



Sand Dune and Shingle Network

Twelfth Newsletter, July 2011

Linking science and management



Introduction

Paul Rooney



The sand dune and shingle network is a habitat based network which aims to identify, develop and promote good practice in the conservation of these special habitats. We continue to focus on this aim. However, as most of

you will be aware these have been difficult and uncertain times for almost everyone involved in nature conservation and we hope that the position will become clearer over the coming months as people settle in to new roles and new structures.

However, in times of cutbacks and restructuring, the need for networking remains as important as ever. The Joint Nature Conservation Committee, for example, is no longer able to provide a coordinating service to the coastal Lead Co-ordination Network. So where does this leave co-ordination between the UK statutory agencies?

Although the responsibility for the delivery of the UK Biodiversity Action Plan has been devolved there are still officially lead agencies for coastal habitats and a centralised Biodiversity Action Reporting System (BARS). We have been actively involved as the habitat champion for sand dunes in the England Biodiversity Strategy's coastal Biodiversity Integration Group. With plans for a new Biodiversity Strategy for England announced in the White Paper on the Environment there is now uncertainty whether its role will continue, yet, at our last meeting in March 2011, the group supported the value of networking.

We would like to take this opportunity to thank Liverpool Hope University for all the practical help and financial support we have received through the institution and from the Higher Education Innovation Fund. We are also very grateful to Natural England for the funding they have provided over the past two and a half years. So, whilst we have received encouragement for the work that we do, we do not yet have the network on as firm a footing as we would like. Nevertheless, our activities will be continuing through the website, occasional papers and events.

We are pleased to announce in this newsletter an international conference in September 2012 on the theme of coastal scrub and woodlands. This will be a network event linking science and management and there will be a focus on European dune woodland and scrub habitat types as a contribution to the celebration of 20 years of the EU Habitats Directive. In the November newsletter we are also planning a special feature on machair habitats so please get in touch with us if you would like to contribute.

Network News

Charlotte Durkin



We have focused on reports in recent months, with the publication of our second report on Dutch dune management based on the 2010 study tour. This was published just before our 2011 study tour and was a useful refresher on (mainland) management issues for students and professionals

alike, before we were introduced to the island dunes. We will also be preparing a report on our 2011 visit and we look forward to being able to share with this knowledge with those of you who weren't able to join us. Regrettably there were a number of people who really wanted to come this year but were restricted by budgets and timing so, although it is a long way off yet, it is by no means too early to begin planning to join us on the 2012 trip, see the back page for details.

The Sea Buckthorn report, based on the 2009 workshop on the east coast of England, has also been published and gives an update on current approaches to the conservation and management of the species and scrub habitat in the UK. The report took longer to prepare than we planned but we hope that it is worth the wait.

I have begun writing up the issues arising from our Northern Ireland workshop in October 2010 and hope that this too, will be useful for anyone who was unable to join the trip. Disseminating knowledge throughout the membership and beyond is one of our key aims as a Network and we have begun to consider ways in which we could make our Occasional Papers series more professional and robust. One of the things we are considering is establishing a peer review panel who would contribute to raising the academic standard of the papers. We are also eager to involve the Network at large and will invite people to suggest future themes and publish their own research or monitoring projects through this medium.

We are currently updating our educational website Sands of Time adding in new photographs and additional text. The resources are mainly used by GCSE and sixth form students studying geography, biology and environmental sciences. See www.sandsoftime.hope.ac.uk for the current resources.

Please keep in touch and send us comments, news items and offers of help. Contact me through dunes@hope.ac.uk and on 0151 931 3885.

Study tour of Terschelling

By Charlotte Durkin



The group on sand dunes near the Boschplaat

In May 2011 we visited the Dutch Wadden Sea island of Terschelling with a group of Liverpool Hope University students on the Environmental Management MSc programme, as well as two network members. Our visit was graciously hosted by Freek Zwart of Staatsbosbeheer and some of his team. Terschelling has only 4,500 residents, but accommodates 450,000 tourists every year, meaning there are a lot of people to consider when it comes to discussing landscape changes.

Afforestation and agricultural development has led to an artificial drained hydrology on the island. A recently closed five year EU LIFE-Nature project has succeeded in a 're-watering' of the western part of Terschelling raising water levels by 20 – 85cm and encouraging more natural seepage and flow patterns between and within dune slacks.

Restoring the open nature of the dunes was another objective which attracted more controversy and legal wrangling with objectors. The removal of trees and the introduction of targeted grazing regimes have created a landscape which will take some years to develop into open dunes but in the short term the reduced evaporation has also reinforced the hydrology work undertaken. Filling in ditches and removing other artificial drainage infrastructure has allowed the resurgence of characteristic slack vegetation as well as increasing the success of breeding waders. Half of the €1 million budget was spent on recreation infrastructure and public engagement. Cycle paths and horse riding routes have been relocated and much effort expended on communicating the ideas and changes to come. Crucially, the landscape which has emerged, used by a wide variety of birds, is one which tourists find appealing.

On the island, the areas of polder are slightly different to the mainland as they are reclaimed saltmarsh, usually with remnant creeks, and the habitat is internationally designated under the EU Birds Directive. Farmers who manage the habitat for nature conservation can earn up to 50% of their income in this way.

The final day was spent on the western part of the island. We encountered green beach, reed beds, primary slacks,

mobile dunes, mud flats and sand flats. The area has a high degree of dynamism because of the environmental pressures including strong winds and inundation from the sea. Succession is clearly visible along a gradient from the shore as reed beds replace slacks, a continuous flux of habitats emerging and receding in response to disturbance. Some of the problems in this part of the island are perceived to stem from management of the marine environment as the Wadden Sea is heavily utilised by shipping, oil and fishing industries. Efforts are underway to rebalance the needs of nature conservation and economic activities. However, Staatsbosbeheer has no input into the Wadden Sea planning, demonstrating a disjointed approach to managing the land-sea interface which can impact negatively on many coastal habitats.

The small population on Terschelling and harsh environmental conditions means a lot of space is available for dynamic nature conservation projects. The fact that many of the tourists who come here come for the nature allows managers to enter into a dialogue with residents and tourists alike and explain their aims for landscape rehabilitation. They may not always agree but as the landscape is evolving and changing so rapidly anyway there may be more of an acceptance for large scale projects which alter the appearance and function of the habitats. Although I have heard the term dynamic dunes many times and seen re-mobilisation projects on the Dutch mainland, it was only on Terschelling that I realised the true meaning of the term. Seeing the wind (on a relatively calm sunny day) move blizzards of sand from the fore shore to the dunes and seeing places where that volume of sand has piled 20 feet high in a week left me in awe of the potential of nature's architecture.



John Ratcliffe (CCW) and Angela Peters (National Trust), the two professionals who joined the study tour. Below John describes his experience:

On Terschelling, the history and evolution of the landscape is very apparent, with successive lobes of dune and primary slack still actively forming. After years extolling the many virtues of open mobile dunes, it is refreshing to see miles of Staatsbosbeheer's Dutch "forest" ... without a tree in sight! This State Forestry Service has long embraced the wider responsibility of multi-functional land management. Here sea defence, nature conservation, recreation and forest are integrated through an ecological understanding of a dynamic landscape. Inevitably, many of the issues, problems and solutions (or no-solutions) are familiar, but with any such exchange come new insights. The need for a critical mass of moving sand, to overcome the current tendency for stabilisation, is food for thought.

Hydrology Thematic Group Field Visit, June 2011



Whiteford Burrows, from left to right: Charlie Stratford, Graham Weaver, Ab Grootjans, Nick Robins, Laurence Jones, Nick Edwards and his dog Meg

A three day visit was made in early June to Braunton Burrows in North Devon and then to Whiteford Burrows and Kenfig in South Wales. The visit was enjoyed by the Hydrology Thematic Group accompanied by Ab Grootjans from the University of Groningen and Graham Weaver from Natural England. The group was hosted at Braunton by Jeremy Barker, Land Management Advisor, Natural England, and (after Graham's passport had been suitably endorsed at the Severn Bridge!) by Nick Edwards, Senior Reserves Manager for Countryside Council for Wales at Whiteford and David Carrington, Reserve Manager for Bridgend County Council at Kenfig.

The purpose of the visit was to show Ab and Graham some of our instrumented dune slacks and to discuss whether our investigatory approach is appropriate both scientifically and from the management perspective. Our fear was that Ab would tell us that the work had already been done by the Dutch, so we were greatly relieved to hear Ab tell us that our dunes are different from those in Holland in that ours did not have an obvious age profile from the coast inland.

The primary slack developing outside the former foredune at Whiteford Burrows on the Gower created great interest. Ab declared that he had never seen anything quite like it before and Graham immediately recognised the potential it offers to monitor slack evolution. Kenfig, as always offered surprises, the Kenfig River reed marsh behind the dunes being just one of them. The Fen Orchid was in bloom and we peered at its unimpressive green and white flowers wondering what the fuss was all about.

The trip was hugely instructive. Charlie Stratford and Laurence Jones from CEH along with Nick Robins from BGS learned a great deal from Ab who offers a wealth of knowledge drawn from a holistic view of dune fields and their slacks the world over. The encouragement we received from Graham and from our respective hosts and the guidance given by Graham on what the managers really need to know was extremely valuable. The Hydrology Thematic Group will go forward armed with this new information and will develop its monitoring and investigation work within the robust framework that the party was able to outline before Ab Grootjans was returned to Bristol Airport.

Nick Robins
British Geological Survey

Environment Agency review of Beach Management Plans

Over the last two centuries, the mainly mixed sand and gravel beaches (shingle beaches) in Southeast England have become increasingly managed to maintain them in size and position as they often form the only defence against coastal flooding and erosion. Local approaches to management have led to problems along neighbouring frontages. Current local management practices that take little or no account of those either side or even further along the coast. In most cases management is required to implement the Hold the Line policies of second-generation Shoreline Management Plans (SMP2) with the broader management strategy (groyned or open beach) usually defined through more detailed Coastal Defence Strategies.

A review http://www.southerncoastalgroup.org.uk/pdfs/2011-02%20BMP%20review_Final.pdf has been carried out by Uwe Dornbusch of the Environment Agency of formal documents (Beach Management Plans) and non-documented practice for 25 management sites. The sites cover 130km in Southeast England with both length and number roughly equally divided between Local Authorities and the Environment Agency as the Operating Authority. Beaches at these sites are actively managed, predominantly through recharge, recycling and reprofiling of the beach material. The sites in question are composed of mixed sediment, with some of the beaches showing intertidal chalk, sand or clay platforms while others have the beach toe always submerged.



Locations of Beach Management activities in Southeast England

Following on from this review a project has been set-up to create a set of hierarchical Beach Management Plans (BMPs). The BMP project, which will be delivered in partnership between all Operating Authorities, will start with the large strategic picture of management across Operating Authority boundaries and then focus on local activities. The project will address existing shortcomings particularly in relation to:

- basic modelling, assumptions and data that went into the design,
- environmental considerations in relation to habitats,
- the use of coastal monitoring data,
- lack of considering large frontages beyond administrative or scheme boundaries,
- lack of review following initial project implementation

This will lead to more sustainable and co-ordinated beach management. Contact: Uwe Dornbusch uwe.dornbusch@environment-agency.gov.uk



European Dune Network

Sharing experience across borders

Newsletter Number 2: July 2011

Welcome to this second edition of the European Dune Network newsletter prepared by the Sand Dune and Shingle Network at Liverpool Hope University. Thank you to all our contributors. We received more information than we can publish which indicates that there may be a demand for a more permanent newsletter.

It remains our long-term aim to establish a permanent European Dune Network and this has been the focus of a submission to the Interreg IVC programme in April 2011 called 'Dunes 2100' led by the Coastal and Marine Union-EUCC.

To prepare the submission a partnership of regional authorities and supporting scientific institutions came together in early 2011 and worked through the process of preparing and submitting the application with Maria Ferreira of EUCC. The long term aim of the project Dunes 2100 would be to improve the conservation status and future prospects for coastal sand dunes in Europe by influencing regional policy, which in turn can develop and implement sustainable solutions.

The overall objective of the project is to provide the knowledge and tools to assist European regional policy makers and local Natura 2000 managers to work towards the EU target to halt the loss of biodiversity. The project would promote sustainable approaches to the conservation of dune coasts as ecosystems providing vital services to local communities.

To do this the project will identify good practice in the management of coastal sand dunes across Europe, will disseminate this knowledge to practitioners, policy makers and other stakeholders and will establish a European Dune Network to provide long-term support and a source of up-to-date information. By the end of the project it would be our intention that every EU Member State with coastal dunes will be represented in the European Dune Network.

Each of the project partners will also produce a long-term management framework for their sites based on an approach to ecosystem services, which takes account of coastal change prediction, climate change forecasts, trends

in vegetation and changes in demand and uses.

The sub-objectives are;

- To develop the capacity of partners and also the knowledge and capacity of other stakeholders
- To encourage the development of national and international dune networks
- To use the knowledge to give advance warning of potential problems, e.g. impacts of future sea level rise, spread of alien species with climate change etc.

The project partnership includes France, Italy, Greece, Bulgaria, Lithuania, Ireland, Netherlands, Portugal and UK but the intention would be to involve representatives from all EU Member States with dune coasts.

Contact points for the dune network

Although our hopes are to develop a broad network of practitioners across Europe to do so we need to develop a network of contacts. We are looking for at least one contact person from every participating country so that we can exchange news and disseminate information to national networks. So far the following people have offered to join us as national contact points:

Portugal – Francisco Tavieria Pinto
Germany – Gerald Schernewski
Netherlands – Fred van der Vegte
Italy – Antonio Perfetti
Poland – Tomasz Łabuz
Bulgaria – Margarita Stancheva
Latvia – Ieva Rove
France – Guillaume Lemoine

It is early days for any network and we have no official structure, so we are not limited in any way to one representative for each country. So please, if you would like to join the e-mail group exchanging information on the conservation and management of dune coasts please let us know. One particular function of the network would be to publish contact details and information on EU-funded LIFE projects relating to coastal dunes.



Dune Landscape of Spiekeroog, German Wadden Sea

Dune conservation in North France

Returning the wild with mechanical diggers!

When we talk of wanting to manage a wild place we are faced with a paradox. The wild is, by definition, a place apart from man and his interventions. Wanting to manage the wild is, perhaps, an unconscious desire to master it, mark it with man's print or control it. Equally, managing a wild area involves implicitly recognising that the latter is no longer wild, because the area under consideration no longer seems capable of maintaining its own particular characteristics as regards its combination of habitats, species and ecological functions.

In the interest of protecting habitats or species, which seem to have cultural value, many land-managers have devised and developed ambitious projects of restoration and then management. For the good of an ecosystem, management plans, based on scientific surveys and on a system of prioritization, aim at proposing management actions which favour such and such a habitat, plant or animal community. These actions are sometimes extreme or otherwise can be akin to eco-gardening in their surgical precision.

Faced with these approaches, more and more voices are being raised and advocating a non-interventionist management style or, quite simply, no management at all, leaving nature to sort itself out, in its own way. Ecosystems will age, become wild and progressively return to a state which they must have resembled before man's arrival.

Let us, however, avoid being too simplistic. Wanting to do nothing more can only be justified if this return to the wild is accompanied by the restoration of a "regime of disruptions" which would allow the spontaneous diversification of these mature ecosystems. Leaving nature alone, without restoring the functional elements of the ecosystem is a short-sighted view of nature and the wild.

The example of the North Sea dunes of the Dunkirk coast

To the east of Dunkirk land managers wished to develop a new approach to dune conservation. They wanted people to appreciate that the dunes are not systems characterised by the developing habitat of extremely mature scrub and woodland, but that, on the contrary, their 'naturalness' lies in their dynamic nature, involving their continual reshaping. Unfortunately this no longer occurs as the dunes have been fragmented with the growth and regular expansion of coastal resorts; there is no winter flooding as the level of the dune water table has been lowered by pumping water away for use by local populations and industries; time has seen the disappearance of any large herbivores and then the rabbits, which replaced them; and finally the excessive stabilisation of the white dunes to avoid sand loss and the constraints that this imposes on the land and on the infrastructures on the edge of the dune massifs - all this has paralysed the dune dynamics. Over a ten year period the blocking of natural processes has resulted in a general encroachment of scrub and the disappearance of animal and plant communities which were characteristic of the dunes and these new wooded areas have created a certain image of what is "natural".



Within the scope of classic management procedures the Departmental Services, like numerous other land managers who are responsible for sites designated as "Espaces Naturels Sensibles", have

restored various very scrubby areas in order to maintain and restore the dune grasslands and alkaline slacks. These areas, which provide a habitat for the great majority of protected and native species, have for some time been managed mechanically (mowing machines) or by grazing. All these habitats are, however, extremely dependent on regular management, involving eco-gardening processes over large areas. In this way the land manager tries to conserve a representative and diverse array of samples of habitats and native species. A "collection of habitats" is conserved as in a new type of botanical garden and is maintained in a way which could be described as museo-geographical... even though each work of art is alive and continues to evolve.



The above system was quickly acknowledged as inadequate and for the Département du Nord it seemed opportune, therefore, to change its approach and to give up protecting the existing heritage in favour of creating conditions for this site to evolve naturally. In order to recreate the most natural conditions for the functioning of the dune ecosystem the management team wanted to find the means of replacing the storms, which were no longer happening, and the subsequent effects of turning over and disturbing the soil. From 2005, therefore, using large forest tractors and mechanical diggers, significant clearing and terracing were carried out in the dunes to the east of Dunkirk in order to reveal a vast area of bare sand, which could be moved and remodelled by the wind, thus giving free rein to natural and spontaneous processes... creating pioneer sites with the opportunity to evolve freely, in the course of time, into thickets and forest, passing through all the different stages of vegetation... Regular repetition of this type of work should enable the dunes to accommodate all its characteristic habitats and, we hope, eventually allow man to stop the fiddling, time-consuming and costly operations which only create the early conditions for a series of plants. Could this be a sustainable management system?

Guillaume Lemoine is an ecological engineer and dune manager in the Département du Nord (local authority). Guillaume.lemoine@cg59.fr (thanks to Lynn Seddon for translation into English)

Restoration of humid dune slack habitat on the Belgian coast: Hannecart Wood

On a visit to the Belgian dunes in October 2010, Sue Rees, the coastal ecologist for Natural England was astonished by the success of a project to restore wet slack communities which seemed to achieve the impossible of what appeared to be full recovery of the habitat from 50-year old alder plantations. The lesson shows that sometimes managers simply have to have faith in their actions. The account below is a summary of information provided by Jean-Louis Herrier, Marc Leten and Hannah van Nieuwenhuysse of the Flemish Agency for Nature and Forests.

A former tidal beach plain of the medieval Yser estuary between Nieuwpoort and Oostduinkerke, cut off from the sea for almost seven centuries, still forms an elongated depression between two dune ranges.



Location of Hannecart wood in the former Yser estuary (Cassini map, 1756).

The lime and iron rich seepage water feeding this primary dune slack from two sides creates an ideal habitat for basiphilous and peaty coastal marshland, with local decalcified infiltration zones. Historically the slack was used as a grazed and mown meadow, with old records of rare plant species, but the area gradually became transformed into arable land. In 1913 a remnant of the historical grasslands (the 'Doolaege') was studied by the botanist Louis Magnel. He was puzzled by the strange and unexpected combinations of calciphilous (*Primula veris*) and rather acidophilous (*Succisa pratensis*) species, of plants from nutrient poor (*Anagallis tenella*) and nutrient rich (*Cynosurus cristatus*) conditions and of species from peaty (*Eriophorum angustifolium*) and moderately dry soils (*Briza media*). With this unusual species combination he probably encountered one of the last remnants of a once widespread type of coastal habitat ('old dune slack vegetation') of which almost no recent examples are known along the Flemish coast.

Between 1930 and 1950 the privately owned site was gradually afforested with black and grey alders and called 'Hannecartbos' (Hannecart wood) since: only very small relicts of unfertilized humid dune grassland remained. Part of the site (31 ha) was purchased by the Flemish Region in the early 1980s as a nature reserve.

In 1999 a management plan was approved for the restoration of the Natura 2000 habitat '2190 humid dune

slacks (dune slack grasslands)' from the alder plantations and bramble scrub.



Deforestation and removal of debris and top soil to restore humid dune slack

The restoration measures were carried out in 2005 as part of the LIFE Nature project FEYDRA. It included felling 6 ha of trees, the removal of debris and topsoil, the re-profiling of a former dune stream and the creation of pools.

Since the restoration was completed the site has evolved towards a very species rich (more than 360 plant species found on 6 ha in 5 years time!) and colourful vegetation type, with, partly unexpected, species such as *Juncus anceps*, *Valeriana dioica*, *Anagallis tenella*, *Carex distans* and *Carex divisa*. However, some of the colonising species (e.g. *Blysmus compressus*) did not survive past the pioneer stage.

Part of the flora is presumed to be derived from a (several centuries old?) persistent seed bank (e.g. *Carex*, *Juncus*, *Anagallis*, *Calluna*), others probably colonised through wind dispersal (orchids, *Parnassia palustris*) or management machines (*Rhinanthus angustifolius*, *Pedicularis palustris*).

There is no clear relation between the restored vegetation types and the history of the site as 19th century meadowland or arable field, although, rather unexpectedly, vegetation structure often remains more open and colonisation of typical dune slack species (*Epipactis palustris*, *Pyrola rotundifolia*) occurs faster on former (but poorly fertilized?) arable fields. Different management regimes (hay meadow, permanent grazing) increases the diversity.

The project results demonstrate that historical maps and ancient botanical data are a useful tool to help determine the restoration potential of a site, although not exactly predicting species composition of the restored habitat. At least in the Doolaege a persistent seed bank enabled the partial restoration of 'old humid dune slack' habitat after deforestation and removal of the topsoil. However, control of the groundwater regime and reduction of the nutrient supply remain key factors for sustainable maintenance of the restored humid dune slack habitat.

Reference

Herrier J.-L., Van Nieuwenhuysse H., Deboeuf C., Deruyter S. & Leten M. (2005). Sledgehammers, cranes and bulldozers: restoring dunes and marshes by removing buildings and soil. In: Herrier, J.-L. et al. (ed.). Proceedings 'Dunes and Estuaries 2005': International Conference on nature restoration practices in European coastal habitats, Koksijde, Belgium 19-23 September 2005. VLIZ Special Publication 19, pp. 79-94.

Polish coastal dunes- current research projects



Natural dune accumulation, Swina Gate sandbar

Dune coasts cover over 75% of the Polish coastline and in many places they are protected including within the Natura 2000 network. The dune habitats are also important as natural dykes protecting the hinterland from flooding during storm surges. But they are also under pressure from tourism development.

The Polish government has highlighted nature preservation and sustainable tourism as key aims of coastal zone development. To date we have been using old strategies of coast protection but new scientific studies have added information on the dynamics of coastal dunes. The project Anthropogenic-Natural Dunes Dynamics (ANDDY), (<http://polishdunes.szc.pl>) helped us to participate in Sand Dune Inventory led by Pat Doody and the information can be found on Wikipedia at http://www.coastalwiki.org/coastalwiki/Sand_dune_-_Country_Report,_Poland. In 2007 we also prepared a report on the coastal dune habitats included in the Natura 2000 network.

We are now beginning a project supported by the Polish National Center of Research and Development called 'The foredunes environment location, morphodynamics and plants fluctuations – the biodiversity valuable habitat of the Polish coast (FoMoBi)'.

The focus of the project is on research of the foredune (primary dunes) habitats, in particular the range of foredune types along the Polish coast, their variability under natural and anthropogenic factors and an estimation of their state/condition in relation to reporting on Natura 2000. The study will determine the threshold conditions causing variability, temporary and seasonal variability of vegetation and mineral content and form. We will disseminate knowledge about the dynamics of the habitat and will prepare guidelines for the protection, restoration or creation of habitats.

We are also preparing a project with colleagues from the German branch of EUCC, financed by the EU in one of the subject areas of the South Baltic Programme. The main idea of co-operation in this project is the exchange of experiences in coastal dune management; searching for solutions for protection in light of tourism development, plans for future biodiversity preservation in line with EU documents and talking about Natura 2000 management plans. The project will also target local inhabitants, tourists and local authorities to increase their knowledge of the coastal dune environment.

We are very open to cooperation and exchange of knowledge in dune environment management and scientific research. Please contact us by e-mail or through our website. Contact: labuztom@univ.szczecin.pl

Tomasz A. Łabuz
University of Szczecin

Recent publications in English:

- Łabuz T. A., 2009, Distal washover fans on Świna Gate Sandbar. *Oceanological and Hydrobiological Studies* Vol. XXXVIII, Supplement 1, p.79-95, (ISSN 1730-413X), <http://www.oandhs.org/files/297.pdf>
- Łabuz T.A., 2009, The West Pomerania coastal dunes – alert state of their development. *Z. Dt. Ges. Geowiss.*, 160/2, Stuttgart p.113-122, (DOI: 10.1127/1860-1804/2009/0160-0123), http://www.schweizerbart.de/resources/downloads/paper_previews/72745.pdf
- Łabuz T.A., 2009, The increase of the coastal dune area of the Swina Sandbar, West Polish coast. *Z. Dt. Ges. Geowiss.*, 160/2, Stuttgart p.123-135, (DOI: 10.1127/1860-1804/2009/0160-0123), http://www.schweizerbart.de/resources/downloads/paper_previews/72746.pdf

News from the Italian Dune Network

The Italian Dune network seems to be going from strength to strength, judging by the event 'Conferenza internazionale do presentazione del progetto RES MAR e IV Comitato di pilotaggio' held 15-17 June in the Regional Park of Migliarino San Rossore Massaciuccoli, near Pisa. The park covers around 24,000ha along the coast between Viareggio and Livorno. In the Italian context it is an unusual example of a relatively undeveloped coastline with large areas of dune, and therefore provided a spectacular backdrop to this conference. Delegates at the event expressed strong interest and support for the Italian and European Dune Network. The first two days of the conference addressed the topic of integrated

coastal management in Italy and across Europe, but included international coastal dune presentations on the challenges for European dune conservation by Paul Rooney (Liverpool Hope University) and the innovative 'Sand Engine' work in the Netherlands by Jan Mulder (Deltares). The final day was an excursion to coastal erosion monitoring performed by the Province of Mass – Carrara. Details of the RES Mar project are available at <http://www.res-mar.eu/it/>

The final reports and layman's report (in English) of the LIFE-Nature project DUNETOSCA are available on the San Rossore website at <http://www.parcosanrossore.org/progetti/life-natura-dunetosca%E2%80%9D/progetto-life-downloads>

The European Dune Network newsletter has been compiled by John Houston and Charlotte Durkin, Department of Geography, Liverpool Hope University, Liverpool, L16 9JD.

The newsletter is produced in association with the Coastal and Marine Union-EUCC.

Please contact us on dunes@hope.ac.uk

Websites: <http://www.hope.ac.uk/coast/europe.html> and www.eucc.net



Pembrey Burrows: The effects of fire on sand dunes



Has anyone had any experience on the effects of fire on sand dunes? Two years ago a fire burned a fairly large area of Pembrey Burrows after being deliberately lit during a long dry

period. All of the vegetation had been burned away and there were many shells of the Sand Hill Snail *Theba pisana* littering the sand. Obviously the fire had had a detrimental effect on the invertebrate and plant communities.

The area also had small bushes of sea buckthorn growing around 4 feet (1.3 m) high and these too were also burned. These small sea buckthorn bushes are the most difficult to deal with as they tend to show strong re-growth when dug out or cut. The expectation was that the sea buckthorn would rapidly grow back, however this did not happen and the sea buckthorn bushes showed no sign of re-growth (see photo). Obviously fire has a detrimental affect on both the invertebrate life and the plant life and would not be encouraged. However, it would be interesting to find out if the use of fire as a management tool has ever been used in a historical context and possibly as a means of controlling sea buckthorn?

Dr Simeon Jones
Carmarthenshire County Council

Coastal care at Lytham on the Lancashire Coast

Lancashire Sand Dunes Project Officer Annie Ancell writes with news of a new project

Normal practice was for tidal debris at the 'Fairhaven dunes' in Lytham St. Anne's to be mechanically removed. The foreshore was also being used as a dumping ground for sand cleared from the surrounding roads. The Lancashire Sand Dunes Project agreed with Fylde Borough Council that the beach and foredune area would be left undisturbed provided that it was kept free of man-made litter. So I set up 'Fairhaven Coastal Care Group', volunteers who hand pick this area every week (even wet days doesn't stop their enthusiasm!). With a £450 grant for equipment the group is now able to 'lead themselves' thanks to first aid and leader training. The funding was a Small Sparks grant from 'Help Direct', who awarded the money based on the social aspect of the group.



Before and after: embryo dunes have begun to form

The result has been immediate with vegetation quickly establishing on the newly created shingle and dune habitat. Geoff Willets, Senior Coast and Countryside Officer with Fylde Borough Council, said "the Council recognizes its duties to both biodiversity and to keep the beach litter free. The pilot project has demonstrated that the two factors can be addressed through a voluntary coastal care group. Resources for hand removing litter may be tight for local authorities so the local community's input is invaluable."

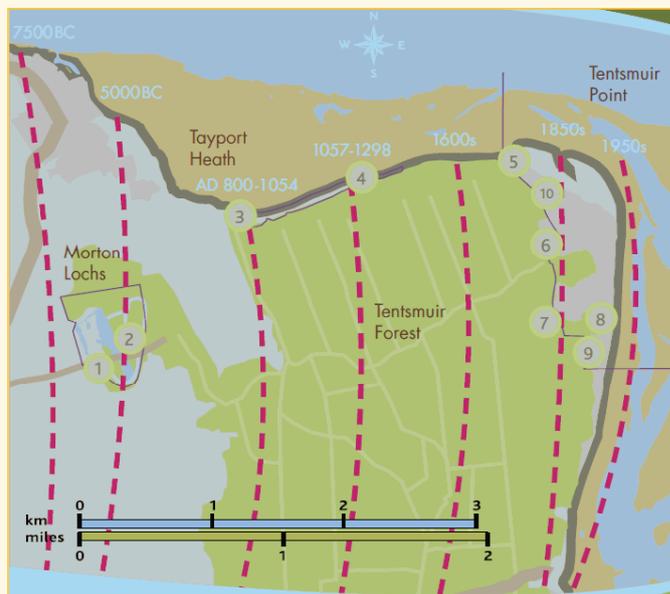
Tenstmuir National Nature Reserve

Tom Cunningham, reserve manager at Tentsmuir NNR, has sent us news of the innovative new timeline and historical interpretation which guides visitors through coastal change and the evolution of the Tentsmuir sands.

The map illustrates the position of the coastline now (grey solid line) and at times in the past (red broken lines) and numbers indicate the position of sculptures and existing features. The sculptures include a depiction of a tsunami wave which devastated the area 7,000 years ago, arrow heads connected with the first people to settle here and objects associated with subsequent Roman, Viking and Medieval settlements.



The timeline project shows great imagination and flair for design and has been well received by visitors. The brochure is well worth a look and can be downloaded from <http://www.snh.gov.uk/docs/B866369.pdf>



UK National Ecosystem Assessment: Publication of Key Findings



Dune grassland provides a valuable grazing resource

In June 2011, the Secretary of State for the Environment launched the findings of the UK National Ecosystem Assessment (UK NEA). The project has produced an independent and peer-reviewed assessment of the state and value of the UK's natural environment and ecosystem services identifying what has driven change observed in the natural environment and the services it has provided over the last 60 years, and what may drive change in the future. It includes an investigation into the monetary and non-monetary value to the economy, society and individuals from various ecosystem services, including how some of these may change in future.

The *Synthesis of the Key Findings* is supported by a *Technical Report* which forms the evidence base. Laurence Jones of the Centre for Ecology and Hydrology was the coordinating lead author for the **Coastal Margins** chapter of the Technical Report. This chapter is of interest to Network members and is available at <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=7k343aATzic%3d&tabid=82>. The chapter addresses the trends and changes in sand dunes, machair, saltmarsh, shingle, sea cliffs and coastal lagoons and identifies the ecosystem services offered by these habitats

To take **sand dunes** as an example, there are more than 70,000 ha of sand dunes in the UK (excluding machair) and more than a fifth falls within the Natura 2000 network (15,000 ha). However, the UK may have lost 30% of its dune area since 1900 and although this slowed after the 1960s as nature conservation legislation was introduced losses continue on unprotected sites. Future losses are predicted through sea-level rise and increased coastal erosion, although impacts will vary from region to region.

One of the most striking changes over the last 60 years has been the increasing vegetation cover and stability of many dune systems. For example the area of bare sand at Newborough Warren has declined from 75% in the 1950s to just 6% today. These changes have led to the loss of specialised species and the loss of the open character of the dune landscape.

In terms of the goods and benefits provided by sand

dunes, the study highlights the value of sand dunes for providing animal produce (traditionally rabbits but more commonly sheep and cattle today), for sea defence, for high biodiversity values and for their recreational, educational, health and inspirational (wildness) values. At certain places dunes have in the past or do today provide for other uses such as forestry, supply of sand, military use and golf courses.

The analysis of ecosystem services is expressed as trade offs and synergies between uses and services. Forestry on dunes, for example, may increase carbon stocks but it reduces recharge to dune aquifers potentially threatening dune slack habitats. Even if forestry adds amenity value the report concludes that the net effect on wild species diversity is negative and acknowledges that this is a contentious issue in the UK. Maintaining a regular, uniform dune profile for the purposes of coastal defence may reduce wind speeds and sand supply to the rest of the dune system and promote stabilisation. This in turn may benefit commercial grazing and carbon accumulation but is detrimental to species diversity.



Golf is an example of a leisure use on sand dunes

The studies thus confirm the value of dune systems but also show that any one use may have impacts on others. Options for sustainable management

are discussed including current interest in promoting the rollback of dune systems and increasing the internal dynamics of larger systems.

Overall the coastal margins chapter highlights the following implications for policy:

- The habitats are of high financial and cultural value to the UK, yet they often fall into the policy no-man's land between marine and terrestrial interests.
- There remain major knowledge gaps, including basic data such as extent and trends. This needs to be addressed to detect change in coastal sediments and habitats to inform adaptation strategies.
- Coastal Margins face major threats, particularly from sea-level rise and climate change, as well as pollution and continuing development pressures. These threats are exacerbated by the linear nature of the habitat, with pressures on every edge and very little safe, core habitat, except on the largest sites.
- Coastal Margins need to be managed holistically, maintaining natural dynamics where possible and acknowledging the interdependence with other habitats, including the marine environment.

The National Ecosystem Assessment can be accessed at <http://uknea.unep-wcmc.org/> and is also available at <http://www.defra.gov.uk/environment/natural/uknea/>

Proceedings of the ICS2011 11th International Coastal Symposium

There are many papers of interests to Network members which are published on the website of the international symposium. All are available FREE from http://www.ics2011.pl/index.php?option=com_content&view=article&id=75&Itemid=80

We have selected just a few below:

Stancheva, M. et al. (2011) Sand Dune Destruction Due to Increased Human Impacts along the Bulgarian Black Sea and Estonian Baltic Sea Coasts.

Maragrita Stancheva, the national contact for Bulgaria in the European Dune Network presented a paper at the conference describing an analysis of how the dune landscape in Bulgaria and Estonia has changed. This has helped to inform understanding of the extent of tolerance and resistance the dunes have to exploitation. There has been direct habitat loss and degradation in the dune areas which have been subject to development pressures, but there have also been indirect effects. The authors found that permanent structures put in place to prevent erosion and protect developments are obstructing the movement of sand which could help regenerate other areas of dunes. The authors highlight the unchecked phase of development which is taking place at the coast, mirroring similar scenarios which unfolded around the Mediterranean in the past.

Montreuil, A.L. and Bullard, J. E. (2011) Meso-scale coastal dune evolution along the North Lincolnshire coast, UK.

González-Villanueva, R., Costas, S., Duarte, H., Pérez-Arlucea M. and Alejo, I. (2011) Blowout evolution in a coastal dune: using GPR, aerial imagery and core records.

Jackson, D.W.T. and Cooper, J.A.G. (2011) Coastal dune fields in Ireland: rapid regional response to climatic change.

Wijnberg, K.M., Bochev-van der Burgh, L.M. and Hulscher, S.J.M.H. (2011) Coastal management and long-term foredune behaviour: characterizing semi-natural foredune evolution.

House, C., Williams, J., Cullis, M.J. and Phillips, M.R. (2011) Coastal sustainability: a comparative socio-economic lifestyle assessment, South Wales, UK.

Williams, A.T., Duck, R.W. and Phillips, M.R. (2011) Coastal dune vulnerability among selected Scottish systems

Ratas, U., Ravis, R., Truus, L., Vilumaa, K., Multer, L. and Anderson, A. (2011) The Aeolian coastal ecosystems of Estonia and their changes

Other recent research papers

Vegetation

Carboni, M., Santoro, R. and Acosta, A.T. R. (2011) Dealing with scarce data to understand how environmental gradients and propagule pressure shape fine-scale alien distribution patterns on coastal dunes. Published online first. DOI: 10.1111/j.1654-1103.2011.01303.x

Damgaard, C., Nygaard, B., Ejrnaes, R., and Kollmann, J. (2011) State-space modelling indicates rapid invasion of an alien shrub in coastal dunes. *Journal of Coastal Research* 27: (3) 595 – 599. DOI: 10.2112/JCOASTRES-D-09-00132.1

FREE Daniela, C., Mirko, B., Maria, P.A. and Costantina, F.L.M. (2011) Morpho-functional adaptations in *Cakile maritima* Scop. subsp *maritima*: comparison of two different morphological types. *Caryologia* 63: (4) 411-421

French K., Mason T.J. and Sullivan N. (2011) Recruitment limitation of native species in invaded coastal dune communities. *Plant Ecology* 212: (4) 601-609

Isermann, M. (2011). Patterns in Species Diversity during Succession of Coastal Dunes. *Journal of Coastal Research* 27: (4) 661-671

Kohyani, P. T., Bossuyt, B. Bonte, D. and Hoffmann, M. (2011) Grazing impact on plant spatial distribution and community composition. *Plant Ecology and Evolution* 144: (1) 19-28

Zaloumis, N.P. and Bond, W.J. (2011) Grassland restoration after afforestation: No direction home? *Austral Ecology* 36: (4) 357-366

Hydrology

FREE Martens, K., van Camp, M. and Walraevens, K. (2011) Ranking of water-table depths for purposes of ecosystem management in the coastal dunes of Belgium. *Geologica Belgica* 14: (1-2)

Geomorphology

Navarro, M., Muñoz-Pérez, J., Román-Sierra, J., Tsoar, H., Rodríguez, I. and Gómez-Pina, G. (2011) Assessment of highly active dune mobility in the medium, short and very short term. *Geomorphology* 129: (1-2) 14 – 28. DOI:10.1016/j.geomorph.2011.01.009

Jackson, N. L. and Nordstrom, K. F. (2011) Aeolian sediment transport and landforms in managed coastal systems: A review. *Aeolian Research*, article in press. DOI:10.1016/j.aeolia.2011.03.011

Esteves, L. S., Brown, J. M., Williams, J. J. and Lymbery, G. (2011) Quantifying thresholds for significant dune erosion along the Sefton Coast, Northwest England. *Geomorphology*, article in press. DOI:10.1016/j.geomorph.2011.02.029

Other

Feola, S., Carranza, M.L., Schaminee, J.H.J., Janssen, J.A.M. and Acosta, A.T.R. (2011) EU habitats of interest: an insight into Atlantic and Mediterranean beach and foredunes. *Biodiversity and Conservation* 20: (7) 1457-1468. DOI: 10.1007/s10531-011-0037-9

Valles, S.M., Fernandez, J.B.G. and Dellafiore, C.M. (2011) Dune vulnerability in relation to tourism pressure in central gulf of Cadiz (SW Spain), a case study. *Journal of Coastal Research* 27: (2) 243-251. DOI: 10.2112/JCOASTRES-D-09-00125.1

Round-up of News

White Paper on the Environment

In June 2011 the UK Government published its White Paper on the Environment 'The Natural Choice: securing the value of nature'. This is the first government document on the environment for over 20 years and will set the scene for at least the next decade. It has been advised by both the National Ecosystems Assessment and also the 'Lawton Report', published in 2010, entitled 'making space for nature: a review of England's wildlife sites and ecological network'.

Although these are documents drawn up for England they are of interest to the UK as a whole (and abroad) as they reflect current thinking in relation to ecological networks and also set out the government's support for EU environmental policies. A key section of the White Paper is aimed at protecting and improving the natural environment. The main message, echoing the 'more, bigger, better and joined' of the Lawton Report is to promote nature conservation on a large scale though Local

Nature Partnerships, Nature Improvement Areas and improved planning.

The White Paper and links to supporting documents can be found at <http://www.defra.gov.uk/environment/natural/whitepaper/>

Proposals for a new Biodiversity Strategy for England

One of the pledges in the White Paper is to prepare a new Biodiversity Strategy for England to set the direction for policy over the next decade. The England Biodiversity Group report 'ThinkBIG: How and why landscape-scale conservation benefits wildlife, people and the wider economy' was published to coincide with the publication of the Natural Environment White Paper and can be downloaded from: <http://naturallengland.etraderstores.com/NaturalEnglandShop/NE309>. We are unsure where the current coastal Biodiversity Integration Group fits in to the new proposals and will give an update in the next newsletter.

Events

International Conference 2012 Scrub and woodland on coastal dunes

We are pleased to announce our plans to hold a two-day international conference and excursion on scrub and woodland on coastal dunes at Liverpool Hope University from 12th-13th September 2012. As this would be a contribution to marking the 20th anniversary of the Habitats Directive, the conference will primarily be set within the context of the habitats of the Atlantic Biogeographical Region but will seek to draw on research from a wider geographical area.



The conference would follow our aim of linking science and management and we are publishing this early announcement to invite papers and contributions to the programme. The topics

we wish to address include: research on the development of woodland and scrub habitats in north-west Europe, an evaluation of Atlantic Dune Woodland in the Atlantic Biogeographical Region including the potential of developing this habitat in the British Isles, research into the relationship between wet woods and coastal dune slacks and the biodiversity value of native dune scrub. The meeting will also be an opportunity to review dune

forestry practices (in the UK and northwest Europe), evaluate the research on alien species and, for the UK, development of a new national strategy for Sea Buckthorn.

We have interest and support from the UK statutory agencies and the Mersey Forest and would welcome proposals for presentations, sponsorship and links to other initiatives. We would particularly welcome offers of research papers or discussion papers which could be circulated before the meeting. The proceedings will be published. Please contact dunes@hope.ac.uk to register your early interest in this meeting.

Study tour to South Holland 2012

14th - 18th May 2012

Our post-graduate study tours of the Netherlands are now a regular feature in our academic calendar. They are also an excellent opportunity for practitioners to join the students and staff for field visits and discussions on the latest developments in coastal management and nature conservation policy and practice. In 2012 the intention is to visit South Holland to look at aspects of shoreline management (including the 'sand motor' - see <http://www.dezandmotor.nl/en-GB/> - have a look at the photos), habitat management through current LIFE-Nature projects and the management of dune water catchments. To register your interest, please contact us at dunes@hope.ac.uk.

This newsletter has been compiled by John Houston and Charlotte Durkin

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Cover Photo: Dune network excursion to the island of Terschelling, May 2011

The 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.

