider dune deforestation, driven by an increasing focus on 'naturalness' may give rise to a recurrence of sand drift problems for coastal settlements, agriculture and infrastructure. Predictions of increased storm frequency and sea level rise by the end of the 21st Century, related to anthropogenically-driven climate change, mean that in locations where coastal sand supply is abundant, dune management may instead need to focus on further stabilisation measures".

These contributions help to set the scene for what will likely to be on-going discussions about how dune management should respond to the drivers of change. But what are the measured trends?

Professor Ken Pye has studied trends in the UK climate over the past century and reported on the implications for coastal aeolian processes and dune mobility. "The available data indicate that much of the UK experienced relatively warm, wet and windy conditions between 1930 and 1960, a period of cooler, drier and less windy conditions between 1960 and 1985, and a return to warmer, slightly windier conditions since the mid 1980s. The changes have been relatively small across the country. The observed changes are of sufficient magnitude to be of ecological significance, but, to date, are considered not to have had a major impact on aeolian processes and dune stability /instability".

The subject of climate change is clearly topical and stimulating. On the basis of these contributions we would consider holding an event to focus on climate change scenarios once more information has been assembled and we have more case studies. Organisations such as the National Trust are developing responses to predicted changes at several coastal properties and are very much part of the debate.

The conference programme included a wide range of presentations covering a number of themes. We will report on some of these themes in future newsletters, a conference report and through the special editions of the *Journal of Coastal Conservation*. We will circulate more information about the conference proceedings with the next newsletter.



New edition of the European Sand Dune Inventory

We were pleased to host the launch of a revised edition of the *European Sand Dune Inventory* at the International Dune Conference in Liverpool. The inventory has been prepared and edited by Dr J Patrick Doody of National Coastal Consultants in association with the Coastal Commission of the International Geographical Union and financial support from EUCC - The Coastal Union and Liverpool Hope University.

Pat Doody writes "The occasion of the meeting 'Dunes and Estuaries' held at Koksijde, Belgium from 19-23 September 2005 prompted the production of this revised inventory. I have used the original inventory contributions and updated them where possible. In some country accounts, I have added additional information from published sources and referenced these. For a few others I have had help, from either the original contributor or other person working on sand dunes. I have trawled the internet for additional information and contacts. Relevant web-site addresses are also given.

The Coastal Commission of the International Geographical Union adopted the inventory as a project. Thanks to Professor Norb Psuty and other members of the Commission for their help.

Originally, this edition was intended to include revised chapters for all countries. In the event, it has proved difficult to revise all the chapters and hence for several countries the descriptions include only minor editorial changes. However, there is great scope for the descriptions to be improved. In order to do this my suggestion is that the individual chapters are imported into the *Coastal Wiki* to allow individuals to add to, revise and update the contributions on an ongoing basis.

The Coastal and Marine Wiki is a spin-off from a European Community project ENCORA, which aimed to improve sharing of coastal knowledge and experience within Europe. The Coastal and Marine Wiki is an Internet encyclopaedia, which so far has over 900 information pages written for and by coastal professionals providing up-to-date high quality Coastal and Marine information. The Wiki can be accessed at http://www.encora.eu/coastalwiki/Main_Page. I hope this revised version of the inventory is helpful."

Those attending the International Sand Dune conference in Liverpool received copies on CD-ROM. Copies of the CD-ROM can be purchased through EUCC -The Coastal Union. For further information on this for contacts and prices please contact dunes@hope.ac.uk in the first instance.

Please have a look at the excellent work that Pat has done to get the Coastal Wiki for sand dunes going. Also email pat.doody@ntlworld.com with any queries, comments or additional information.

Network Activity

We have completed two management models as part of this EC contract. The models have been published on the Commission's website on the link http://ec.europa.eu/environment/nature/natura2000/management/best_practice_en.htm

Management models for Natura 2000

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The documents are referenced as;

- Houston J.A. 2008. Management of Natura 2000 habitats. 2130 *Fixed Coastal dunes with herbaceous vegetation ('grey dunes'). European Commission. ISBN 978-92-79-08319-8
- Houston J.A. 2008. Management of Natura 2000 habitats. 2190 Humid dune slacks. European Commission. ISBN 978-92-79-08320-4

We will also be adding the models to the network website. The models make reference to a number of other key sources of information. Please have a look at these on the following links;

The decision-tree for dune management: <http://www.barger.science.ru.nl/life/decision-tree/index.html>

Review of information on wet slacks: Davy A., Grootjans A.P., Hiscock K. And Petersen J. 2006. Development of eco-hydrological guidelines for dune habitats –Phase 1. English Nature Research reports, No 696, Peterborough. Available free of charge from enquiries@naturalengland.org.uk

Common Standards Monitoring Guidance for Sand Dune Habitats- Version August 2004. www.jncc.gov.uk

Conservation status of EU habitats in the UK: Reports under Article 17 of the Habitats Directive. www.jncc.gov.uk/article17

Restoration of dune habitats along the Danish West Coast: <http://www.sns.dk/foralle/projekter/klithede/english.htm>

Links to Ireland

In early July the UK network team members met with Irish counterparts in Dublin. Thanks to Karen Gaynor of the National Parks and Wildlife Service for facilitating this. We will give a short report on the situation in Ireland in the next newsletter. The National Parks and Wildlife Service, like JNCC for the UK, has completed its assessment under Article 17 of the Habitats Directive and has published a wealth of information based on the results of a Coastal Monitoring Project which ran from 2004-2006. You can find the reports on all EU listed habitats and species in

Ireland on <http://www.npws.ie/en/PublicationsLiterature/HabitatsDirectivereport07/>

These include reports on the status of Natterjack Toad and Petalwort in Ireland. For example the report on the status of Petalwort in Ireland can be found at <http://www.npws.ie/en/media/Media,6284,en.pdf> and that for Natterjack Toad at <http://www.npws.ie/en/media/Media,5166,en.pdf>

Site news

Kenfig National Nature Reserve, Wales

David Carrington from Kenfig National Nature Reserve reports on management work for the fen orchid *Liparis loeselii*

Work has been carried out to address the urgent need for new slacks for fen orchids to colonise. The species is in a precarious state with Kenfig having the only known Welsh plants in 2006 and 2007 (Whiteford Burrows has not had any since 2005). A grading bucket was used to create the slack and digging bucket to move the sand to a huge pile next to the slack. The work took three weeks. The slack was more or less completed in a week and the rest of the time was spent moving the spoil to one side of the slack where it is to develop into a (hopefully natural-looking) new dune.

The success of the new slack will be monitored and reported in the annual reports for the site.



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Tentsmuir National Nature Reserve, Scotland

A regular newsletter is prepared for Tentsmuir by Tom Cunningham, the reserve manager (available on www.snh.gov.uk). The January 2008 edition reports on a new edition of the reserve education pack which is being sent out to all schools in Fife. This education pack is an excellent production and can be downloaded from http://www.snh.org.uk/nnr-scotland/publications_detail.asp?pubID=92

The reserve leaflet is available as an audio file, see;

<http://www.snh.org.uk/publications/on-line/designatedareas/nnr/TentsmuirPoint/TentsmuirPoint.asp>

The newsletter carries a report on studies of Coralroot

Orchid by Professor David Read from the University of Sheffield. Coralroot Orchid is primarily an arctic species which may be under threat as a result of increasingly warm winters and dry summers.

Sefton Coast, England

A note on proposed botanical studies by Philip H. Smith
philsmith1941@tiscali.co.uk

This summer, I hope to do some survey work on two notable plants: Flat Sedge (*Blysmus compressus*) and Field Gentian (*Gentianella campestris*). Both are known to be declining rapidly in Britain, being described as "vulnerable" in the Red Data List (Cheffings & Farrell 2005) and included in the 2007 UK list of priority Biodiversity Action Plan species.

B. compressus is known from perhaps 20 dune slacks on the Sefton Coast with evidence of a recent localised increase. Thus, its presence in Birkdale frontal dune slacks increased from 2 slacks in 1983 to 10 in 2003 (Smith 2006).



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Large populations of *G. campestris* have been found in recent years in Ainsdale Sand Dunes NNR, where damp slacks were cleared of conifers and scrub in the 1990s. Here, there are certainly thousands, perhaps tens of thousands of plants.

Image copyrights P.H. Smith

I hope to map the distribution of both species, estimate population sizes, characterise associated vegetation and consider appropriate management. Being retired, I do not have easy access to academic library facilities. It would therefore be helpful if network members who know of other relevant studies of these plants could provide me with details.

References:

Cheffings, C.M. & Farrell, L. (eds.) (2005). *The Vascular Plant Red Data List for Great Britain*. Joint Nature Conservation Committee, Peterborough.

Smith, P.H. (2006). Changes in the floristic composition of sand-dune slacks over a twenty-year period. *Watsonia* 26: 41-49.

Reports and publications

We will reference any reports and publications which come our way. Some publications, especially the grey-literature from reserve records and unpublished reports, are hard to find. Please send us copies of relevant reports.

Sand dune processes and management for flood and coastal defence. Defra R&D Project FD1302, published June 2007.

This is a result of a study completed by Royal Holloway University of London and Kenneth Pye Associates Limited. The outputs of this study are summarised in a five part final report, delivering comprehensive assessment of sand dune morphology and processes for coastal flood risk management. The effects of changes in climate and sea level are considered to allow proposals for the evolution of future schemes, and the importance of dune systems for coastal defence is underlined. The report is intended to inform local engineers and other coastal managers concerned with practical dune management, and to act as stimulus for further research in this area.

A link to the report can be found from <http://www.defra.gov.uk/enviro/fcd/research/> and the summary on http://sciencesearch.defra.gov.uk/Document.aspx?Document=FD1302_6131_TSM.pdf

Loizou, T. (2006). Re-introduction of Lathyrus japonicus at Elliot Links SSSI in Angus: ecological and management aspects. Scottish Natural Heritage Commissioned Report No. 2000 (ROAME No. FO2LH09).

The study was undertaken in 2002/2003 to ascertain whether or not it would be feasible to re-establish one or more populations of *Lathyrus japonicus* (sea pea) at Elliot Links SSSI in Angus. Habitat change and increase in visitor numbers are probably the two reasons for its decline at Elliot Links. Since the 1960s there has been no grazing by stock at Elliot Links and the vegetation has become rank and uniform. In the absence of grazing by stock the author suggests that burning is a useful practice that can halt the dominance of rank grassland.

BRANCH partnership (2007). Planning for biodiversity in a changing climate –BRANCH project Final Report, Natural England.

Although dunes and shingle are just two of the habitats in a wider study we want to help promote project reports such as this as part of our networking function. The study included a number of coastal case studies including the Normandy coast. The project summary is that biodiversity must adapt to climate change. For many habitats and species this will be difficult because the landscape across Europe is fragmented and past decisions limit the opportunities for adaptation. Spatial planners must act now to create a landscape and coastline that can withstand the effects of climate change. BRANCH was an Interreg IIIB funded partnership project led by Natural England. The final report can be found on <http://www.naturalengland.org.uk/press/docs/branch-report.pdf>

Sand and Sea: Sefton's Coastal Heritage; Archaeology, History and Environment of a Landscape in North West England.

Proceedings of the conference Sefton's Coastal Heritage, Formby, 15 September 2004. Edited by J M Lewis and J E Stanistreet. Published by Sefton Council. ISBN 978-1-874516-16-3

The book is available mail order from: Sefton Council, Crosby Library (Local History), Crosby Road North, Waterloo, Liverpool, L22 0LQ. Tel: 0151 257 6401. Price £15 plus £3 post and packing. Cheques payable to 'Sefton Council'.

The volume contains eight chapters which add to the knowledge of the Sefton Coast. The contributions range from studies of the prehistory of the area, to the search for lost settlements, to studies on everyday life in the 17th and 18th centuries, asparagus farming, the development of pine plantations and maritime history. The volume would be of interest to anyone involved in similar coastal areas, in northwest England and further afield.

Integrating nature conservation and military training in Northern Ireland. Sarah Jupp, Defence Estates, In Practice 59, March 2008.

The article in the Bulletin of the Institute of Ecology and Environmental Management outlines the management practice on two sand dune military training sites in Northern Ireland.

Plassman, K; Brown, N; Jones, L.M. & Edwards-Jones, M. (2008) Can atmospheric input of nitrogen affect seed bank dynamics in habitats on conservation interest? The case of dune slacks. Applied Vegetation Science 11 pp. 413-420.

The effects of nitrogen addition on seed germination from the soil seed bank were investigated. More seedlings emerged from fertilised samples than unfertilised controls. This suggests that increased atmospheric deposition of nitrogen probably not only impacts on established vegetation but also has the potential to alter seed bank dynamics.

International News

LIFE Nature project ZENO

The Flemish Nature Reserve known as 'The Zwin Dunes and Zwin Polders' covers an area of 222 hectares consisting of dunes, woodlands and meadows. This is the location for the latest LIFE-Nature project run by the Belgian Agency for Nature and Forest. ZENO stands for Zwindunes Ecological Nature Optimisation. The project runs from 2006 to the end of 2010 with the following activities;

- The restoration of wet dune slacks and pools by the removal of scrub, re-profiling of dune pools and creation of new dune pools. The work will benefit natterjack toad, great-crested newt and tree frog.
- Restoration of the natural dune habitats in and around man-made 'hunting ponds' through the removal of

exotic tree species.

- Restoration of the micro topography of part of the polders which was formerly a saltmarsh before being converted to meadows and levelled to construct an airfield. Excavations will restore the original landscape with creeks and ditches. This will promote the creation of wet habitats.
- Removal of old infrastructure and plantations of exotic trees to restore dune grasslands and the half-open character of the transition zone between dunes and polders.

The project will be holding a seminar in late 2010 to share its experiences. We intend to arrange a short study tour for UK participants to this event and also to include sites in the Netherlands. If you would be interested in attending please let us know and we will keep you informed. At this stage we would consider an excursion based around the Hull-Zeebrugge and Rotterdam –Hull ferry route. The particular interest in the Belgian project is in the work on the transitional habitats between dunes and inland 'polders'. This is a target zone for the UKBAP and also agri-environment schemes for the rehabilitation of habitats.

Information on the project can be found at www.lifenatuurzeno.be

Dune Management in Denmark – a short history



The international dune conference was an occasion to wish Frede Jensen of the Danish Agency for Spatial and Environmental Planning a happy retirement after a career which spanned the changing attitudes

to dune conservation in Denmark from afforestation and stabilisation to modern approaches which respect the natural dynamics and biodiversity of the coastal zone.

Archaeological excavations in Denmark have shown that there have been at least three periods with substantial sand drift. The most recent started early in the Middle Ages and was most intense from 1500 to 1800. The reasons for this are considered to be two-fold; overgrazing by domestic livestock and collection of materials for fuel etc coupled with the so-called Little Ice Age with lower temperatures and stronger winds.

A taste of what the conditions may have been like is conserved at Råbjerg Mile, the largest migrating dune in present-day Denmark, which covers over 100 ha and continues to move across the landscape. In 1817 the Ministry of Finance estimated that 112,000 ha in Jutland had been ruined by sand drift. This was despite legislation going as far back as 1539 to protect the dune vegetation. The sand drift problems were not systematically addressed until the ordinance of 1792 which set out how the dune areas were to be preserved and how they should be

planted with marram grass and lyme grass. All local people had to participate in the planting without payment. Grazing was forbidden in the preserved areas and large areas were reclaimed for agricultural use.

From 1792 experiments with tree planting were encouraged. The first experiments failed but in the middle of the 19th century a major programme was initiated. The state was authorised to expropriate dune areas for afforestation as a means to stop the sand drift. The state acquired about 80,000 ha of dunes up to 1950. Half the area was planted with conifers, mainly mountain pine (*Pinus mugo mugo*).

On the better soils the plantations of mountain pine were converted to more productive species in the 20th century, mainly Sitka spruce (*Picea sitchensis*), Scots pine (*Pinus sylvestris*) and deciduous trees.

In 1993 a geomorphological survey of the Danish dunes was completed. The total dune area of wind-blown sand was 127,000 ha (3% of the land area of Denmark). Of this total 32,000 ha were of high geomorphological value and 55,000 ha of high botanical value (many areas will fall under both categories).

The strategy for dune management in Denmark is 'protection with sustainable and multiple use'. In this context it is important that there is room for the dynamics which support dune species but within the control against devastating sand drift. Another aspect is to restore and maintain a zone of fixed dune heath inland of the high coastal dunes. This is being achieved partly through the clearance of plantations to restore the vegetation of lichens, grasses and dwarf shrubs.

The dunes are elements in the dynamic coastal processes, they are part of the sea defence, and they cover large areas of great landscape, biological and recreational importance.

The Minister of the Environment is responsible for the protection of the dune landscape. Following the reform of local government in Denmark in 2007 the administration takes place in 'Environment Centres' (the Centres at Aalborg, Ringkøbing and Ribe are responsible for dune management) and practical works are carried out by the local office of the Forest and Nature Agency. The Agency for Spatial and Environmental Planning is responsible to the Minister on issues concerning law enforcement and the establishment of dune protection areas.

Adapted from the booklet prepared by Frede Jensen and Nils Schou for the international dune conference, Liverpool, 2008.

Forthcoming Events

Shingle field meeting, East Anglia: 18-19 September 2008

On behalf of Natural England we are planning a shingle meeting at Cley-Salthouse on 18 September followed by an excursion to Blakeney Point on 19 September. Places are limited. In the first instance we will contact all network members who have indicated their interest in this habitat.

Sefton's Dynamic Coast: Landform, Ecology and Management 1st September 2008 Southport

Sefton Council in conjunction with the Sefton Coast Partnership is holding a conference and publishing proceedings to update and expand on the Sand Dunes of the Sefton Coast conference and proceedings held in 1991. The meeting celebrates 30 years of partnership on the Sefton Coast. For more information visit http://www.seftoncoast.org.uk/research_conf2008.html