



UK Sand Dune and Shingle Network

Fifth Newsletter, March 2009



Introduction

The UK Sand Dune and Shingle Network supports the dissemination of good practice in coastal dune and shingle management through national and international networking activities, the organisation of seminars, workshops and training events and contributions to the development of technical advice based on existing knowledge, information and data.

Membership of the network is free. We maintain a website and publish three newsletters a year. These are circulated to over 250 coastal contacts worldwide. Copies of previous newsletters are available on our website www.hope.ac.uk/coast under 'Project News'.

We welcome the continuing support for our work through a Memorandum of Agreement signed between Natural England and Liverpool Hope University in 2008. This will help support the core activity of the network through to 2011 and will allow us to continue to develop the services to members through the website, newsletters and events.

Specific activities linked to the agreement are to deliver workshops and training events, contribute to the work of the England Biodiversity Strategy Coastal Workstream Group and to develop national and international networking.

We have been asked to help support Local Biodiversity Action Plans (LBAPs) and will be making contact with coordinators to see what help they might need in terms of training and guidance. We will also be providing reviews on subjects such as dune scrub, recreation management and interpretation.

We now have over one hundred full members and need your help to help to spread the word. Please circulate the newsletter to your colleagues. To become a member is simple: download and complete the registration form on the website. It only takes a couple of minutes to fill it in and return it to us- and it's free!

Only if we know your interests can we send you targeted messages and alerts on forthcoming events. Members are also invited to contribute information to the newsletter.

Paul Rooney, Liverpool Hope University

Links to the machair

The UK and Ireland have a special dune habitat –the machair of the western coasts. In 2002 the former Machair Studies Group was reconstituted within the Aberdeen Institute for Coastal Science & Management (AICSM). With the help of some financial assistance from Scottish Natural Heritage, secretarial services were provided in order to establish and maintain a database of individuals with any type of interest



Machair © Stewart Angus

in machair. At present the group has over 60 associates. There are no joining fee or membership requirements; the Group is a loose association that is designed to share information on any study or project relating to machair. The Group has re-issued *Sand Dune Machair* Volumes 1-3 and has published *Sand Dune Machair 4* (all in PDF). If you are interested in joining, please contact elaine.ball@abdn.ac.uk

The Machair Study Group newsletter is distributed by e-mail and is free to members of the Machair Study Group. For further information see <http://www.abdn.ac.uk/aicsm/machair.shtml> . Newsletter contributions to stewart.angus@snh.gov.uk

Much of the latest newsletter is concerned with studies following the exceptional storm event which hit the Western Isles on 11 January 2005 (see reference below). The storm highlighted the lack of some basic information on machair, particularly a terrain map at a resolution which could be useful for flood-risk mapping on areas with small changes in relief and gentle slopes. A remote sensing study has been carried out using LiDAR and CASI platforms.

The Macaulay Institute has developed a digital classroom resource for Higher Geography Rural Land Resources. It describes machair in terms of geomorphology, climate, water, soils and ecology, and in terms of the land use covering archaeology, crofting systems, land ownership, politics and economy. It is available on <http://www.macaulay.ac.uk/machair/Data/index.html>

The Glasgow Natural History Society held a conference 'Machair conservation: successes and challenges' in December 2008. The outline of the conference programme and abstracts can be found on <http://www.gnhs.org.uk/machair.html> . We will publicise the proceedings when they are published.

Dawson, A., Dawson, S. & Ritchie, W. 2007. Historical climatology and coastal change associated with the "Great Storm" of January 2005, South Uist and Benbecula, Scottish Outer Hebrides. *Scottish Geographical Journal*, 123, 135-149.

Dune Network excursion to the Netherlands 9–13 February 2009

Seven professional conservation managers joined students and staff from Liverpool Hope University on a five-day excursion to the Dutch dunes in February. We are most grateful to our Dutch hosts Fred van der Vegte and Cees de Vries of the University of Amsterdam for setting up the programme. The main theme of the study tour was to look at the results of some of the recent large-scale dune restoration and dune re-mobilisation projects carried out by the dune management organisations.

Anne Heslop, Fylde Sand Dunes Project Officer, was one of the members on the trip. Here she describes her impressions.

The Dutch dune system has a long history of management revolving around stabilisation and creating a robust sea defence along the frontal dunes. However views are changing and the dunes are now being actively encouraged to mobilise and evolve. Blow-outs which were previously viewed negatively are now being allowed to form and large scale vegetation removal is taking place.

Dutch views on nature conservation have evolved over recent times, our Dutch host Fred van der Vegte informed us; initially there has been a focus on managing vegetation patterns (e.g. mowing and grazing) but focuses have shifted to working with landscape and ecological processes. The trends can often go against the thinking behind Natura 2000 and the Dutch argue for a more flexible approach towards the EU regulation and less focus on site targets and a greater emphasis on sustainable management.

With changing management ideas a change is also required from the local community and dune visitors. Many people remember when pine trees were planted as part of unemployment schemes and an emotional response often follows suggestions of pine removal. The Dutch are therefore putting resources into community consultation to liaise with visitors, locals and 'landlords' – those who feel they own the landscape and oppose any change.

So back to the concept of remobilisation, the Dutch have carried out turf stripping on a large scale to un-stabilise dunes, encourage early stages of succession and reactivate the development of dune slacks. The first day we saw 1.3ha of newly created bare sand which was impressive enough, but by the end of the trip we were seeing turf stripping over

65ha, which is equivalent to over 70% of the total dune area in the whole of Lancashire!

Despite the huge size difference between the Dutch reserves (thousands of hectares) and those on the Fylde coast in Lancashire which I manage (less than 90ha), there were plenty of similarities which I could draw upon, one of which was a lack of rabbits from disease. The Dutch have initiated grazing on a grand scale with the use of Highland cattle, Konik ponies, hardy sheep and goats and even European bison although I'm not sure the residents of Blackpool would appreciate the bison!



© John Houston

The trip was very informative in many ways but what I really took away was the attention to community liaison, the balance between recreation and conservation and the Dutch bravery to get stuck in with conservation on such a grand scale in order to encourage those natural biodiversity creating processes even if it means a reduction of species in the short-term.

Other snippets

- 920 vascular plant species have been recorded in the North Holland Dune Reserve.
- Over 6 million visitors per year come to the North Holland Dune Reserve, which is more than the Grand Canyon or Blackpool Pleasure Beach!
- The dunes are used as a water filtration system and as a result the dunes are often managed by water companies.
- The Dutch are currently tackling the problem of invasive *Prunus serotina*, a black cherry which has spread rapidly over recent times, possibly following changes in climate.



Den Hoorn, Texel © John Houston



Bride of Haarlem Remobilisation Project © John Houston

The dangers of digging in sand dunes: the need for risk assessment and safety warnings

Sand dune areas throughout the UK, and the rest of the world, are visited each year by hundreds of thousands of people, but few give thought to hidden dangers which may cause death or serious injury to the unwary. Awareness of dune safety issues is also highly variable amongst local authorities and other bodies responsible for the management for sand dune areas.

One serious danger is posed by the digging of deep holes, sand caves and tunnels. A fatal incident at Pembrey Country Park in Carmarthenshire, South Wales, in August 2008 has again drawn attention to the significant risk posed by such activities. In this incident a 16 year old boy died after being buried by up to 2 tonnes of sand. A 1.5 m long tunnel connecting two 3 m deep holes had been dug over a period of about 5 hours in an inter-dune depression behind the frontal dune ridge. Previously reported incidents have more commonly involved digging of tunnels and caves into near-vertical dune faces, often on eroding sections of coast.



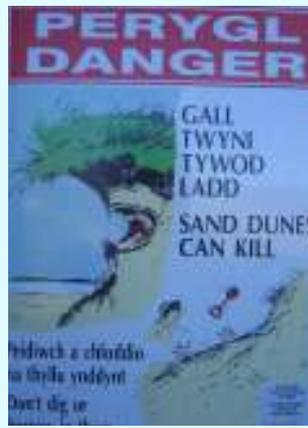
Inter-dune depression behind the frontal dunes at Pembrey, Carmarthenshire –site of a fatal sand tunnel collapse in August 2008 © Ken Pye

Although it is relatively easy to dig holes and tunnels in damp, well-compacted sand, such excavations are inherently unstable and are prone to sudden failure, either due to progressive drying or creep of the sand, or as a result of some external triggering factor. Holes which penetrate the main or a perched groundwater table, where the sand approaches saturation (e.g. in dune slacks and other inter-dune depressions), can also experience sudden failure.

A recent survey in the United States

suggested that sand-hole collapses are responsible for more deaths each year than shark attacks, yet public awareness remains poor. The same appears to be true in the UK where, despite a number of fatal and near-fatal incidents over the past 20 years, few beaches and dune areas have signs or other public information which specifically warns against the dangers of digging in dunes. An exception is Ynyslas in Ceredigion, where there was fatality involving another young boy in 1996.

Following the Pembrey incident, the Carmarthenshire Coroner called for greater public awareness and better



Warning sign at Ynyslas dunes, Ceredigion, site of a fatal incident in 1996 © Ken Pye

signage at all beach and dune sites in the county where there are large number of visitors, and Carmarthenshire County Council has promised action. It would help reduce the risk of similar incidents elsewhere if other local authorities and dune managers carried out an appraisal of the risks adequacy of warnings in their areas.

Anyone with relevant information regarding similar incidents and preventative measures is invited to contact Professor Kenneth Pye at Kenneth Pye Associates Ltd (k.pye@kpal.co.uk).

CoastAdapt: Trans-national climate change project

A three year international project led by Comhairle nan Eilean Siar (Western Isles Council) began work in January. The project is funded by the Northern Peripheries Programme of INTERREG, and its full title is: The Sea as Our Neighbour: Sustainable Adaptation to Climate Change in Coastal Communities and Habitats on Europe's Northern Periphery, CoastAdapt for short.

CoastAdapt will develop and implement a range of adaptation strategies and tools to enable people living in coastal communities to take action and adopt strategies that deal with sea-level rise and reduce the negative impacts and risks associated with climate change as well as take advantage of the potential benefits.

CoastAdapt is a partnership of local municipalities, environmental organisations and academic institutions involving local people and governments in a 'bottom-up' approach to the development of adaptive response and preparedness to the impacts of climate change. The project will also develop long-term recovery planning from climate-induced natural hazards.

CoastAdapt will produce data; information; tools such as handbooks, vulnerability assessments and adaptation implementation strategies; and climate change networks within the pilot study areas and beyond.

CoastAdapt will provide a sustainable single site, one-stop web-based service to enable these resources to be accessed by end-users not just in the pilot areas, but by coastal communities throughout the programme area and further afield.

For further information see <http://www.coastthebrides.co.uk/>. This site will be developed as the project progresses.

Special focus on Sea Buckthorn *Hippophaë rhamnoides*



© John Houston

In advance of our planned workshop on sea buckthorn (see events section) we have devoted a large part of the newsletter to the subject of Sea Buckthorn (*Hippophaë rhamnoides*) in the UK. Graham Weaver, Coastal Ecologist for Natural England introduces the subject and this is followed by a report of a study tour to the Netherlands by Claire Weaver, Designated Sites Advisor for Natural England in Lincolnshire. Further information is provided on the Netherlands by Rienk Slings, Simon Cooter outlines the management work at Saltfleetby-Theddlethorpe NNR, Duncan Priddle gives an update of work in East Lothian and we have a series of comments from network members. Thanks to all those who contributed.

Sea Buckthorn-Friend or Foe?

Graham Weaver, Coastal Ecologist, Natural England

Sea buckthorn has few friends in the environmental world, except for bird watchers and natural vitamin C supplement takers. You could even say that coastal conservationists were, for a long time, in denial of its native status. This is no longer an option. We know it is native on at least part of the east and south coasts of England: elsewhere it is likely to originate from planting. And sea buckthorn scrub has been identified by the EU (Habitats Directive 1992) as a “habitat type of community interest whose conservation requires the designation of Special Areas of Conservation”.

We know, though, that it has the capacity to expand dramatically and rapidly, and we know that it changes soil chemistry and suppresses grassland communities (many of which are of high conservation value on sand dunes). But are these generalities sufficient to base decisions on about its management within and outside its native range? I’m not sure they are.

For such a controversial plant, it is perhaps surprising that we do not have an accurate figure of how much of it we have at present, and hence we can say little about trends in

extent or in age structure.

Related to this we also do not have an up to date picture on current management of sea buckthorn around the country. Is anyone trying to eradicate it from their site, or is containment more the order of the day? And how well is the effectiveness of management interventions being monitored and experience shared? For example, I have only recently refound a report written in 1977 detailing the management that effectively eradicated sea buckthorn from Braunton Burrows in Devon.

Although the impact of sea buckthorn on grassland communities is straightforward, two related issues have been little investigated in the UK. Firstly we have little information on changes in soil chemistry post sea buckthorn clearance. In particular, how quickly does the soil return to a pre-scrub condition on different parts of the coast – or are some changes permanent? And secondly, a topic that relates to scrub more generally, European work might suggest that we have been underestimating the evapotranspiration effect of sea buckthorn scrub. This is of great significance at a time when dune wetlands are under so much pressure from falling water tables for other reasons.



The newsletter editor measuring Sea Buckthorn growth on the Birkdale Hills, Sefton Coast 1981 © Phil Smith

Since the ‘classic’ paper on sea buckthorn was published in 1962 in the *Journal of Ecology’s Biological Flora* series (*Hippophaë rhamnoides* by Pearson & Rogers, *Journal of Ecology* vol. 50, pp 501-513), there has been surprisingly little further detailed work on the species. What exactly influences its initial vigour and its later fading? What determines whether a more mixed scrub community succeeds it or whether it reverts to nitrophilous grassland? How long does viable seed survive in dune soils?

Some of these information gaps can be filled through the UK Dune & Shingle Network membership but others will require new money to fund survey and research. And, I suggest, we should not lose sight of the broader issue of whether any scrub or woodland has a place on dunes with grassland communities of high conservation value (i.e. most!), especially in the context of a move towards allowing natural processes a larger role in dune development in the future.

The prickly issue of 'Dunes with *Hippophaë rhamnoides*' (sea buckthorn) as a European interest feature in Lincolnshire

Claire Weaver, Designated Sites Advisor,
Natural England (Lincolnshire)

The Dutch looked at us quizzically as if to say 'why do you want to look at sea buckthorn? It doesn't pose a problem and it's not rare so why come all this way?' In October 2008 the only two people in Natural England with site-based responsibilities for 'dunes with *Hippophaë rhamnoides*' stood on the Zuid-Kennemerland dunes in North Holland west of Amsterdam and wondered why the Dutch needed to ask. Within half an hour we had a clearer idea. In recent history the British conservation manager has tended to see *Hippophaë rhamnoides* as a thorn in their side – it has expanded greatly since the 1950s from the scattered clumps reported from sites in its native range, it has been planted widely on other dunes as an aid to stabilisation and has spread aggressively there also. Most of the literature from the 1970s and 1980s is concerned with its removal or eradication and it earned itself a whole section in *The Scrub Management Handbook* (FACT/English Nature 2003) dedicated to effective control.

In this context it is perhaps no surprise that only one Special Area of Conservation (SAC) in Britain has it named as a feature of interest: Saltfleetby-Theddlethorpe Dunes and Gibraltar Point. This SAC, which consists of two Sites of Special Scientific Interest, is also designated for other dune habitats, notably 'fixed dunes with herbaceous vegetation' (grey dunes) which are between 50% and 80% covered in sea buckthorn scrub. In drawing up management strategies to redress the balance between dune grassland and scrub we realised that we did not know what the European habitat looked like – or indeed why the Europeans thought it worthy of conservation. Our study trip to the Netherlands had the explicit aim of gaining an understanding of its importance in a European context so as to inform our production of Conservation Objectives and management strategies.

So there we stood, in the middle of the Dutch dunes, as our hosts explained to us that sea buckthorn did not invade other dune habitats in any way that compromised



Salt spray pruned bushes of *Hippophaë* on the landward side of a frontal dune ridge, Noordhollands Duinreservaat

their conservation. We also established that 'dunes with *Hippophaë rhamnoides*' in Holland are precisely that – a dune habitat with some (mostly scattered) sea buckthorn. What we saw confirmed this but we also noted other differences: that sea buckthorn bushes there are predominantly low growing (knee or thigh-height), usually form isolated clumps rather than an extensive closed blanket and that the Dutch vegetation beneath the *Hippophaë* is not the nitrophilous, ruderal community described in our British National Vegetation Community (NVC). So what is controlling *Hippophaë* on the continent that does not do so in Britain?

There appear to be several limiting factors in Holland:

- Salt-spray 'pruning' on frontal dunes within 1km of the sea
- High rabbit grazing pressure (up until 1991)
- Nematode attack on roots
- Established dune soil profiles forming a physical barrier to seedling root establishment
- Leaching of calcareous sands creating more acid soils
- Low nutrient status dune 'soils'.

We were shown tall frontal dunes that only had sea buckthorn on the landward sides of the ridge.

Sea spray keeps the bushes in check with 7g/m² annual salt deposition and the salt-pruning effect we observed kills off *Hippophaë* growth points and shoots up to 1km from the sea. Certainly this is not a controlling factor on the Lincolnshire coast where the prevailing winds are offshore and sea buckthorn is suckering into the semi-fixed *Ammophila arenaria* (marram grass) communities 20m from the strandline.

The fixed dune grassland areas were a surprise in themselves – the classic Dutch sward is only about 1.5cm, is largely composed of mosses and lichens and maintained by very high rabbit pressure. Rabbit populations on the southern Dutch dunes crashed in 1991 when viral haemorrhagic disease (VHD) first occurred. Whilst the heavy grazing effect would seem to be an obvious control on seedlings and young suckering shoots, the Dutch dunes do not appear to have experienced the widespread coalescing of bushes into blankets that the Lincolnshire dunes saw after Myxomatosis was introduced in the late 1950s.



Grey dune grassland with scattered clumps of *Hippophaë* bushes and (foreground) heavy rabbit grazing

Two new (to me) factors were mentioned that Dutch colleagues cited as common limiting factors in the spread of sea buckthorn there. One was nematode attack on the roots of mature plants. The other was that “seedlings can only establish in mature dune soil profiles if their roots can follow marram grass roots to penetrate to underlying sands”. I am not aware that this is a controlling factor in Lincolnshire where sea buckthorn still appears to be spreading by seed into the remaining grey dune grassland.

In the older dunes the soils become leached of calcium and there we saw that the more acid conditions restrict both growth and seedling establishment. This certainly has the same effect in Britain but, unfortunately, the highly calcareous Saltfleetby-Gibraltar Point SAC sands appear not to show signs of leaching as yet.

The one situation where Dutch sea buckthorn resembled our tall, vigorous, closed canopy scrub was where small areas of the dunes had been ploughed for arable crops. Up to the 1950s villagers from near by fishing communities occasionally ploughed and planted small areas of flat dune and would have applied seaweed and possibly fish waste as fertiliser. Here the loose sand and increased nutrient status gives rise to more lush sea buckthorn growth with some of the tallest shrubs we saw during the visit. At one such location some expansion of *Hippophaë* bushes had occurred in the last 15 years since VHD reduced rabbit numbers and the clumps had coalesced to form a uniform knee-high sward over that period.



Sea buckthorn on former arable dune plain – bushes have merged to give a uniform, virtually closed structure

The Netherlands are probably experiencing as much, if not greater quantities, of air pollution related nutrient enrichment (something that we will be following up) which begs the question “are our dunes more nutrient rich than Holland or are there other limiting factors there that do not apply in Britain?” We plan to take soil samples from the two SSSIs for comparison with results from the Dutch sites we visited with particular attention to phosphate levels. We’re not sure what we can do about elevated nutrient levels, if such proves to be the case, but the character of our *Hippophaë* scrub is so different from that of the Netherlands that we really ought to get a better understanding – and with this being the only SAC for the habitat it looks like it is down to me to progress sea buckthorn conservation!

Additional information from the Netherlands

Rienk Slings, Provincial Water Company of North Holland

I accompanied Claire and her colleague in the Kennemerland dunes. The dunes we saw are relatively favourable from the Sea Buckthorn-perspective. Had we visited the Voorne dunes (in the SW Estuary region) our visitors would have felt much more ‘at home’, because of the lush growth of sea buckthorn. In the case of Voorne this is said to stem from a higher than usual (for Dutch dunes) amount of silt incorporated in the dune sand, possibly because of a rather recent history of coastal accretion.

Synthesizing Nitrogen by *Frankia* in the root nodules is an energy-intensive process: it takes lots of ATP (adenosine triphosphate). Therefore it takes phosphate to make sea-buckthorn grow. Marine sediments are often rich in P and silt may also enhance soil moisture status which aids the diffusion of P to the roots.

As to the limiting factors I would emphasize that in the Dutch calcareous dunes most sea buckthorn grows on soils that have been disturbed by man. ‘Virgin’ dune soils are often surprisingly hard to penetrate. Carole Ampe has published an article on this subject (see below). Natural sites for sea-buckthorn are the lee of (once mobile) dunes where sand was loosely deposited or other deposition areas where plants, mostly marram, caught sand and grew upward. In areas that experienced heavy sand-blowing and a (concurrent or subsequent) *Ammophila*-phase you’ll now find a ‘*Hippophaë*-landscape’, because sea buckthorn can penetrate the soil via the root channels of the former marram plants.

Another point is the occurrence of ‘regressive or retrograde succession’: stands of sea buckthorn suddenly die off and a (initially rough: Dune small-reed *Calamagrostis epijegos*) grassland is established. Through rabbit grazing this may even lead to ‘moss dunes’. Also transition to vegetation dominated by burnet rose *Rosa pimpinellifolia* is often mentioned.

As to ‘soil factors’ influencing the vitality of sea buckthorn the nematode *Tylenchorhynchus microphasmis* is the most common one and the nematode *Longidorus dunensis* is found only in degenerating stands of sea buckthorn. The fungus *Cylindrocarpon destructans* (promising name!) can also harm sea buckthorn scrub. The nematodes eat root hairs which makes it more difficult for the plant to get P. These facts were published in the thesis of Zoon in 1995 (see below). He was of the opinion that depletion of P is the ultimate factor in the degeneration of sea buckthorn scrub and that nematodes just finished the job. The question then is: what is the normal mechanism that regulates the availability of P during succession?

Ampe, C. & Langohr, R. 1993 Distribution and dynamics of shrub roots in recent coastal dune valley ecosystems of Belgium. *Geoderma* 56: 37-55

F.C. Zoon 1995. Biotic and abiotic soil factors in the succession of sea buckthorn, *Hippophae rhamnoides* L. in coastal sand dunes. Thesis. Wageningen

<http://library.wur.nl/wda/abstracts/ab1931.html>

Sea buckthorn management at Saltfleetby-Theddlethorpe Dunes NNR.

This will be the venue for the field meeting later this year (see events). Simon Cooter Senior Reserve Manager, Eastern Area National Nature Reserves for Natural England outlines the current work. This will be published later this year in Conservation Land Management.

Work started this year on a 7 year scrub management programme at Saltfleetby-Theddlethorpe Dunes National Nature Reserve. As the site is partly notified for its scrub habitat and dunes covered with sea buckthorn *Hippophaë rhamnoides* the aims of the programme are not to eradicate scrub but to maintain the dunes with:

Core area of permanent grassland:	50%
Core area of permanent scrub:	25%
Grassland/scrub mosaic:	25% (ranging from 33%-66% scrub cover)

The result is that scrub needs to be removed from 5% (18ha) of the dry dune area. This is being carried out by Creative Nature, a Lincolnshire based firm that has developed the machinery for this type of work through experience. Scrub is cleared using a 16 ton JCB excavator on long and wide tracks fitted with modified 6ft scrub rake which pulls the bushes out of the sand. Smaller scrub is cut with the same machine using a heavy duty cutter bar attached to the same machine. A hydraulic tiltrotator allows these heads to follow the contours of the dunes ensuring their profiles are left undamaged.

Areas of grassland are left untouched to encourage rapid establishment of dune grassland. Small areas of scrub and isolated bushes are retained and once the areas have recovered the plan is to fence and then extensively graze them with hardy sheep and cattle. The stocking density will be manipulated so that it allows scrub to regenerate but prevents it from dominating.



Scrub rake © Simon Cooter

Sea buckthorn management in East Lothian – an update

Duncan Priddle, Countryside Assistant, East Lothian Council provides an update on the ongoing sea buckthorn control programme in East Lothian. The winter 2008-09 programme of targeted control along the coast has included work at Longniddry Bents, Aberlady Bay Local Nature Reserve, Gullane Bents, Yellowcraig and John Muir Country Park.

At all sites a 360 degree tracked grabber was employed to uproot plants. Experience from the previous season led us to prototype different types of grabber heads - depending upon the age / vigour of the plant to be removed. A stone bucket was also used at one location to measure its effectiveness at clearing the root system along with the plants. Time will tell what particular bucket / machine head has worked best, but initial results (above the ground at least) are encouraging.

Initially the uprooted plants were left in piles to be burnt (in the following autumn) once they had fully dried out. Due



Stone bucket © Duncan Priddle

to the sheer volume of material involved, however, and its potential to act as a sand trap, it was decided at Yellowcraig and John Muir Country Park to burn the material as soon as it was piled up. This has led to a much more satisfactory result on the ground - the appearance of a job completed.

A degree of vigorous regeneration from underground suckers is only expected and it is anticipated that areas cleared

will be subsequently treated with herbicides. Advice from neighbouring golf course managers suggests that rather



Grabber head © Duncan Priddle

than treating the re-growth in year 1, control is much more effective if applied to plants during year 2. The selective herbicides Nu-Shot and Timbrel have been recommended as effective, and it is proposed that both will be used in different areas to measure the relative success of one against the other. In addition to chemical control, individual plants / small concentrations of regenerating sea buckthorn, will be hand-dug by Countryside Staff.

It is hoped that resources will continue to be made available to continue this regional approach to the control of sea buckthorn in East Lothian. Resources this year, however, were substantially boosted by a grant from Scottish Natural Heritage, enabling works totalling some £6,200 over 14 days to be completed.



Work in East Lothian © Duncan Priddle

Sea buckthorn – around the network

Some e-mail comments from network members on the subject are summarised below. We will develop a page on the website to continue this sharing of views and experience.

Kev Wilson, Site Manager, Gibraltar Point National Nature Reserve. "At Gibraltar Point, we are committed to a programme of dune grassland recovery through scrub removal and grazing. It is very timely to open up more debate on *Hippophaë* control - we will be due to revise the 5 year management plan shortly."

David Carrington, Reserve Manager, Kenfig National Nature Reserve. "We attempt to eradicate sea buckthorn at Kenfig NNR using a local contractor to spray foliage in late summer with Roundup Pro-biactive with a wetting agent which helps the herbicide penetrate the leaves of sea buckthorn. He adds red dye to help show which bushes have been done. The kill rate is very high, over 95%." See the reserve website on <http://www.meadowgarden.co.uk/hometable.htm>

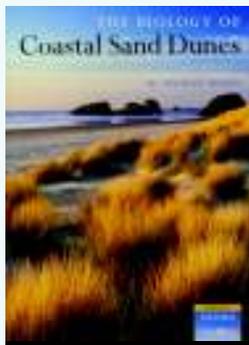
Phil Smith, Naturalist, Sefton Coast. "The problems are well-known but it is perhaps necessary to balance this with occasional wildlife benefit. As far as the Sefton Coast is concerned, one such would be its role as a food source (berries) for wintering Blackcaps. White *et al.* (2008) "Birds of Lancashire & North Merseyside" refer to a wintering population of 40 or more in 2000 and 2003."

Andy Gibson, Outer Humber Officer, Yorkshire Wildlife Trust. "With the arrival of brown tail moths on the Spurn NNR in East Yorkshire we have had very negative public response to the conservation of habitats which support this moth larva due to the irritating rash caused by the shed hairs of the caterpillars."

Tony Lloyd, Rye Golf Club, Camber Sands, East Sussex. "10 years ago we had to start controlling this species that our Head Greenkeeper remembers being planted from Norfolk to stabilise the yellow dunes in the 1950s. This led to vast tracts of both grey and yellow dunes being covered. This excellent habitat for rabbits resulted in huge numbers and consequent damage to the course. Control was carried out by brush-cutting, stump treatment (with the herbicide Timbrel) and follow-up treatment. Leaf treatment in autumn proved to be most effective. The area has regenerated with a more diverse structure and rabbits are fenced out of some areas and occasionally shot in others."

Reports and Publications

The Biology of Coastal Sand Dunes



Anwar Maun
Oxford University Press
320 pages
Paperback edition £37.50
Hardback edition £75.00
ISBN-13 9780198570363

The book provides an introduction to the formation, dynamics, maintenance and perpetuation of coastal sand dune systems. It describes the interactions between living organisms and the physical processes of geomorphology, with particular emphasis on conservation and management issues due to this habitat's increasingly endangered status. The book is aimed at senior undergraduate and graduate students as well as professional ecologists and conservation biologists requiring a concise but authoritative overview of the topic.

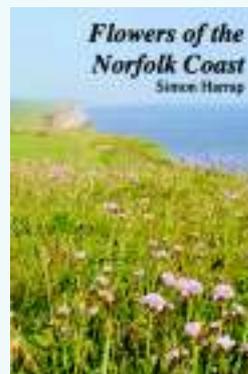
Geological Conservation Review reports on-line

The Joint Nature Conservation Committee (JNCC) is making the Geological Conservation Review reports available on-line. The 'Coastal Geomorphology of Great Britain' is available. To search for a GCR report on the database go to www.jncc.gov.uk/page-2949 and follow links under 'Navigating the GCR Database'. Information is also available on www.theGCR.org.uk.

Blakeney Point and Scolt Head Island, The National Trust, 1989

The National Trust is offering network members a free copy of this book which contains information on physical geography, botany and zoology of these classic wildlife sites. For a copy please send a tough self-addressed envelope (to hold a soft-back booklet 1 cm thick and A5 in size) and 90p in stamps. Send this to; National Trust Office, Friary Farm, Blakeney, Holt, Norfolk, NR25 7NW

Flowers of the Norfolk Coast



Published 2008, 64 pages in colour
We would recommend this new pocket-sized guide by Simon Harrap which has excellent photographs of 77 of the most characteristic and charismatic wildflowers of the coast of Norfolk. The guide describes the variety of coastal habitats in Norfolk, including salt marshes, dunes, beaches and shingle banks and each species is described, with information on habitat and distribution as well as key identification features. Although it covers the Norfolk coast the notes on distribution cover the British coast.

More information is available on <http://www.norfolknature.co.uk/index.html>

Price £7.99 (including postage & packing). Send your name and address and a cheque (payable to Simon Harrap) to: 1 Norwich Road, Edgefield, Norfolk, NR24 2RP. ISBN 978-0-9558579-0-4

International News

Natura 2000 and coastal habitat: from ecological restoration to management

Organised by the regional Park Migliarino San Rossore Massaciuccoli on 12 December 2008 in San Rossore, Pisa.



San Rossore dunes © John Houston

The conference was attended by about 100 delegates including the managers of LIFE projects on coastal dunes in Italy. Professor Paolo Emilio Tomeri of the University of Pisa and co-author of the book 'The coastal dunes of Italy: nature and landscape' attended and spoke with passion about the loss of the dune systems of Italy, the need to safeguard what remains and his desire to see some strict nature reserves established and all non-native pinewoods removed.

The meeting was in three sessions. The first session was on general issues about coastal dune habitats, including common threats, the Habitats Directive, the value of the LIFE programme, the problems of invasive species and good practice in restoration of coastal habitats. The second session reviewed the experience of LIFE projects in Italy and the final session was a proposal for the establishment of an Italian dune network to continue to share the experiences of dune management and to involve a range of sectors.

The conference endorsed the written proposal to establish such a network with the lead being taken by the Regional Park Migliarino San Rossore Massaciuccoli. The follow-up information from the conference confirms the intention of the delegates to develop an Italian dune network. The UK Sand Dune and Shingle Network will continue to develop contacts with our Italian colleagues.

Contact for further information conservazione@sanrossore.toscana.it & www.parcosanrossore.org/index.php
DUNETOSCA project



Problems with invasive Yucca © John Houston

Dutch report on coastal and dune birds

There are few examples in Europe of action plans which focus on the conservation of characteristic species of the dunes. However, concerns about dune and coastal birds in the Netherlands have led to the production of an 'Action Plan' by Vogelbescherming Nederland.

Few areas of the coast now remain undisturbed by beach-users, walkers and cyclists. The action plan is intended to provide land managers, policy makers and the general public with ideas for opportunities to increase natural processes in the Dutch coastal zone.

The report referenced here is a 'background report' which gives the scientific basis for the action plan and it highlights the main species at risk from human activities. The report covers typical species, typical habitats, ecological processes within these habitats, current bottlenecks and their causes and current conservation measures.

Twenty-three species are highlighted including terns, gulls, waders, ducks and species of the dunes including Hen Harrier, Short-eared Owl, Nightingale, Whinchat, Northern Wheatear and Red-backed Shrike.

http://www.vogelbescherming.nl/documents/pdf-files/Duin%20kust_BasisrapportA_2008.pdf

Results of LIFE projects

The European Commission supports nature conservation projects in the European Union through the LIFE fund. We have taken a special interest in these projects over the years and have attended several end-of-project conferences. All projects must now prepare a Layman's Report of their work. These reports can be found on the LIFE data base at <http://ec.europa.eu/environment/life/project/Projects/index.cfm> Links to these are being added to our website. We would recommend:

Protection and management of coastal habitats in Latvia

The layman's report of the LIFE-Nature project 'Protection and Management of Coastal Habitats in Latvia' LIFE02 NAT/LV/008498 published by the Faculty of Biology at the University of Latvia gives a good introduction to conservation issues on the Latvian coast. All the information including leaflets, reports and maps is available on the website <http://piekraste.daba.lv/EN/>.

The project has completed habitat mapping of the coast, the development of nature conservation plans, the restoration and management of coastal meadows, the control of invasive species, including *Rosa rugosa* and *Hippophae rhamnoides* and the development of site infrastructure to control recreation pressure.

Reports are also available from the projects LIFE02 NAT/DK/008584: Restoration of Dune Habitats along the Danish West Coast, LIFE02 NAT/B/008591: FEYDRA: Fossil Estuary of the Yzer Dunes Restoration Action and LIFE04 NAT/ES/000031: Dune regeneration on Laida beach (Urdaibai)

News from Sweden

A finalised manual (in Swedish) for baseline surveying of open sand dune habitats within Natura 2000 sites in Sweden can be downloaded from the link <http://swenviro.naturvardsverket.se/dokument/epi/basinventering/basdok/pdf/dynmanua.pdf> A manual for monitoring

coastal habitats (also in Swedish) is in preparation and also a book on Swedish sand dunes.

Ola Bengtsson and colleagues are producing species action plans and monitoring programmes for the endangered coastal species Sea Holly *Eryngium maritimum*, Oysterplant *Mertensia maritima* and Ray's knotgrass *Polygonum oxyspermum*. The plans will have an English summary. If anyone is interested in sharing experience of the conservation of these species please contact ola.bengtsson@pro-natura.net

Case studies of the Belgian Coast

At the 6th European Conference on Ecological Restoration held in Gent, Belgium from 8-12 September 2008 an excursion was held on the Belgian coast. The case study documents give a useful introduction to the coast (with maps and aerial photographs) and include specific information on the Westhoek dunes, Ijzermending and the Zwin. The information can be found at the following web-addresses: http://www.ser2008.be/Info_tour_A.pdf
<https://www.ser.org/europe/pdf/Ijzermending.pdf>
<https://www.ser.org/europe/pdf/Zwin.pdf>
<https://www.ser.org/europe/pdf/Coastal.dunes.Westhoek.pdf>

Published research

Rita Ketner-Oostra (2006) Lichen-rich coastal and inland sand dunes (Corynephorion) in the Netherlands: vegetation dynamics and nature management. PhD Thesis, Wageningen University <http://library.wur.nl/wda/dissertations/dis4057.pdf>

This PhD is divided into chapters which address the decline of lichen diversity in calcium-poor coastal dune vegetation, vegetation succession and lichen diversity on dry coastal dunes, restoration of lichen diversity on coastal dunes after wildfire and relevant studies on the inland drift-sands of the Netherlands.

The study describes long term changes in the lichen-rich dry grassland over a 40 year period. The study supports the value of reactivating blowouts and encouraging sand drift as a means of maintaining the lichen-rich habitats.

Plassmann, K., Edwards-Jones, G. and Jones, M.L.M. 2009. The effects of low levels of nitrogen deposition and grazing on dune grassland. *Science of the Total Environment* 407. 1391-1404.

The study was undertaken at Newborough Warren using realistic loads of additional Nitrogen and Phosphorus to study the effects on soils and vegetation over a two year period. The impacts of grazing management and its potential to mitigate the effects were examined. The conclusion was that an increase in above-ground biomass was detected even with quite low levels of input and the critical load for dune grasslands is probably below the 20 kg N ha⁻¹ year⁻¹ previously suggested. Grazing was shown to be important but grazing alone might not mitigate the effects of N fertilisation. The experiment is ongoing.

Remke, E., Brouwer, E., Kooijman, A., Blindow, I., Esselink, H. and Roelofs, J.G.M. 2009. Even low to medium nitrogen deposition impacts vegetation of dry, coastal dunes around the Baltic. *Environmental Pollution* 157: 792-800

Coastal dunes in the Baltic Sea receive lower amounts of atmospheric nitrogen deposition than North Sea coasts. In 19 sites studied the atmospheric wet nitrogen deposition was 3-8 kg N ha⁻¹ yr⁻¹. The nitrogen content of *Cladonia portentosa* appeared to be a suitable bio-monitor of these low to medium deposition levels. With increasing nitrogen load there was a shift from lichen-rich short grass vegetation towards species-poor vegetation dominated by *Carex arenaria*. Plant species richness per field site, however, did not decrease directly with low to medium N loads but with change in vegetation composition. Critical loads for acidic, dry coastal dunes might be lower than previously thought, in the range of 4-6 kg N ha⁻¹ yr⁻¹ wet deposition.

Other recent papers of interest;

Plater, A.J., Stupples, P. and Roberts, H.M. 2009. Evidence of episodic coastal change during the late Holocene: the Dungeness barrier complex, SE England. *Geomorphology* 104, 47-58.

Yu, S., Bell, D., Sternberg, M. and Kutiel, P. 2008. The effect of microhabitats on vegetation and its relationships with seedlings and soil bank in a Mediterranean coastal sand dune community. *Journal of Arid Environments*. 72. 2040-2053.

Anthony, E.J., Vanhee, S. and Ruz, M-H. 2007. An assessment of the impact of experimental brushwood fences on foredune sand accumulation based on digital elevation models. *Ecological Engineering* 31. 41-46

Clemmensen, L.B., Bjørnsen, M., Murray, A. and Pedersen, K. 2007. Formation of aeolian dunes on Anholt, Denmark since AD 1560: A record of deforestation and increased storminess. *Sedimentary Geology* 199. 171-187.

Milligan, J., O'Riordan, T., Nicholson-Cole, S.A. and Watkinson, A.R. 2009. Nature conservation for future sustainable shorelines: Lessons from seeking to involve the public. *Land Use Policy* 26. 203-213.

Aagaard, T., Orford, J. and Murray, A.S. 2007. Environmental controls on coastal dune formation: Skallingen Spit, Denmark. *Geomorphology* 83, 29-47.

These three papers from network member Julien Pétilion may also be of interest to invertebrate specialists.

Pétilion, J. & Garbutt, A. 2008. Success of managed realignment for the restoration of salt-marsh biodiversity: preliminary results on ground-active spiders. *Journal of Arachnology*, 36: 388-393.

Pétilion J., Georges, A., Canard, A., Lefeuvre, J.-C., Bakker, J.P. & Ysnel, F. 2008. Influence of abiotic factors on spider and ground beetles communities in different salt-marsh systems. *Basic and Applied Ecology*, 9: 743-751.

Pétilion, J., Georges, A., Canard, A. & Ysnel, F. 2007. Impact of cutting and sheep-grazing on ground-active spiders and ground beetles in some intertidal salt marshes (Western France). *Animal Biodiversity and Conservation*, 30: 201-209

Coastal Wiki

Pat Doody continues to add material to the Coastal Wiki including the country reports from the revised Sand Dune Inventory of Europe. The inventory was presented on CD at the International Sand Dune Conference held in 2008 in Liverpool, UK. Copies can be obtained at a small cost from the Coastal & Marine Union (<http://www.eucc.nl/>). To find the reports and other information go to http://www.encora.eu/coastalwiki/European_Sand_Dune_Distribution.

The following pages also have information:

http://www.encora.eu/coastalwiki/Sand_Dunes_in_Europe

http://www.encora.eu/coastalwiki/Sand_dune_types_-_Europe

So far country reports have been added for Norway, Iceland, Sweden, Latvia, Lithuania, Ireland, Great Britain, Belgium and Cyprus.



Foredune growth on Latvian Dunes © John Houston

These articles can now be edited. Please have a look and consider adding additional content on your own contributions or adding other articles. All you need to do is register. See the main page of the Coastal Wiki at http://www.encora.eu/coastalwiki/Main_Page.

Forthcoming Events

Sea Buckthorn workshop and field meeting

17-18 September 2009, Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC.

A one day workshop and field excursion at Saltfleetby-Theddlethorpe National Nature Reserve, Lincolnshire and optional second day excursion to Gibraltar Point NNR.

The aim of the event is to follow up some of the issues raised in this newsletter. The output of the meeting will be a report summarising the current position regarding the management of sea buckthorn in the British Isles and this may feed into a broader workshop on dune scrub which we may hold next year.

Places will be limited to 25 due to capacity on site and at the Wash Study Centre, Gibraltar Point. We hope to attract a wide audience drawn from throughout the UK and we also invite colleagues from north-west Europe.



Sea Buckthorn clearance © Simon Cooter

There will be a small charge for the event. To register your interest and for further information on costs please contact John Houston houstoj@hope.ac.uk

Coastal vegetated shingle –proposed regional meeting

The proposal, in our last newsletter, to hold a meeting in south west England is on hold for now. Instead, in discussion with Natural England, we have suggested that we should follow up the shingle meeting held in North Norfolk in 2008 with a review of the delivery of the vegetated shingle Habitat Action Plan in south east England along with more discussions on the restoration of coastal shingle. More information will be given in the July Newsletter. The report of the 2008 shingle meeting will be completed and circulated by May 2009.



Washover of gravel bank, Cley-Salthouse © John Houston

This newsletter has been compiled by John Houston. Contact houstoj@hope.ac.uk
Cover Photo: Branton Burrows © John Breeds MOD

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