



## **Examples of geodiversity – biodiversity relationships from Brabant’s sand regions, in nature conservation and restoration**

Hanneke van den Ancker (1), Erik Heskes (2), Pieter Dirk Jungerius (3), Bert Maes (4), and Jaap Harthoorn (5)

(1) Geomorfologie & Landschap, Oude Bennekomseweg 31,6717 LM Ede, The Netherlands, (2) Provincie Noord-Brabant, 's Hertogenbosch, (3) University of Amsterdam - IBED, Amsterdam, (4) Ecologisch adviesbureau Maes, Utrecht

The Dutch province of Noord-Brabant is dominated by sand landscapes of aeolian and riverine origin dating from Pleistocene and Holocene times. Brabant’s geological history is governed by its position on the fringe of a geological basin with re-activated faults and a Weichselian polar dune desert, a history that makes the region unique in Europe. Some areas have assemblages of geomorphology and soils that have remained relatively untouched up to the present day.

In these more pristine areas, the morphological, geological and soil development is a governing factor for the small-scale vegetation differences and biodiversity. Examples of these relationships will be shown, such as loam forests, wetlands caused by ‘wijst’ - a feature that is special for Brabant, in which the higher grounds are wetter than the lower grounds - active drift sands, and dry and wet heathlands with ‘vennen’ - small ponds in different gradations of paludization. Many of these areas are Natura-2000 habitats. The geodiversity-biodiversity relationships will be part of the proposal for a European Geopark in Brabant.

Measures to restore biodiversity are only sustainable if geodiversity is part of the nature restoration plan e.g. the history of the local landscape, geology, geomorphology and soils. Even if the areas have undergone a drastic transformation. Two examples will be given of nature restoration projects based on geodiversity-biodiversity relationships. The first example is the restoration of an active drift sand, such as still occur in The Netherlands but are extremely rare in the rest of Europe. Over the last decades they have also stabilized in The Netherlands due to high nitrogen deposition. The other example concerns a nature restoration project in a stream valley. These stream valleys originally had a high and small-scale geodiversity that was completely destroyed by stream regulation for agriculture production. This was the first project to study the former and present-day geo-dynamics and use these to restore the stream habitats and optimize geo-biodiversity relationships.