



## The importance of refugial population on Lateglacial and early Holocene vegetational changes in Romania

A. Feurdean, KJ Willis

Oxford Long-term ecology laboratory, Centre for the Environment, University of Oxford  
angelica.feurdean@ouce.ox.ac.uk Phone: +44-(0)1865-285178

Romania has for a long time been lacking good palaeoenvironmental records for the Late Quaternary. A chronological framework had been nearly absent and the vegetation development had been reconstructed entirely from pollen data. Romania was not extensively glaciated during the last full glacial, this region may, therefore, have been a glacial refugia for temperate trees and could represent areas of special value for long-term persistence of biodiversity. This work reviews new palaeobotanical data from radiocarbon dated sequences in Romania and considers it in conjunction with genetic evidence with the aim of locating the glacial refugia and tree immigration patterns for several trees species, and also the vegetation response to climatic oscillation from the end of the Lateglacial and Early Holocene.

The palaeoecological evidence (pollen and mega-fossils) suggests the occurrence of *Pinus*, *Juniperus*, *Betula*, *Salix* and *Picea* in lowland areas and the Romanian Carpathians between 18,000 and 14,700 cal. yr BP. This is in agreement with genetic evidence from plants and animals associated with woodland habitats.

During the Lateglacial *Pinus* (*P. sylvestris*, *P. cembra*, *P. mugo*), *Betula* (*B. pubescens*, *B. pendula*), *Picea abies*, *Larix decidua*, *Populus tremula*, *Salix*, *Prunus padus* and *Alnus* were present in the Carpathians. *Ulmus* occurred at low to mid elevation between 13,200 and 12,900 cal yr BP. *Quercus*, *Tilia*, *Fraxinus*, and *Corylus* were also probably present in a few isolated places.

The Lateglacial vegetation development shows a distinct response to climatic oscillations at all elevations, although the response is stronger at mid-altitude (800-1100 m.a.s.l) than at high altitudes. Moreover, smaller climatic oscillations are only

recorded at sites situated at mid altitudes, probably because these areas were located close to the treeline ecotone.