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EU project helps bring extinct grass back to life in Belgium

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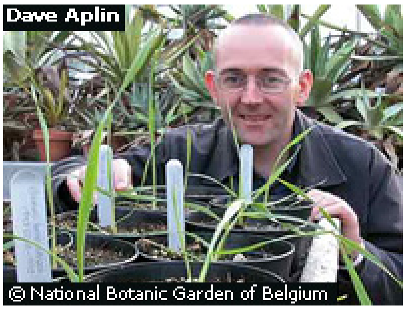

Fresh, green shoots of a grass species endemic to Belgium that had been considered extinct, the 'Brome of the Ardennes', are emerging simultaneously in the UK and Belgium. The germination of a collection of seeds of this species, Bromus bromoideus, rescued by a British botanist from the vault of the National Botanic Gardens of Belgium, is a cause of great joy for European botanists and particularly for Belgian - the country is currently celebrating its 175th birthday, and celebrating all things Belgium.

The so-called 'kiss of life' project constitutes a major success for the EU funded seeds conservation network ENSCONET.

This Belgian endemic species, almost exclusively restricted to the calcareous meadows of the provinces of Liege and Luxembourg, was first discovered in 1821 and soon became botanists' most celebrated native plant. Many editions of the 'Belgian Flora' had a picture of the grass on their covers. Then, in the latter part of the 19th Century, the species became progressively rare and, since being harvested for the last time in 1935, the Brome of the Ardennes has been absent from Belgian meadows.

Its extinction was mainly attributed to changes in farming practices and the distraction of professional botanists, who saw new floral riches arriving from Africa and the Americas. The University Botanical Garden of Liege continued to cultivate the Brome and distributed its seeds to a few other institutes. Unfortunately however, this botanical garden closed, and with other botanical gardens suffering the same fate, their collections were lost.

The story of this reappearance started earlier this year, when Dave Aplin, a botanist at the National Botanic Garden of Belgium in Meise, and Belgium's representative in ENSCONET, first became aware of the Brome's infamous extinction while searching for examples of extinct Belgian species to illustrate a presentation for a meeting of the network. He first thought that nothing was left of the Brome, but on investigating further, a handful of seeds preserved deep in the vaults of the Meise seed bank appeared. Dr Aplin thought he was probably looking at the last few remaining seeds of this species in existence.

The scientist explains: 'We then checked with botanists in Belgium, France (where a small population of the grass was once recorded) and scoured the Internet, to see if anyone else had the Brome seeds or plants.' One small private collection of the Brome seeds appeared in Flanders. These privately-held seeds, kept for ten years in an attic, were unlikely to be suitable for planting, but the best method for checking this was to attempt to germinate some of them.

Simon Linington, head of curation at Kew's Millennium Seed Bank in the UK, says that 'one of the purposes of the ENSCONET project is to determine the best techniques in seed preservation. Modern seed banking facilities are a vital tool for conservation, capable of preserving seeds over hundreds of years by carefully reducing their moisture content, and maintaining them at an astonishing minus 20°Celsius'.

Dr. Aplin started a round of consultations with some of Europe's top experts from ENSCONET and soon established links with the Millennium Seed Bank (MSB) of the Royal Botanic Gardens in Kew, one of the world's leading seed science research institutes and coordinator of the network. With fingers crossed, a small number of seeds were dispatched to the Kew's seed bank, and on 6 September, Dr Aplin received the call that he had been hoping for from Kew: some Meise seeds had successfully germinated, providing valuable information on how best to incubate the precious remaining seeds.

'It was a relief to know that the garden's seed bank was fulfilling its purpose and it illustrates the key role that botanic gardens have in conserving some of the world's most vulnerable plant species,' said Thierry Vanderborght, seed bank manager at Meise.

The future of the 'Brome of the Ardennes' does however remain uncertain. With the estimated total number of remaining viable seeds being lower than10,000, the species remains one of the world's most threatened. According to Dr Aplin, 'of the total amount of seeds discovered in the bank, less that 35 per cent are viable, so it seems that time was indeed running out for this species'. The best case scenario is for this species to be re-entered into the wild, although careful management will be needed to avoid a repeat of its history.'

Seedlings are now being grown, and it is hoped that they will produce fresh seeds so that these can be collected and conserved in seed banks across Europe for safety and the long-term survival of Belgium's most prized species.

The idea of a European-wide seed conservation network arose as botanical research centres became aware of the current high levels duplication in establishing and improving methodologies for seed collecting, curation and data management. By eliminating wasted efforts, the common resources could be redirected to establish links with other research activities within the EU, further increasing the quality of plant conservation, restoration and sustainable use.

The European Native Seed Conservation Network (ENSCONET) is a coordination action funded by the 'integrated infrastructure initiative', under the Commission's Sixth Framework Programme (FP6). The project was launched in November 2004 to protect the continent's most endangered plant species. Led by the Millennium Seed Bank (MSB) of the Kew's Royal Botanic Gardens, 19 botanical institutes from eight Member States and four candidate countries, covering five of Europe's six biogeographical regions, have joined the network to coordinate and enhance their activities.

The network is organised in four areas of activity; seed collection, curation, data management and dissemination. The main priorities for the network are the completion of a baseline inventory of species represented in European seed banks, and their conservation status in the wild. A 'gap analysis' of this inventory will serve to identify the priorities for future seed collecting programmes. The material in storage will be distributed among the members in a coordinated fashion. Within the five years, the network expects to have shared and spread good practice, developed common databases and undertaken foresight studies.

Countries

Belgium

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