

Lowland heath in Europe – What has happened since the 14th European Heathland Workshop in 2015?

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During the past 35 years, the European Heathlands Workshops turned out to be excellent events to exchange practical and scientific knowledge and experience regarding heathland management and research in Europe. 15 workshops were successfully organized and yielded a wealth of information. However, also during this 15th workshop, a lot will remain unsaid. That's why an email was sent a couple of weeks ago asking you to inform me of new things that happened since we last met. I received a lot of replies, and it seems indeed, that interest in heathland remains high in many parts of its area.

Please, don't expect now a complete and most up-to-date review of current European heathland issues. It is my subjective selection, based on what I've received and seen recently. I apologize to anyone if I forget one of the things you made me aware of.

To begin with, the European **LIFE+ projects** that include heathland, inland dunes, moorland and moorland pools are still very popular and, as it occurs to me, very successful. In all heathland countries examples can be found; see the LIFE+ website for more details. Everywhere, they are very important to upgrade and facilitate local conservation initiatives. Improvement of the management, restoration of degraded ecosystems, purchasing land, enlarging heathland areas and connecting isolated sites through woodland clearing and the creation of corridors, re-establishing natural processes, especially hydrology and aeolian activity, are most often part of the projects.

Designating and protecting heathland as a nature reserve according national or European decrees or as regional or national parks still continues. Indeed, in many regions heathland sites with important biodiversity qualities still merit a better protection. And thus in Brittany, France, two *Regional Nature Reserves*, that of *Monténeuf* (Morbihan) and of *Plounérin* (Côtes d'Armor) were recently created. The same happened in Poland. In England, scattered Sites of Special Scientific Interest (SSSI) in the *Mid-Cornwall Moors* were merged and designated as one, enlarged SSSI. Enlargement was also the objective for the *Lake District National Park* and the *Yorkshire Dales National Park*, both with significant areas of upland heath. The first has also been designated as *World Heritage Site*. Also in the UK, the criteria that describe the attributes a heathland should have to merit designation and protection under national legislation, the *Guidelines for the Designation of Heathland SSSIs*, were reviewed and updated. In Norway *coastal heathland was designated recently as priority habitat*, what created new opportunities and objectives, but also new challenges for the managers. And in Germany, the heathland area '*Oranienbaumer Heide*' in Sachsen-Anhalt, 850 ha, a former military area with a very high species richness, grazed by Heck cattle and Konik horses, was elected "*Weidelandschaft des Jahres 2017*" ('Pasture Landscape of the Year 2017').

On the European level, the **EUNIS habitat types** for heathland, scrub and tundra were *revised and brought in alignment with the European Vegetation units* via a complex processing of large vegetation data sets. The list was combined with the European Red List of habitats and presented for public consultation. Maybe colleagues from the European Heathlands Network were involved in this procedure. The final revised classification, supported by the European Topic Centre on Biological Diversity in Paris, is now approved and will be key instrument for European wide reporting and assessment.

It is needless to say that mere protection is not enough to maintain heathland. It has to be **managed properly**. And here too progress is made in many areas. In Poland for instance, prescribed burning and sheep grazing become more popular and are addressed in environmental directives and legislation. New techniques or tools were also introduced recently, like the tree popper, a handy device to uproot and remove small trees without breaking your back. Designed in South Africa and now also used by Natural England. In traditional management, managers are also confronted with new 'problems', or better challenges. To name only one: in that Oranienbaumer Heide, two wolves are attacking small foals of the nearly natural herd of Konik horses. What to do?

Furthermore, it is striking that **heathland management becomes more and more integrated** and not seldom, also **landscape based**. It is indeed acknowledged that heathland supports a wide variety of services that are highly appreciated by society. On the other hand, it is also clear that multiple stressors have a negative impact on the state of heathland and its related values and services. Both call for an integrative and collaborative approach: integration of the objectives to be achieved, analysis of the whole ecosystem, identification and division of responsibilities, cooperation with different stakeholders, etc. Integration is thus the keyword for new management plans, for instance in Flanders, Belgium. For two of our largest heathlands, the *Kalmthoutse Heide* and the *Teut - Tenhaagdoornheide*, such plans were prepared. The latter was elaborated together with our Dutch colleagues of de Bosgroepen (André Janssen, one of the organizers of this workshop) and Bargerveen (Joost Vogels, the main organizer of the current workshop). By the way, these management plans are based on a **detailed landscape ecological analysis**, which provides essential information about the relationship between the localization of the different habitat types and landscape forms, the abiotic environment and its processes, former and recent land use and the actual species composition and habitat characteristics.

We know that, often as a result of the European Natura2000 strategy and its legislation, **active management of privately owned heathland** is encouraged. To facilitate this, *new instruments and new procedures* are implemented there where they are missing so far. They allow that also private land owners have access to funding mechanisms to support their efforts. Again in Flanders, the provision to allocate subsidies for nature management, was adapted and a *new decree* that ensures an equal treatment of private landowners, nature conservation NGOs and governmental agencies, was adopted last month. High hopes are held that this will increase the chance that especially forest owners will now maintain and manage open heathland more properly. However, managing heathland for different purposes, in collaboration with owners, tenants, etc., each with their own private interests, remains a challenge. No wonder that, even in the UK with its long traditions, a *special workshop* dedicated to "*Solving problems in managing commons*" was organized during last *National Heathland Conference*. It is an issue that lasts already for centuries.

Since the *coastal heath in Norway* is a priority habitat and at several places also a landscape of high cultural value, managers there also focus on an *integrated approach*. Grazing and burning are main issues in the debate. How to maintain and improve habitat quality not only for heathland species and communities, but also as breeding sites for seabirds, and combine this with the cultural values which involves the maintenance of traditional land use, and thus the interests of farmers who use the area for grazing. Until recently that grazing with production as the only objective, was hardly regulated. So, overgrazing often occurred. That is why currently and because of the priority habitat status, managers are working on an *adaptive management plan* for the protected areas that includes a delicate balance of the different objectives.

As I said, more and more heathland conservation and management starts from a **landscape perspective**. In order to provide habitat for all “heathland species”, it is often necessary to *work beyond the borders of what is left as strict heathland*. Indeed, in many parts of its range, heathland is only to be found on the most unfertile areas of the trophic landscape gradient. During previous heathland workshops, it was already demonstrated that also the more fertile and well buffered parts of the landscape, the sites of the arable land of the former heathland farm, should get attention too. So, our colleagues in the Netherlands and in Germany slowly but surely continued their efforts to *re-establish heathland farms*. Restoring the gradient of habitat types and achieving a sustainable agricultural production, embedded in a contemporary and functional heathland landscape, are the overall objectives.

Recently, the landscape perspective was also adopted in the *assessment of potential negative effects* of a commercial development nearby Natura2000 sites in Dorset, UK. The large heathland at stake is a nesting place for nightjars, birds that go foraging outside the reserve. The inspector who decides whether and on what terms the development can proceed, concluded that development is only allowed when a permanent corridor for foraging nightjars across the development site is created. This is an important example of how the functioning of a heathland is interpreted in the context of a complex landscape in which connections between functional habitats may not be hampered.

It is also an indication that our continuous efforts to **disseminate ecological knowledge** to the general public, administrations and so on, yield results. And communication about heathland did not stand still. During the last couple of years, many publications were distributed. In Denmark, a *new manual for heathland management*, with many very instructive illustrations, was published as one of the results of a successful LIFE+ project. In Brittany, France, a *new book for the general public*, “*Landes vivantes. A la découverte d'un milieu naturel Breton*”, was published, while a main website dealing with the Culture of Brittany, was completed with a lot of information on heathland, its biodiversity, use and history. And finally, in the tradition of Peter Emil Kaland, a new *exhibition for the Ecomusée de Rennes* in France is prepared. In Norway, our colleagues, very regularly broadcast the results of their research and heathland management. And I’m sure that many of you know how to contact radio, television, newspapers and magazines. The high impact scientific journals are not the only means to spread the news, that’s clear.

Talking about **research**, also that did not stagnate as will be proved by the high quality scientific contribution during this 15th European Heathland Workshop and the many papers that were recently published in the journals. *Master theses* and *PhD’s* dealing with heathland were defended at many universities. Research and *species inventories* at several sites, often military areas revealed new populations of very rare species. Prescribed burning and grazing are still popular research objects in

Poland, Spain and Norway, just to mention only these countries. The use of remote sensing for detailed archeological and land history surveys, for habitat characterization and monitoring is another field of research that gets attention, for instance in a project in Poland.

But what is encouraging even more, is that also *new and big research projects* were granted. I want to mention new programs in Norway (Bergen University and partners) with the *LandPress project* (<http://www.uib.no/en/rg/EECRG/95156/landpress>) that will study how climate change and land use change affect biodiversity and natural resources in Norwegian coastal heathland. The interaction between droughts, increased wildfire incidence, prescribed burning, all in relation to biodiversity and ecosystem services, is the core issue. Another project of Møreforsking, the University of Bergen and others is *HiddenCosts* (<https://www.cristin.no/app/projects/show.jsf?id=533087>). It focusses on the hidden costs of afforestation as a climate change mitigation strategy. Very important in the context of alternative strategies to deal with climate change, and the landscape types, open with heath or closed with forest, that result from them. In Denmark, the Universities of Aarhus and Copenhagen join forces again, in a 3 to 4 years research project, '*Natural dynamics in heathland management – self-sustaining management*' (no acronym yet) to investigate the impact of different heathland management techniques on micro-topography and vegetation structure, different biota and nutrient stoichiometry. In another Danish project, the long term effects of nitrogen deposition on forests and semi-natural ecosystems including stoichiometry in heathland, will be studied. Ecosystem services on the other hand, are key subjects in the new *EcoCult* 6 years project of the Eberswalde University for Sustainable Development, the Leuphana University Lüneburg and two other partners in Germany (<http://www.leuphana.de/en/professorships/landscape-ecology/research-projects/ecocult.html>).

Within the landscape context of the Lüneburger Heide the effectiveness of different biodiversity management and conservation approaches will be assessed, while simultaneously the societal demand regarding ecosystem services, especially the cultural services, and the perception and acceptance of the conservation measures will be analyzed. How to strengthen social legitimation of efforts to sustain a heathland that delivers the desired goods and services and equally maintains a rich biodiversity. In The Netherlands, last year the specific research program on heath and moorland of OBN, the *Knowledge Network for Restoration and Management of Nature in The Netherlands*, was successfully reviewed. It is to say, the projects were assessed to be of very high quality and relevance for future policy action in favor of these ecosystems. And hopefully, thanks to that, the network will get ample project funding in the future too.

So on the one hand, big new projects will focus on the *processes acting on the landscape scale*, on the *integration with social and economic sciences*, and will hence perceive heathland as part of the complex *socio-ecological systems*. This approach is necessary to achieve a more sustainable land and ecosystem use. On the other hand, research also tends to concentrate more and more on specific *physiological processes* and on *organisms* that are at stake; unraveling the black boxes, so to say. Especially the *soil compartment*, its chemistry and biota are then of interest. Understanding these processes is crucial if we want to develop and select effective measures to counteract ongoing acidification, eutrofication and the leaching of essential minerals and their compounds. For too long, getting rid of bulk nutrients was the mantra of much of the heathland management. Now, it becomes clear that together with the nitrogen, also other elements were removed in large quantities, impoverishing the heath and weakening its resilience capacity. Dutch and Danish research of the last years yielded a lot of evidence in this respect.

At the end, it becomes clear that a **heterogeneous landscape**, with its variety of environmental qualities and potentials, meets the requirements of a healthy heathland ecosystem. And so, we should always try to combine both perspectives, the broader landscape and the individual organism, in our attempts to study and understand, to manage and use, to maintain heathland for our own pleasure and that of our children and the generations to come. Dear friends and colleagues, enjoy the workshop!

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