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strongest interaction with the environment. As part of the work our network does we are eager to make contact with golf course managers across the country.

UK Sand Dune and Shingle Network

The UK Sand Dune and Shingle Network is concerned with sharing ideas, knowledge and best practice between people who manage Sand Dunes for nature conservation. It has been recognised for some time what a significant role Links Golf Courses can play in meeting the targets for biodiversity conservation in the UK. Among all the major land-based sports, golf has probably the



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There are many examples of excellent golf course management on sand dunes, however there are instances where course management may not have considered the environmental value of this unique habitat. There is actually significant, but largely unrealised, common ground between the aims of links golf and dune conservation in terms of desired landscape and habitat qualities. It is the network's aim to bring together the knowledge golf experts possess with our experience of sand dune management to improve practice.



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What can the network do for you?

We publish a newsletter three times a year along with other books, papers and occasional publications on specific topics for our members. We run training events and conferences, often in conjunction with Natural England, as well as study tours to learn from good management examples in the UK and Europe.

Our network is free to join and offers access to relevant information through our publications. The website is currently being updated and we hope to add much more on Links Golf Courses in the coming months. The Network has 150 full members and the newsletters are circulated to over 300 people worldwide. Membership allows information on specific topics including invitations to events, to be targeted according to members' field of interest.

Email: dunes@hope.ac.uk

Website: www.hope.ac.uk/coast

The UK Sand Dune and Shingle Network operates from the Geography Department of Liverpool Hope University and is funded by the Higher Education Innovation Fund (HEIF). The most recent funding was allocated on the basis of a "Making Links" project which aims to promote the sustainable use and shared experience of best practices in coastal dune management amongst the distinctive community of the dune golf courses in England, Wales and Scotland.





UK Sand Dune and Shingle Network

Seventh Newsletter, November 2009

NATURAL
ENGLAND

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Introduction

Welcome to the seventh newsletter of the UK Sand Dune and Shingle Network. In this newsletter we have a focus on the problems of invasive species on sand dune and shingle habitats as well as our usual round-up of coastal news.

We had a very useful meeting in Liverpool on 15th October with the Joint Nature Conservation Committee (JNCC) and the representatives of the national nature conservation bodies for England, Wales, Scotland and Northern Ireland at which they confirmed their support for the network.

We will develop a number of actions arising from this meeting over the next six months including;

- Adding more information to the website
- Developing some thematic groups
- Identifying some leaders for topics
- Broadening the membership

We were very pleased to receive additional funding from the Higher Education Funding Council for England to appoint a part-time network assistant to help develop some of this work and improve our services to network members.



We would like to welcome Charlotte Durkin to the team. Charlotte has a First Class Honours Degree from the University of Liverpool and has spent a year working with Atkins in their Hydraulic Modelling Team based in Bristol.

We are giving some consideration to the 'UK' in the network title. Most of the support for the network to date has come from English sources of funding, but, ideally we would like to see ourselves as part of a wider British Isles and European network. We would like to develop the opportunity to include Ireland within the core of the network and have been encouraged to do so by the national coastal specialist.

We have over 150 registered members and we sent the newsletter out to a further 150 contacts. Whilst we hope that this will grow we also ask key contacts within the network to disseminate the newsletter to others.

Paul Rooney, Liverpool Hope University

Links Golf: the challenge for sustainability

By Paul Rooney

Golf, now a worldwide multi-billion pound sport and leisure activity, has its more humble origins on sand dune coasts. The most well-known name in golf is the Royal and Ancient Golf Club of St Andrews, on the east coast of Scotland, founded in 1754 and it is here that golf's governing body and organiser of the Open Championship, the R&A, is based.

The R&A, in promoting golf as a global industry, is also acutely aware of the need for sound environmental management and wise use of natural resources. These values are also important in the UK to ensure that golf courses developed on coastal sand dunes are genuinely sustainable, particularly in the face of climate change.



Open Championship 2008 © John Houston

Sustainable golf course management is defined by the R&A as 'optimising the playing quality of the golf course in harmony with the conservation of its natural environment under economically sound and socially responsible management.' See <http://www.randa.org/coursemanagement/sustainability> for more information.

The Scottish Golf Environment Group (SGEG) (<http://www.sgeg.org.uk/index.htm>) works with the managers of Scotland's 600 golf courses to promote sustainable management.

SGEG has led on a study of climate change and golf courses which can be found at <http://www.sgeg.org.uk/documents/ClimateChangeandScottishGolfCourses.pdf> Although the report focuses on the issues of fairway management it does look at case studies of management of natural rough on coastal courses and the need to plan for coastal change.

The international Golf Environment Organisation (GEO) <http://www.golfenvironment.org/> promotes best environmental practice in golf course design and management around the world.

The GEO is a strong advocate of the need for sustainable development. It is not slow to criticise development which does not respect the landscape, environment or culture of the area. The CEO, Jonathan Smith, says that "the development of resource intensive, environmentally degrading new golf facilities, tainted by social inequity must cease" and challenges the golf industry to spend less time on lobbying and defending golf and more time on actually ensuring that it is sustainable. <http://www.golfenvironment.org/about/news/view/what-does-golf-want-to-stand-for>

Golf and sand dunes

Coastal sand dunes provide the special playing surface known worldwide as links golf. Links courses are seen as the ultimate challenge for the golfer and are often set in spectacular coastal scenery.

In the British Isles golf and nature on coastal sand dunes should be able to form a sustainable partnership. On some of the wilder sites the playing surfaces of tees, fairways and greens lie within the natural landform of dunes and slacks and, with low levels of fertiliser use, limited use of water, natural bunkers, and perhaps even grazing by livestock the golf course will have little negative impact on landscape or biodiversity.

However, all too often, golf course developments try to 'tame' or 'improve' nature through using special grass mixes for the playing areas, adding fertiliser to 'green' the land and using large quantities of water for irrigation. Golf courses, too, are often set in dune landscapes where coastal change is part of the very fabric of the place yet attempts are made to fix the coast line, to erect sea defences and to stop all sand movement. Such practices are unsustainable and golf's managing bodies are looking for ways to improve all aspects of environmental management on golf courses from water use to nature conservation.

We are interested in finding solutions to problems concerning nature conservation, dune management and coastal change on golf courses and a focus of our current work is on these issues through what we call the 'Making Links' project.

Two very different golf courses

Two Scottish golf courses have been in the international headlines this year for very different reasons: Donald Trump's development at Menie Links and the opening of the Machrihanish Golf Course on the Mull of Kintyre.

The decision by the Scottish Government to give outline planning permission to the development of the Menie Links by Trump International Golf Links Scotland has created a storm of opposition and pushing ahead with the development has harmed the reputation of golf in some quarters. The Golf Environment Organisation was quick to condemn the decision as "an extremely negative reflection of society's pursuit of economic growth at the expense of environmental quality and natural spaces". Jonathan Smith set out the formal position of GEO:

"This is not a sustainable development. The irreversible loss of internationally important habitats and uniquely adapted species of plant and animal is a high and un-necessary price to pay for this form of poorly substantiated economic development. Society cannot continue to destroy ecosystems if it is to halt the decline of biodiversity and retain any wild areas."

GEO added that the planning decision "constitutes a complete failure to protect one of the last few remaining wild sand dunes in north-western Europe". See <http://www.golfenvironment.org/about/news/view/trump.unsustainable>

The damning remarks from within the golf industry contrast with the praise that has been given to the sensitive development of the Machrihanish Dunes golf course in the Mull of Kintyre, on the west coast of Scotland. Andrew Thin, chairman of Scottish Natural Heritage described the 18-hole golf course, which opened on 21st July 2009, as "one of the world's most environmentally friendly golf courses" (reported in *The Scotsman* newspaper on 22nd July 2009).

At Machrihanish the golf course developers worked closely with ecologists to ensure that the special landscape and wildlife of the Site of Special Scientific Interest was respected and conserved. In the same *Scotsman* article Andrew Campbell, Scottish Natural Heritage's manager for Argyll and Bute said that "the spirit of co-operation and collaboration has made it a delightful site. We have no conflict at all on this. We have got a SSSI being managed in an almost perfect way."

The development has been sensitive to the landform of the dunes. The site is a SSSI and several parts of the site were off-limits for development. Any disturbance to the soil was only permitted for greens and tees with the fairways created only by mowing the existing vegetation. Retaining the existing landform means that there are blind shots on quite a number of holes and there is a lot of walking between holes but this is a good example of compromise with golf working with the constraints of nature and not against them. Whilst the rough areas of the course cannot be mown sheep will be introduced to maintain the vegetation.

The Making Links project

Over the next 12 months we will focus on some of the issues of sustainability facing links golf courses and will try to bridge some of the knowledge gaps between science and practice. Our involvement is welcomed by the Golf Environment Organisation where I am a trustee and member of the Advisory Council.

The particular issues which we will be addressing include:

- Good and bad practice in relation to responses to coastal change through a number of case studies
- Innovative approaches to the management of golf courses to support dune habitats and species
- The debate on fertiliser use: how much is necessary on links courses?
- The need for water management in relation to natural wet slacks
- The over-riding issue of sustaining dune dynamics

We plan to hold a symposium in 2010 with representatives from a range of stakeholders and also to prepare management advice for use by Conservation Advisors and others in responding to requests from golf courses for management works which may impact on protected sites.

We will be using our database to contact members who have an interest in the subject and we will also be speaking to a number of golf course managers and advisors to get information for case studies.

Our position is to support good practice in the management of links golf courses whilst being opposed to developments which do not respect the landscape, nature or culture of the region. We feel that this position supports that of the Golf Environment Organisation and we look forward to a productive collaboration.

For more information on this project please contact Paul Rooney at rooney@hope.ac.uk

Report of the UK Sea Buckthorn Workshop

By Graham Weaver, Coastal Ecologist,
Natural England

A productive and enjoyable two-day workshop was held in September 2009 on the Lincolnshire coast. Twenty five participants from all parts of the UK contributed, with an international flavour given by Sam Provoost from Belgium. It provided the first opportunity for many years for advisers, site managers and contractors to get together to share and compare their experiences of managing Sea Buckthorn scrub. Case studies were presented for Merthyr Mawr in Wales, East Lothian in Scotland, Saltfleetby-Theddlethorpe Dunes in England and Murlough Dunes in Northern Ireland. A recurring theme of the presentations and the networking was that "more work is required", especially in research and monitoring.



Participants at the Sea Buckthorn workshop

The workshop highlighted the large amount of effort that has gone into the reduction and containment of this shrub, that there is some consensus on effective techniques of bush removal, and that concerted programmes of follow-up management are required but that frequently these programmes suffered from changing organisational priorities when the eye was taken off the Sea Buckthorn seed, shoot or runner.

It became apparent that we need clearer objectives for scrub clearance and more information on effective follow-up management techniques. An important discussion point was whether dune grassland could develop from cleared sites without removal or burying of the upper soil profile. This highlighted how little soil chemistry data we have for sites under scrub and their change once the shrubs are removed. Another question discussed, mostly on the field visits to Saltfleetby-Theddlethorpe Dunes NNR and Gibraltar Point NNR, was whether it is possible to contain Sea Buckthorn scrub by grazing alone, or whether grazing needs to be complemented by periodic cutting or spraying.

Another theme to come out, emphasised by Sam's presentation on the situation in Belgium, was the 'youngness' of the scrub communities on UK dunes. A

consequence is the somewhat unpredictable course that these communities could take if unmanaged. It is therefore difficult (or impossible) currently to identify which scrub stands will revert to grassland and which will relentlessly develop into woodland.



Pioneer Sea Buckthorn scrub in foredune communities at Saltfleetby-Theddlethorpe NNR

Action points from the meeting to be developed by Natural England:

Current status and management of sea buckthorn

To repeat a survey of site managers' attitudes and actions on Sea Buckthorn, and the current estimated extent on each site. This would be compared with information collected in the 1970s and 1980s being collated by Paul Rooney at Liverpool Hope University.

Developing guidelines for management, post-clearance of Sea Buckthorn scrub

To gather information from as many sites as possible on post-clearance management and the vegetation response, in order to develop guidelines for dune sites in different regions and with different soil pHs.

Future monitoring requirements

To survey soil chemistry under a range of dune scrub communities (and ages), and establish soil monitoring plots on sites where scrub has been removed to chart changes over time.

Setting a nationally agreed strategy for the management of Sea Buckthorn

To discuss with the Country Agencies the need for a national strategy. A 'national strategy' would identify individual sites by, initially, three categories: eradication, containment, and 'dynamic management'. Within each country this would need to be a collaborative process between the Country Agency and site managers. The strategy would help to inform resource requirements and, with luck, encourage more consistent long-term management.

The proceedings of the workshop will be prepared and published through the Sand Dune Network by the end of March 2010.

Coastal Vegetated Shingle in England

Development of a Coastal Vegetated Shingle Inventory for England (NECR015)

Coastal Vegetated Shingle is an extremely rare habitat in England and Europe; and is one of the UK Biodiversity Action Plan (BAP) Priority Habitats. The first national digital inventory for coastal vegetated shingle sites in England has now been produced. This shows the extent of coastal vegetated shingle in England and is based on the last national survey of this habitat, which took place between 1988 and 1991. Significantly, it has been found that there is less coastal vegetated coastal shingle in England than previously thought. Natural England will use the findings to promote actions to achieve the UK BAP targets for this habitat and to improve the condition of the vegetated shingle feature within protected sites. <http://naturalengland.etraderstores.com/NaturalEnglandShop/NECR015>

Evidence base for the extent and quality of coastal vegetated shingle HAP

The work on the inventory leads into the current Defra project on developing an evidence base of extent and quality of shingle habitats in England reported in the last newsletter. The project, awarded to the GeoData Institute (University of Southampton), Roland Randall and Jonathan Cox, effectively updates the earlier inventory that was generated from surveys during the 1990s by Sneddon and Randall (1993) and subsequently updated in 1998 (Doody et. al.). In addition, the project has an active steering group, made up of representatives from Defra, Natural England, Joint Nature Conservancy Committee, National Trust, Environment Agency, Countryside Council for Wales and Scottish Natural Heritage.



Rye Harbour Nature Reserve © Barry Yates

The aims of the current project are to create a 2008 Inventory layer based on a collation from existing surveys post-2000. GIS layers, where available, will be assessed for suitability for inclusion into the new inventory layer. In addition, a series of field validation surveys have been undertaken at selected sites in order to investigate the validity of mapped boundaries and the relationship to other inventory boundaries, habitat quality (from species records), site-specific issues and management regimes; as well as to provide guidance that will inform future surveys of these habitats.

If you have or are aware of any shingle habitat survey datasets that might contribute to this project, we would be very glad to discuss these with you further. The project is due to report in March 2010 when an updated GIS layer of the coastal vegetated shingle inventory will be available. For further details about the project please contact the project manager: Andy Murdock, GeoData Institute, University of Southampton apm@geodata.soton.ac.uk Tel. 023 80592719

Coastal Access in England; its coming your way!

The Marine and Coastal Access Bill received Royal Assent on 12 November 2009. The coastal access provisions will put in place powers to establish a continuous foot route around the English coast, within a corridor of variable width. It is expected to take about 10 years to complete this route.

In line with this, Natural England has been developing guidance, the Coastal Access Scheme, on how these powers should be applied. It describes how the route should be aligned and how much 'spreading room' should be included. And it includes a chapter on the sensitivities of each coastal habitat and the preferred management options to minimise/eliminate damage and disturbance.

Natural England is now consulting publicly on the Scheme it proposes to use for implementing improved coastal access under the Marine and Coastal Access Act 2009. This can be accessed through the Consultation Pages on the website <http://www.naturalengland.org.uk/ourwork/position/consultations/default.aspx>

Views can be submitted on-line and must be submitted by 6 p.m. on 5 February 2010.

Due to the processes of local consultation and plan development it is likely to be two years before the first substantial schemes begin to be delivered on the ground. This should give us time to better draw together the wealth of experience, held by members of the network, of effective (and creative) management of informal recreation on dune and shingle sites.

In addition, Natural England has recently published two comprehensive reviews of the research literature on the impacts of access on the full range of the England's habitats and species groups (one up to 2001, the other post-2001). They can be viewed or downloaded at <http://naturalengland.etraderstores.com/NaturalEnglandShop/NECR012> and <http://naturalengland.etraderstores.com/NaturalEnglandShop/NECR013>

For general information see <http://www.naturalengland.org.uk/ourwork/enjoying/places/coastalaccess/default.aspx>

Focus on Alien Species

By Sally Edmondson

The invasive, non-native species questionnaire, sent to network members in June of this year, elicited responses from 39 sites in England, Scotland and Wales; 30 dune sites, 7 shingle, and 2 with significant shingle and sand. All responses were interesting and informative, showing the willingness of network members and others to contribute.

Details of the responses varied between sites, depending on the expertise, interests and experience of the respondents. The design of the questionnaire however, allowed the significant problem species to be flagged up on all sites, whilst allowing more detail to be returned for those with this information. It also did not impose strict definitions of 'non-native' and 'invasive' thus allowing respondents to report on species that they felt relevant or significant for their sites. The top 15 taxa in frequency of reports are shown in Table 1.

The variation in responses also clearly indicated a difference in perception of species between managers. I received some reports of native, invasive species e.g. Rosebay Willowherb, and there is arguably no difference between native and non-native invasive species in practice; we do have native plant thugs. The increasing problem of *Clematis vitalba*, on dunes on both the west and east coast is a clear example of this. Only 2 responses mention *Oenothera spp.*, now widely naturalised on most dunes, but generally accepted as a benign element of the dune flora. The fleabanes *Conyza sumatrensis* & *C. canadensis* are increasing on coasts, but again only two responses were returned.



The invasion of the Saltfleetby-Theddlethorpe dunes by *Clematis vitalba*.

A striking example of this difference in perception is the failure to report the moss, *Campylopus introflexus*. First recorded in England in 1941, this species is widespread throughout the UK and almost certainly present and widespread on all dune systems. Being small in stature it is understandably overlooked as an invasive alien, and studies in Europe are still inconclusive on its impacts on native species. Other species with differing perceptions for varying reasons, ripe for debate, include Broom

Cytisus scoparius, Sycamore *Acer pseudoplatanus*, Michaelmas Daisies *Aster x salignus / novi-belgii*, Spring Beauty *Claytonia perfoliata* and Hoary Cress *Lepidium draba*.

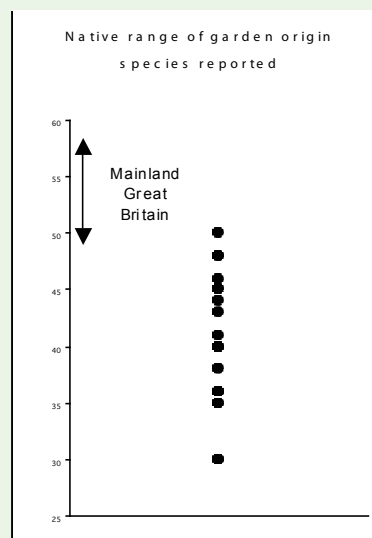
Invasive species controlled effectively on protected sites, can remain a threat because of their presence on adjacent land. The survey showed this to be true of a range of species including Sea Buckthorn *Hippophae rhamnoides*, Rhododendron *Rhododendron ponticum*, Pines *Pinus spp.* and Pirri-pirri Bur *Acaena novae-zelandiae*, thus underlining the need for a wider perspective of site management.

Housing boundaries remain a problem with significant dumping of rubbish introducing a wide range of species onto the dunes, quotes including 'from garden refuse anything possible but notably daffodil spp., narcissi, poppy spp., snow-in summer, red-hot poker, tree lupin' and 'people cross road to dump grass clippings and other garden waste'. In such boundary areas deliberate introductions also occur; 'some species are planted by well meaning residents'. Most of these species will not become invasive, but a small proportion is already consuming resources because of necessity of control on some sites e.g. Duke of Argyll's Tea Plant *Lycium barbarum* and Oregon Grape *Mahonia aquifolium*. *Rosa rugosa* also continues to be a problem in many places.

It is established that residence time of introduced species in the receiving environment increases the chances of invasion, largely because introductions are ready to take advantage of any window of opportunity (in terms of e.g. disturbance, periods of suitable weather). This is of concern generally, but more specifically in relation to climate change.

Figure 1 shows the latitudinal centre of distribution of species of known garden origin reported in the survey compared to the range of mainland Great Britain.

Nearly all are from significantly nearer to the equator



than the UK. *Yucca recurvifolia* and Pampas Grass *Cortaderia selloana* are good examples, both of which were reported on a number of dune sites. *Yucca* is extremely invasive in dunes in Italy; Pampas Grass similarly in Spain. Pampas Grass is already becoming invasive in the Isle of Wight where it is easily controlled on protected sites, but is spreading along the coast elsewhere.

Figure 1 Latitudinal centre of distribution of known garden origin species reported in the survey.

On shingle, two species stand out as being real problems, Red Valerian *Centranthus ruber* and Silver Ragwort *Senecio cineraria*. Both spread rapidly by seed, are having a significant impact on shingle communities, and are subject to control measures. Red Valerian is also reported from a number of dune sites where control at an early stage may be advisable.



Red Valerian © Barry Yates

There is sufficient evidence in the results of the survey, and from the context in the literature, that we need to be very alert to the problems of both known and potentially new invasive species. Networking and education are likely to be very important in both raising awareness of threat and of sharing expertise on control measures. There is no question that early intervention on control is the best measure possible, and the precautionary approach surely is advisable. Rum Cherry *Prunus serotina*, was thought not to be a problem on the Amsterdam Waterworks

Dunes open dunes in The Netherlands until the 1990s when the population exploded. Despite massive attempts (involving very large sums of money) to clear this species, local managers accept that they will never exterminate this species from the site. Early intervention would have been cheaper and effective (note that no responses reported the presence of this species – but it is likely to be there!).

We must learn from examples such as these. I suggest it is time we stopped viewing some non-natives as wacky curiosities on our sites, and start perceiving them as dangerous threats. In addition to the direct threat to biodiversity, there is a danger of species becoming known to the visiting public who then become fond of them – this creates public relation problems if control measures eventually have to be enforced.

Some species may be effectively benign in our dune and shingle communities; examples might include Evening Primroses *Oenothera spp* and Oxford Ragwort *Senecio squalidus*. Although scarce management resources must be directed to the biggest threats, we should consider how we evaluate the impacts of non-native species, because of the need for early intervention for cheap and effective control. We should also consider the combined impacts of an increasing number of non-native species on vegetation communities, any one of which might be insignificant alone.

The survey questionnaire is still available on the network website, and more information will always be welcome.

Table 1. The 15 most frequently reported non-native species based on number of sites

	No. of sites	Dune sites	Shingle sites	No. & % of sites where reported invasive or alternative comment
<i>Hippophae rhamnoides</i>	20	17	3	19 95%
<i>Centranthus ruber</i>	17	6	11	Dunes 3 27% Shingle 6 100%
<i>Pinus</i>	15	12	3	4 27%
<i>Hyacinthoides hispanica</i> and/or <i>H. non-scripta</i> X <i>H. hispanica</i> / <i>Hyacinthoides x massartiana</i>	12	10	2	5 42%
<i>Populus spp.</i> (mostly <i>P. alba</i> reported)	11	10	1	6 55%
<i>Rosa rugosa</i>	10	10	0	8 80%
<i>Cerastium tomentosum</i>	10	7	3	6 60%
<i>Crococsmia X crocosmiiflora</i>	8	8	0	1 12%
<i>Fallopia baldschuanica</i>	7	6	1	6 87%
<i>Kniphofia uvaria</i>	7	6	1	1 14%
<i>Crassula helmsii</i>	7	2	3	7 100%
<i>Acaena novae-zelandiae</i>	7	7 (1 adj.)	0	7 100%
<i>Saponaria officinalis</i>	6	5	1	3 50%
<i>Cortaderia selloana</i>	6	4	2	2 'spreading', 1 kept in check
<i>Fallopia japonica</i>	6	4	2	3 50%

Comment on Alien Species

Graham Weaver, Coastal Ecologist, Natural England.

We need to be clear in our objectives on this emotive subject. Are we focusing on species outside their native range such as Sea Buckthorn on some sites? Are we concentrating just on non-UK species? Or in fact, are we aiming at the wrong target, with effort more sensibly focused on 'invasive species', whatever their origin? For example, White Poplar (an alien) can be invasive on many sites, but tends to part of a wider range of native shrubs and trees spreading over less intensively managed dune sites.

Many alien species never become invasive on dunes; they either do not spread from their point of introduction to a site or, if they do spread more widely, they do not compromise the pre-existing vegetation communities (e.g. Evening Primroses). However, sand dunes (along with sea cliffs) do seem particularly prone, or 'open', to the establishment of non-UK species, largely 'garden escapes', taking advantage of an often open turf and an especially mild climate. And we might expect this situation to intensify with projected climate change. And some species, like Pirri-pirri-bur, can become a problem.

We therefore do need more clarity on the dynamics of alien species on sand dunes in the UK, in order to better predict (i) the response of these aliens to projected climate change and (ii) their response to future large-scale habitat management (e.g. scrub clearance or dune re-mobilisation).

The management of Red Valerian on vegetated shingle.

Red Valerian *Centranthus ruber* is a native of the Mediterranean region but has been introduced into many other parts of the world as a garden plant. It is widespread in Britain and was introduced before 1600 and has spread by its wind blown seeds to many arid habitats including walls and shingle beaches.

At Rye Harbour Nature Reserve in East Sussex (SSSI and SAC) the majority of the vegetated shingle has suffered some damage from machines, either by extraction or for sea defence. This damaged shingle has been colonised by Red Valerian and during the last 25 years has become dominant over more than 20 hectares. This has limited the potential for native shingle plants, such as Sea Pea and Sea Campion and reduces the open habitat required by nesting Ringed Plover and Wheatear.

Over the last three years the management here has been a combination of hand weeding by volunteers or spot spraying with Glyphosate in calm conditions. The plants remain green and susceptible to herbicide for a long period, and we usually treat from August to October. The treatment has been little and often, so that large areas have not looked devastated.

Alien species on coastal sand dunes in South Africa

Professor Roy Lubke of Rhodes University, Grahamstown, South Africa has provided an interesting comparison to our survey of species of concern in the UK with the situation in the South East Cape. None of the species listed in our survey are established on the sand dunes of South Africa. Some species, including non-native poplars, are found in wetter areas away from the coast. *Kniphofia uvaria* (Red-hot Poker) is of course a native species of South Africa but is also only found in wet areas.

The worst problem species in South Africa is *Acacia cyclops* (Rooikrans) which can be dominant in dunes and coastal fynbos. Biological control is now being introduced. Another common invasive species is *Acacia saligna* (Port Jackson Wattle) and again biological control (a fungus) has been introduced.

Ammophila arenaria (Marram Grass) was introduced to the Cape from France as a dune stabiliser in the 19th Century. It is considered to be non-invasive and after an extensive EU-sponsored programme scientists have concluded that it can be a useful plant for dune stabilisation in South Africa. A guide to its use will be produced. It is known, however, to be a great problem in other countries including Australia, New Zealand and the Pacific coast of the United States.

Roy would be interested to develop some more work on comparisons of the problems associated with alien species in South Africa and other parts of the world and can be contacted on r.lubke@ru.ac.za



Manual control at Rye Harbour Nature Reserve © Barry Yates

Red Valerian has been a particular problem within a rabbit-proof enclosure managed for two very rare flowers, Least Lettuce *Lactuca saligna* and Stinking Hawksbeard *Crepis foetida*. Here it is competing for space and is hand weeded on an annual basis.

On the positive side Red Valerian is enjoyed by visitors and is used by many species of butterflies, moths, bees and other insects. The plan is not therefore to eliminate it, but rather restrict its distribution to some sheltered footpaths.

Dr Barry Yates, Manager - Rye Harbour Nature Reserve,
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www.WildRye.info

Visit to the German East Frisian islands

Liverpool Hope University staff visited Maike Isermann of the University of Bremen in July 2009 as part of teaching mobility grant (funded through the EU Erasmus programme). The visit included excursions to the East Frisian islands of Spiekeroog and Langeoog where we had discussions with coastal managers and education specialists.

One of the common research areas was the issue of invasive species, particularly Japanese Rose, *Rosa rugosa*, and also increasing our understanding of the ecology of Sea Buckthorn, which is less invasive on the East Frisian islands.

A report of the visit is in preparation and will be available on the network website.

The dune landscape on the island of Spiekeroog: north-facing slopes are dominated by Crowberry and south-facing slopes by Grey Hair-grass



Highland cattle are used for grazing dunes on the Island of Langeoog



Floristic diversity on the Sefton Coast Sand-dunes, England

The flora of the Sefton Coast sand-dune system in Northwest England has been studied for over 200 years, species lists having been published as early as those of Whittle (1831). In 1999, an attempt was made to draw up an inventory of all vascular plants (species, sub-species and hybrids) reliably identified on the Sefton Coast. This listed 881 taxa for the sand-dune area (Smith 2006). Since then, intensive field work has continued, with 25 new taxa being found in 2005/06, 18 in 2007 and 17 in 2008.

Literature searches have discovered many additional records previously overlooked, the latest revision of the inventory listing 1143 duneland vascular plants. A total of 738 is indigenous, while 405 (35%) are non-native or introduced native plants, many having escaped from nearby gardens. The proportion of "aliens" appears to be increasing but fortunately only a few are invasive. This dune system has long been famous for its rare plants, no less than 179 taxa being regionally or nationally notable. Interestingly, only about 50 plants are listed as "extinct"; twelve duneland species thought to have been lost were rediscovered between 1999 and 2007.

These data confirm the very high botanical importance of the Sefton dunes, most of the area being protected by British and European conservation designations. Additionally, in 2007 the Sefton Coast was listed by Plantlife International as an Important Plant Area (IPA), one of only 155 such sites in the UK.



Grass-of-Parnassus at Cabin Hill NNR © P.H.Smith

It would be interesting to know whether similar inventories exist for any other major dune systems in Britain and northwest Europe, so that comparisons can be made. The Sefton Coast Vascular Plant Inventory can be accessed on the Sefton Coast Partnership web-site at www.seftoncoast.org.uk

References

- Smith, P.H. (2006). An inventory of vascular plants for the Sefton Coast. *BSBI News* 102 4-9.
- Whittle, P. (1831). *Marina; or a historical and descriptive account of Southport, Lytham and Blackpool, situate on the western coast of Lancashire*. P. & H. Whittle, Preston.

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Developing links with New Zealand



On 10 September we were pleased to host a visit by Mark Dean, chairperson of the Dune Restoration Trust of New Zealand. We discussed many issues in common and looked at how dune managers in the UK are working with coastal communities to discuss the need for future adaptation in the face of climate change. For

example we saw how the National Trust at Formby Point in Merseyside is working with local communities to show how the coastline is changing, how Sefton Council, as part of the EU-funded IMCORE project, is involving primary school children in thinking about coastal futures and how, in the Borough of Fylde, the Fylde Sand Dunes Project is supporting local communities in practical projects. In New Zealand all these activities would come under the Coast Care programme which supports regional Coast Care groups throughout New Zealand.

L-R Anne Heslop (Lancashire Wildlife Trust), Andrew Brockbank (National Trust), Mark Dean, Esme Dean

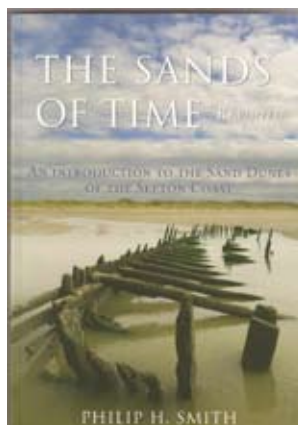
Coast Dune Management Guide available online

The Natural Environment Research Council's (NERC) 1986 'Coast dune management guide' by D S Ranwell and R Boar is available as a PDF file on the following link: http://nora.nerc.ac.uk/5233/1/Coast_dune_management.pdf

The guide complements the British Trust for Conservation Volunteer's practical handbook 'Sand Dunes' which was also published in 1986 (available on www.btcv.org.uk). The main difference was that the NERC guide was produced under contract from the Department of the Environment as a guide for coastal engineers whereas the BTCV handbook was aimed more at managers of nature reserves and conservation volunteers.

Both handbooks contain some excellent background information to the issues and techniques of dune management but were written at a time when dune stabilisation and re-vegetation of bare areas was considered to be good practice. Today there is an increasing emphasis on working with natural processes and encouraging at least some bare sand in the system so, until there is an updated good practice guide available, some care needs to be taken when interpreting the advice.

Book Reviews

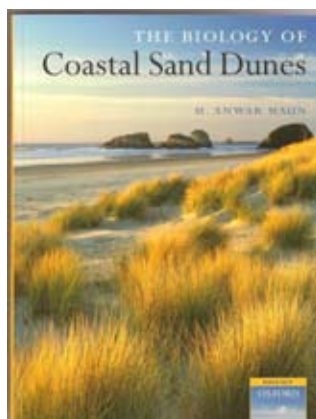


The Sands of Time: Revisited An Introduction to the Sand Dunes of the Sefton Coast **Philip H. Smith**

2009 Amberley Publishing
ISBN 978 1 84868 454 6
£15.99 pbk.

For this book Phil Smith has extensively revised and rewritten his 1999 publication

'The Sands of Time'. He presents an introduction to the development, history, landscape and wildlife of the Sefton Coast, the largest dune system in England. Written for the layperson and fully illustrated, the book will be of interest to anyone with a passion for dune systems. In this sense it is a classic study which defines the sense of place which is the Sefton Coast. Sections on dune plants and animals, and the chapter on dune management, will be of interest to other dune managers and may help to encourage the sharing of knowledge.



Biology of Coastal Sand Dunes **M. Anwar Maun**

2009 Oxford University Press, Oxford
ISBN 978-0-19-857035-6 (Hbk)
ISBN 978-0-19-857036-3 (Pbk)

The publication is based on over 30 years of painstaking dune 'detective work' by Anwar Maun and his students in the Department of Biology at the University of Western

Ontario, Canada. Sadly, Anwar died before publication, and thanks to his colleagues this important review of the science behind many of our observations of the response of plants to burial, seed dispersal and survival the impact of salt spray is available for a wider readership. The most thorough parts of the book are the chapters based on the fieldwork carried out around the Great Lakes looking at how plants survive and interact in a sand dune environment. Anwar was probably the leading world expert on the response of dune plants to burial in sand, something which all dune managers observe day –to-day without necessarily understanding how plants cope with these environmental pressures. The structure of the chapters is clear and each has a summary of the main points, very useful when wishing to read a quick update of the key points.

There is a challenge in this book to dune managers; to read it, to use the scientific knowledge in their work and to translate some of the most significant points into interpretive and educational programmes. What excellent interpretation and classroom experiments can come from knowing something about fruit dimorphism in *Cakile maritima* and how its seeds are dispersed by the sea. Maybe we can call it the 'British coconut'!

Recent Publications

Champion, P.D. & Reeves, P.N. (2009). Factors causing dune ephemeral wetlands to be vulnerable to weed invasion. DOC Research and Development Series 310, New Zealand Department of Conservation, Wellington, New Zealand. Available on: <http://www.doc.govt.nz/upload/documents/science-and-technical/drds310.pdf>

Chapman, H., Adcock, J. & Gater, J. 2009. An approach to mapping buried prehistoric palaeosols of the Atlantic seaboard in Northwest Europe using GPR, geoarchaeology and GIS and the implications for heritage management. *Journal of Archaeological Science* 36. 2308-2313 doi: 10.1016/j.jas.2009.06.015

Chust, G., Borja, A., Liria, P., Galparsoro, I., Marcos, M., Caballero, A & Castro, R. 2009. Human impacts overwhelm the effects of sea-level rise on Basque habitats (N Spain) between 1954 and 2004. *Estuarine, Coastal and Shelf Science*. 84, 453-462.

Clarke, D. and Sanitwong Na Ayutthaya, S. 2009 Predicted effects of climate change, vegetation and tree cover on dune slack habitats at Ainsdale on the Sefton Coast, UK. *Journal of Coastal Conservation*

The authors describe the seasonal and long term variation in groundwater levels in part of the Sefton Coast between 1972 and 2007. A stochastic water balance model was used to describe the changes in water table levels in dune slacks in the open dunes and also in areas covered with pine trees. The results showed that the pine trees evaporated 214 mm/year more than open dune vegetation, with the water table being 0.5–1.0 m lower under the trees than under the open dunes. The effects of climate change are predicted to lead to a decrease in mean ground water levels by 1.0–1.5m in the next 90 years. Typical patterns consist of sequences of 5–10 years of low water table levels interspersed by infrequent sequences consisting of 2–5 years of relatively high levels.

Grafals-Soto, R. & Nordstrom, K. 2009. Sand fences in the Coastal Zone: intended and unintended effects. *Environmental Management* 44 (3). 420-429.

Isermann, M. 2008. Classification and habitat characteristics of plant communities invaded by the non-native *Rosa rugosa* Thunb. In NW Europe. *Phytocoenologia* 38(1-2), 133-150

Jones, M.L.M., Sowerby, A. & Rhind, P.M. 2009. Factors affecting vegetation establishment and development in a sand dune chronosequence at Newborough Warren, North Wales. *J Coast Conserv.* doi:10.1007/s11852-009-0071-x

Jones, M.L.M., Norman, K. & Rhind, P.M. 2009. Topsoil inversion as a restoration measure in sand dunes, early results from a UK field-trial. *J Coast Conserv.* doi:10.1007/s11852-009-0072-9

Kooijman, A.M., Lubbers, I. & van Til, M. 2009. Iron-rich dune grasslands: Relations between soil organic matter and sorption of Fe and P. *Environmental Pollution* 157 (3158-3165)

Kollmann, J., Jørgensen, R.H., Roelsgaard, J. & Skov-Petersen, H. (2009). Establishment and clonal spread of the alien shrub *Rosa rugosa* in coastal dunes – A method for reconstructing and predicting invasion patterns. *Landscape and Urban Planning* 93 (194-200).

The authors studied the clonal spread of Japanese Rose *Rosa rugosa* on dune sites in western Denmark. Aerial photographs were used to map the spread of the species. The increase in patch sizes from the older to the younger photographs was used to calculate a lateral clonal spread rate (0.42 m year⁻¹). Applying the clonal spread rate to current patches allowed the authors to quantify future distribution patterns. Between 1986 and 2004 the establishment rate was estimated as 0.02 patches ha⁻¹ year⁻¹ and by 2004 the species had invaded 0.33% of the study area. Assuming only clonal spread of existing patches, current environmental conditions and no management the species is estimated to cover 3.9% by 2034. If including the establishment of new patches the cover will increase to 9.5% in 2034.

Muñoz-Perez, J.J., Navarro, M., Roman-Sierra, J., Tejedor, B., Rodriguez, I. & Gomez-Pina, G. 2009. Long-term evolution of a transgressive migrating dune using reconstruction of the EOF method. *Geomorphology* 112. 157-177. doi: 10.1016/j.geomorph.2009.05.016

O, Connor, M.C., Lymbery, G., Cooper, J.A.G., Gault, J. & McKenna, J. 2009. Practice versus policy-led coastal defence management. *Marine Policy*, 33, 923-929. doi: 10.1016/j.marpol.2009.03.007

Peyrat, J., Braun, M., Dolnik, C., Isermann, M. & Roweck, H. 2009. Vegetation dynamics on the Łeba Bar/ Poland: a comparison of the vegetation in 1932 and 2006 with special regard to endangered habitats. *J.Coast. Conserv.* doi:10.1007/s11852-009-0073-8

Remke, E., Brouwer, E., Kooijman, A., Blindow, I. & Roelofs, J.G.M. 2009. Low atmospheric Nitrogen loads lead to grass encroachment in coastal dunes, but only on acid soils. *Ecosystems*. doi: 10.1007/s10021-009-9282-0

Rooney, P. & Houston, J. 2009. From wasteland to joy land – changing attitudes to coastal dunes. *Ecos-A Review of Conservation*. 30 (2). 50-57

Tahmasebi Kohyani, P., Bossuyt, B., Bonte, D. & Hoffmann, M. 2009. Grazing as a management tool in dune grasslands: Evidence of soil and scale dependence of the effect of large herbivores on plant diversity. *Biological Conservation* 141(6), 1687-1694

Zavala, L.M., González, F.A. & Jordán, A. 2009. Fire-induced soil water repellency under different vegetation types along the Atlantic dune coast-line in SW Spain. *Catena* 79, 153-162

Useful bibliography of information relating to Marram Grass *Ammophila arenaria*

A list of papers mentioning *Ammophila arenaria* covering the period 1926-2007 has been assembled on the Australian New Crops website listing of 'interesting plants of the world'. Have a look at the list on http://www.newcrops.uq.edu.au/listing/species_pages_A/Ammophila_arenaria.htm

Natura 2000 site conservation and management on the Lithuanian coast



© Ecological Club Žvejoni

This three year project coordinated by the Ecological Club Žvejoni, finished in late 2008 and targeted the conservation and restoration of sand dune habitats on the Curonian Spit National Park and the protection of the Curonian Lagoon.

The Curonian Spit is one of the most important dune systems in Europe and the project focused on the restoration of over 500ha of Natura 2000 habitat.

The final report to the European Commission and a full colour layman's report can be found on the website http://www.zvejone.lt/life/index_en.php

Of particular interest to the sand dune network are the actions to;

- Protect damaged areas of mobile dunes (white dunes) with brushwood fencing laid in a grid pattern. In total 30ha were treated in this manner.
- Construct boardwalks and steps to the beach in areas of high recreation pressure
- Remove scrub and trees from open fixed dunes
- Fence off vulnerable parts of the dunes
- Introduce grazing as a management tool



Pippa Recaldin 1963-2009



It is with great sadness that I have to report the death of Pippa Sneddon. Pippa came up to Girton College, Cambridge as an undergraduate to read for the Geography Tripos. She specialized in Biogeography and when the opportunity arose to do research on the shingle vegetation of Great Britain, funded by JNCC, she was delighted to accept. Her PhD entitled 'Variations in Shingle Vegetation around the British Coastline' was completed in 1992 and the classification methodology she developed has become widely used. Pippa collaborated with me to produce a paper on shingle conservation management models in Packham et al. (2001) but devoted most of the last decade to being a devoted wife and mother.

Roland Randall

and postgraduate students. In 2010 we will be visiting the Netherlands from 1-5 March with a group of 17 students. We can offer a few places to professionals to join us on the tour, staying in hostel-style accommodation and travelling in mini-buses. The visit will probably focus on coastal management issues in South Holland and Zeeland.

If you are interested in the study-tour please contact Paul Rooney on dunes@hope.ac.uk for more details

Belgium and the Netherlands, provisionally 5-9 October 2010

We are planning a short excursion centred on the one-day workshop being held by the Belgian LIFE-Nature project ZENO <http://www.natuurenbos.be/nl-BE/Projecten/Zeno.aspx>

The workshop event aims to disseminate international experience about the restoration and maintenance of transition grounds from dunes to polder and from dunes to salt marshes in Europe. This is an area which tends not to be so well studied in the UK and it should be an interesting meeting.

The visit would also include a visit to the Belgian dunes and to sites in the Netherlands particularly to look at management options for conifer plantations, including conversion to deciduous woodlands.

If you would like further details of this excursion please contact John Houston on rooneyjp@hope.ac.uk

European Study Tours

Netherlands 1-5 March 2010

Liverpool Hope University has a well-established twinning arrangement with the University of Amsterdam to run joint field-based training events for undergraduate

This newsletter has been compiled by John Houston

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Cover Photo: Royal Birkdale Golf Course © John Houston

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

