



Conservation of dune habitats in the Atlantic Biogeographic Region

Outline of a roadmap for knowledge exchange and networking for the period 2016-2020

Version 1.1 following the workshop on dunes and estuaries held at the 2nd Atlantic Biogeographic Seminar, 25-27 October 2016, Ennistymon, Ireland.

Background

The roadmap addresses the conservation of the main dune habitats of the Atlantic biogeographical region:

- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
- 2130* Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 2140* Decalcified fixed dunes with *Empetrum nigrum*
- 2150* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- 2160 Dunes with *Hippophae rhamnoides*
- 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
- 2180 Wooded dunes of the Atlantic, Continental and Boreal Region
- 2190 Humid dune slacks
- 21A0 Machairs (* in Ireland)

As a contribution to the Natura 2000 Biogeographic Process a LIFE Platform meeting on coastal and inland dunes, hosted by Waternet, PWN and Natuurmonumenten, was held in Zandvoort, The Netherlands, from 15-17 June 2016. The meeting was organised by the Neemo LIFE team and ECNC on behalf of the European Commission and focused on sharing experience on the restoration of dune habitats.¹ Platform participants contributed to the draft roadmap for knowledge exchange for discussion at the Atlantic seminar.

The LIFE Platform meeting reinforced the conclusions of the *Dynamic Dunes 2015* meeting organised by Dutch LIFE projects² that;

- The overall target of favourable conservation status can only be achieved by concerted efforts
- Dunes should be higher on the European research agenda
- Project experience should be widely disseminated

The issues highlighted in the 2012 Natura 2000 Atlantic seminar included climate change, spontaneous and/or artificial fixation of the dune landscape, loss of habitat and habitat connectivity, interference with natural geomorphological dynamics and hydrological dynamics, afforestation, invasive alien species and recreation pressures.

¹ The workshop report is published on the Natura 2000 Communication Platform
http://ec.europa.eu/environment/nature/natura2000/platform/events/index_en.htm

² <https://www.pwn.nl/dynamicdunes> and
<http://awd.waternet.nl/media/projecten/Life/PDF/Rapport%20conference%20Dynamic%20Dunes%202015.pdf>

A specific workshop session at the LIFE Platform meeting confirmed that the issues discussed in 2012 remain relevant and added agricultural change, Nitrogen deposition and the need to increase engagement with the general public to the original priorities. See also the Habitat factsheets for Dunes discussed at the Second Atlantic Seminar.³

The need for a European Dune Network for Natura 2000

The recommendations of the 2012 Atlantic seminar included forming an expert-network of governmental agencies responsible for conservation policy and the management of coastal dune sites in all Member States. This level of cooperation remains an ambition and should include NGOs. Areas where international cooperation would be valuable, amongst others, include:

- An early warning system for Invasive Alien Species and the sharing of practical control methods with costs
- A comparative review of Conservation Objectives for dune habitats in Member State to help standardise reporting under Article 17
- Developing and promoting a joint research programme on issues with an explicit international dimension e.g. impacts of N-deposition and climate change
- Guidelines on how to incorporate dynamics into the interpretation of Favourable Conservation Status
- Further interpretation of habitat types, especially fixed dune and slack sub-types
- Strengthening cross-border (also within Member States) management initiatives
- Expected changes to habitats as dune systems respond to climate change pressures
- Sharing management practices and results

Although there are already established networks through the Coastal & Marine Union- EUCC and Liverpool Hope University (UK) these do not have the capacity to coordinate a networking programme for Natura 2000. An 'engine room' is needed to drive forward a programme developed by, and with the support of, national agencies. With the success of recent LIFE projects in several Member States the timing is right to aim to step up work in the period 2016-2020.

The Atlantic dune networking roadmap

Networking can be effective and can be time-saving, especially when new or more efficient techniques are shared. When a case can be made for networking at national level it can be given added value by networking at international level. As well as intra-sectoral networking there needs also be dialogue with other sectors and stakeholders.

There are already activities or plans to establish networking in the several Member States along with EUCC national branches and offices. These groupings, along with national research bodies, could form the nodes within a network helping to ensure effective knowledge transfer.

Current and future LIFE projects could support and benefit from a knowledge network which adds structure to project activity by providing access to a larger audience than could be reached by one project alone and by focusing project activity on issues that benefit from a cooperative approach.

³ http://ec.europa.eu/environment/nature/natura2000/platform/documents/atlantic_seminar/annex_4-coastal_and_dunes_en.pdf

The roadmap V1.0 is the product of discussion involving representatives of the Atlantic member states at the 2012 and 2016 Atlantic Biogeographic Seminars, the Dutch LIFE 'Dynamic Dunes 2015' conference and the LIFE Platform meeting on coastal and inland dunes in 2016.

The roadmap presents describes and sets out the relevance for a series of Actions. For most of these the roadmap identifies possible lead bodies and a target timetable. In most cases there is no firm commitment or resources to develop the actions. The roadmap belongs to the Natura 2000 dune management and restoration community with the intention to update the roadmap each year through the actions of the European Dune Network.

Coastal dune roadmap V1.1- 2017

This version follows discussion at the workshop on coastal dunes and estuaries at second Atlantic Natura 2000 seminar held in Ennistymon, Ireland

Action	Description	Relevance	Timing	Lead	Support
Guidelines on how to incorporate dynamics into the interpretation of Favourable Conservation Status	There is a recognised need to ensure that favourable conservation status includes bare sand and dune forming processes. This is true in the mobile habitats as well as the 'fixed' habitats and for the creation of embryo dune slacks	Target values can be set for bare sand /dynamics in dune habitats (a figure of c. 10% is proposed by some experts). The scale of dynamics is also important with a balance between large mobile features, smaller blowouts and scrapes.	First steps would be to review the science and results of monitoring to compile guidelines for assessing habitat condition.	MS to ask science bodies to prepare a science review to guide restoration and management of dune habitats or science bodies to take lead in compiling a review.	Site manager and LIFE project support through practical works which include funding for monitoring.
	After a general science review the second stage would be to consider how MS reconcile the interpretation of the Habitats Directive into guidance and condition monitoring.	The acceptance of bare sand and mobility within dune systems is not a universal concept.	Within the period 2016-2020 this should be a question to be addressed through the biogeographic process.	Based on a science review the lead should be from the EC/MS asking MS to report on the issues concerning adoption of a more dynamic approach to Natura 2000 and the mapping of dune habitats	If this is a MS study the costs should be largely borne by the agencies. Workshops to explore the issues could be supported by national science/management networks.
	Following a MS level review there may be interest in developing a communication and demonstration project to provide case studies of restoring dynamics to dune systems	A LIFE Governance and Information project could help to disseminate new messages about best practice in dune conservation and management. There are still management agencies inclined to 'fix'	Probably not ready for such a bid until 2018	If a European Dune Network can be strengthened it would be the natural proposer of such a project. Or the lead can be taken by any previous LIFE beneficiary.	A LIFE project would involve several partners from the Atlantic Region

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		dunes to prevent sand drift whereas most recent experience seeks to reactivate sand movement.			
Addressing dynamic coastal change with attention to sandy beaches and the formation of strandline vegetation and subsequent formation of 2110 embryonic shifting dunes	Dune systems are part of the shallow sea, beach and dune sand-sharing system and are moulded by large scale and long term changes in climate, sediment supply and sediment movement.	The 'Living with the Sea' LIFE project addressed these issues in the 1990s. There would be great value in developing a similar project to show how shoreline management policies have evolved in last 20 years	Dependent on interest from responsible bodies	Such a project should be led by shoreline management authorities who deal in sediment management, e.g. Rijkswaterstaat, Environment Agency (UK) and BRGM (FR).	Dune habitat management and protection of sea bird populations (e.g. terns) is perhaps a small component of such studies but they are vital to the long-term prospects of the habitats. It is expected that national conservation agencies would wish to engage with such studies.
Interpretation, mapping and management guidelines for EU habitat types	There are several habitat types which cause confusion and may be interpreted differently in different MS. The habitats which could be reviewed are 2170 dunes with <i>Salix repens</i> ssp. <i>argentea</i> , 2160 <i>Hippophae rhamnoides</i> and 2180 dune woodland	It is difficult to assess progress towards FCS if we are not comparing like with like. Natural England, Scottish Natural Heritage and NPWS, for example, have shared concerns about mapping of 2170 dunes with <i>Salix repens</i> ssp. <i>argentea</i>	Suggest that a series of expert work groups meet in field to share methodologies, understanding of definitions, mapping and management. One field meeting /year with write up in the style of the EU Management Models. The aim should not be to further sub-divide habitat types but assist with the interpretation of the EU Interpretive Manual	MS nature conservation agencies could share the project (i.e. one workshop each) as part of Natura 2000 process. Key leads could be from BE, NL, UK/IE, FR	Supported by national networks and national scientific bodies (e.g. OBN, INBO, CEH, Conservatoire Botanique National de Bailleul etc).
	In Portugal there is a lack of	There is a need to	Surveys to inform the next	Quercus (PT) to convene	Sharing of results

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	basic information on several dune habitat types	improve the baseline information for a better assessment of future prospects	article 17 assessment	a working group on coastal dunes	through dune network
Restore ecological connectivity in fragmented dune belts along strongly urbanised coasts	Urbanisation and intensification of agriculture in coastal areas has led to fragmentation.	The possibilities to restore connectivity for habitats and populations of species should be examined.	The issue is long-term but should be incorporated within national plans and restoration projects.	The issue is of particular relevance in Belgium and has formed a key component of the use of LIFE funding	Sharing of experience between Member States and at networking events.
Addressing protection and management of 2130* fixed dunes	Fixed coastal dunes 2130* is by far the largest dune habitat type by area but only 47% of the 110,880 ha is within the Natura 2000 network according to EEA data.	The conservation needs of the c. 60,000 ha of fixed dune outside the Natura 2000 network must be addressed, e.g. clear evidence of loss in UK (Anglesey)	Assessing the ongoing pressures and threats on all fixed dune habitat (inside and outside Natura 2000)	All MS PAFs must include actions for 2130* as a priority habitat. A lead could be taken by the Habitats Committee to address the particular threats to this habitat type.	A focus on 2130* could be a catalyst for giving more support to a European Dune Network
	Threats to 2130* include both abandonment of traditional management leading to encroachment with scrub and grasses and intensification of agriculture including enrichment with N and P and conversion to horticulture or stud farms.	Measures for the maintenance and improvement of fixed dune habitats are required in all Member States.	Article 17 reporting provides 'snapshots' of progress towards FCS	Continued need to share experience between Member States, to publish evidence of successful measures and to continue to support innovation, replication of results and transfer of methodologies.	European Dune Network can continue to promote links between science and management.
Further studies on the 'low hanging fruit' habitats	The background documents prepared for the Atlantic seminar on low hanging fruits identify habitats and the need for improvement	Success in applied management indicates that a 'step change' is possible for several dune habitats. Seminar	Focusing on how to improve structure and function in DK could help to establish a Danish dune network and the work	The low hanging fruit paper identifies DK as the lead MS. The habitat 2150 Atlantic decalcified fixed dunes could be	Any action would be supported by European Dune Network and other MS. A Natura 2000 management guidelines

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	to make a step change. MS are also identified. ⁴	documents suggest that DK can lead on 2140 Decalcified fixed dunes (currently 5 DK LIFE projects address this habitat type) to step up from U1= to U1+	could extend to other MS through the European Dune Network	addressed along with 2140 to target a change from U2= to U2+	document for 2140 (and 2150) could also be prepared.
		Habitat 2180 wooded dunes of the Atlantic, Continental and Boreal region is also identified as a low hanging fruit to step up from U1= to U1+	Opinion from dune experts is that not enough is known about the definition and management of this habitat type across the biogeographic regions.	The low hanging fruit paper identifies FR (with 20,000 ha) and NL (with 8,100 ha) as lead MS. In FR the Conservatoire National de Bailleul is a leader in research.	The roadmap suggests that, as a first step, FR could organise a workshop to discuss the identification, monitoring and management of the habitat across three biogeographic regions.
Developing and promoting a research programme on, e.g. impacts of N-deposition, and monitoring of outcomes of restoration projects	Science and management are essential partners as confirmed at the LIFE platform meeting.	The experienced scientific bodies such as OBN can assist in drawing up an applied science programme for dune habitats.	This should be started in 2016 for presentation at Littoral 2017.	MS should request bodies such as OBN, CEH, INBO to cooperate in preparing a science programme for coastal dune habitats	A dune science programme can be adopted by and promoted through dune networks. LIFE projects would be encouraged to contribute to the science programme
	A dune management 'decision tree' was developed by the LIFE co-op project on bogs and dunes ⁵ .	The decision tree and PROMME approach is designed to provide managers with decisions based on scientific	To be considered as part of a science review: to update the tool or to replace the tool?	Nijmegen University (Bargerveen Foundation) could be invited to update the knowledge base	Support through OBN and other science networks could develop the tool for wider use in NW Europe

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http://ec.europa.eu/environment/nature/natura2000/platform/documents/atlantic_seminar/annex_3_supporting_elements_for_2nd_atlantic_natura2000_seminar_core_document_en.pdf

⁵ [LIFE03NAT/CP/NL/000006](https://ec.europa.eu/environment/nature/natura2000/platform/documents/life_coop_bogs_and_dunes/) Co-op bogs and dunes

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		evidence			
	In some cases there may be added value in integrating existing monitoring programmes to broaden the scope of studies and the relevance of outputs.	Trends in the populations of some species (e.g. <i>Liparis loeselii</i>) could be looked at the biogeographic level.	Aim would be to coordinate national studies so that European added value can be incorporated into project design.	Natura 2000 should provide opportunities for research bodies to collaborate and share their knowledge.	Science networks
An early warning system for Invasive Alien Species and the sharing of practical control methods with costs	Development of a 'black list' for Atlantic dunes	Evidence of S-N spread of invasive species. Guidelines and advice can be disseminated through national networks.	Further discussion at Littoral 2017 on a 'black list'. Sharing of information on web-sites etc.	Scientific lead from Maike Isermann with input from all MS through networks and scientific bodies	Funding support from national authorities to bodies such as OBN, INBO, ATEN, CEH, Quercus etc
	Best practice examples of control of IAS	For each IAS of concern the knowledge can be made available through the Natura 2000 process	Presentations/ workshops at key events such as EUCC-France field workshops, Littoral 2017 and LIFE-FLANDRE	Case studies published by site managers and LIFE projects. Field meetings held, e.g. on <i>Prunus serotina</i> .	Information made available on web-sites-coordinated and updated by a dune network
	Specific review of experience in the control of <i>Rosa rugosa</i> with details of costs and development of national programmes	<i>Rosa rugosa</i> is now recognised as a serious threat to dune sites in NW Europe. There is evidence of its rate of spread.	Scientific report in 2017 and management study in 2018 (present at LIFE-FLANDRE meeting)	Scientific lead from Maike Isermann with experience mainly from DK and NL	From LIFE projects and national authorities
Communication	To re-invigorate a European Dune Network by establishing an 'engine room' linking to national nodes	The value of communication is stressed in the biogeographical process and from the practitioners	As soon as possible to propose a first meeting of a new group at Littoral 2017	At LIFE platform offers were given from NL, DK, UK and DE to take an active role in networking and to seek resources	Resources are required to ensure some network staff resources. Suggested 0.4 FTE is required to maintain a network.
	To ensure European conservation objectives, PAF priorities, research priorities	All future LIFE projects and similar projects (including Interreg) to	As soon as possible – as part of development of updated websites.	An action for a European Dune Network based on published MS or other	Support needed from MS for commonly agreed objectives.

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	and networking sites are well published	be aware of the wider context of their work		objectives	
	To maintain existing websites and newsletters	UK and Ireland: A network of over 500 contacts has been developed. Newsletters, field visit reports and website.	Ongoing – currently at a low level due to resources	UK Sand Dune and Shingle Network maintains European pages and has taken lead with a European newsletter- but no resources for this since 2015.	The UK network requires further support from national agencies. Further support could come from the Dunes at Risk Interreg 2 Seas bid.
		EUCC France and ONF maintain a programme of events, publications and newsletters ⁶	Ongoing. Key meetings include Merlimont 2014 and Littoral 2016	Loic Gouget of ONF and EUCC France ⁷	There is interest from outside France in developing better links and sharing of information. This would be an action for the European Dune Network
		Coast & Marine Union- EUCC maintains link to European Dune Network	Ongoing but low key at present	EUCC ⁸	EUCC will continue to support efforts for European Dune Network
		Networking in Spain includes links to ONF (FR)	Seminar on dune systems under strong human pressure will be held in Santander in 25-26 April 2017	EUCC Atlantic office / LIFE ARCOS ⁹	European Dune Network would encourage participation and disseminate results.
		In Germany a dune section is included in EUCC-Germany	Ongoing	EUCC-D ¹⁰	EUCC
Conferences, workshops	Littoral 2016 conference in	A workshop on coastal	October 2016	EUCC-France	Supported by EUCC

⁶ www.euccfrance.fr and http://onf.evenementcom.net/onf_news_detail.php?_nof=5&_c=dit

⁷ http://onf.evenementcom.net/onf_html/onf_dunes_10_2015.html

⁸ <http://www.eucc.net/green-coasts/european-dune-network/>

⁹ <https://euccatlsantander.wordpress.com/>

¹⁰ <http://www.eucc-d.de/beach-and-dune-network.html>

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and events	Biarritz ¹¹ .	dune geomorphology, biodiversity and management in relation to climate change addresses one of the key themes identified in the roadmap.			branches
	Littoral 2017- Liverpool	The Littoral series of European/ International conferences attract scientific presentations. A special session will be devoted to coastal dune management.	September 2017	Liverpool Hope University ¹²	EUCC
	LIFE FLANDRE end of project conference. The international conference will offer the next major opportunity for the dune practitioner network to meet in the context of a LIFE project.	Topics include the impact of climate change on the dynamics of beaches and on the status of coastal habitats, restoration and management of coastal dunes and ecosystem services of coastal dunes.	May-June 2018	Flemish Agency for Nature and Forests	Support from dune networks and other LIFE projects.
Submitted and potential project bids	Sands of LIFE project application (LIFE16NAT/UK/000571) by Natural Resources Wales	A project which addresses the main conservation issues affecting dune coasts in Wales	If successful project would start in 2017	Natural Resources Wales	The project would include networking and scientific studies of relevance to the dune network
	Dunes at Risk bid under the Interreg 2 Seas programme	A trans-national project with UK, France, Belgium and	Application submitted in October 2016	Norfolk County Council (UK)	Project has several partners

¹¹ <http://littoral2016.univ-pau.fr/>

¹² <http://www.hope.ac.uk/news/conferences/littoral2017/>

Action	Description	Relevance	Timing	Lead	Support
		Netherlands addressing dune responses to increasing climate change pressures			
	Natura 2000 dune sites in Atlantic Portugal	A project which would address the threats to the southernmost sites in the Atlantic region with a focus on ex-situ propagation and controlling recreation pressure.	Possible submission to 2017 LIFE round	Quercus (PT)	Through dune networks and sharing best practice in recreation management
	CHICIAS LIFE project application (LIFE16NAT/BE/000793) Coastal Habitat Improvement by Controlling Invasive Alien Species.	Eradication of IAS in the coastal dunes and Northern France and raising awareness of garden owners/ professionals and development of an early warning system.	If successful the project would start in 2018	Agency of Nature and Forests of the Flemish Government with Département du Nord (FR) and CPIE Flandre Maritime (FR)	All coastal dune owning public authorities (including municipalities) and dune management organisations (NGO Natuurpunt and Golf Clubs) in Belgium and Northern France will participate.