Reconstructing past arboreal cover based on modern and fossil pollen data: A statistical approach for the Gredos Range (Central Spain)

Nils Broothaerts, Sandra Robles-López, Daniel Abel-Schaad, Sebastian Pérez-Díaz, Francisca Alba-Sánchez, Reyes Luelmo-Lautenschlaeger, Arthus Glais, José Antonio López-Sáez

PII:	S0034-6667(17)30166-5
DOI:	doi:10.1016/j.revpalbo.2018.04.007
Reference:	PALBO 3948
To appear in:	*Review of Palaeobotany and Palynology*
Received date:	27 July 2017
Revised date:	5 April 2018
Accepted date:	25 April 2018

Please cite this article as: Nils Broothaerts, Sandra Robles-López, Daniel Abel-Schaad, Sebastian Pérez-Díaz, Francisca Alba-Sánchez, Reyes Luelmo-Lautenschlaeger, Arthus Glais, José Antonio López-Sáez , Reconstructing past arboreal cover based on modern and fossil pollen data: A statistical approach for the Gredos Range (Central Spain). The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Palbo(2017), doi:10.1016/j.revpalbo.2018.04.007

Reconstructing past arboreal cover based on modern and fossil pollen data: A statistical approach for the Gredos Range (Central Spain)

Authors: Nils Broothaerts[a*], Sandra Robles-López [b], Daniel Abel-Schaad [c], Sebastian Pérez-Díaz [b], Francisca Alba-Sánchez [c], Reyes Luelmo-Lautenschlaeger [b], Arthus Glais[d], José Antonio López-Sáez [b]

(a) KU Leuven, Department of Earth and Environmental Sciences, Celestijnenlaan 200E, 3000 Leuven, Belgium

(b) G.I. Arqueobiología, Instituto de Historia (CCHS), C.S.I.C., Albasanz 26-28, 28037 Madrid, Spain

(c) Departamento de Botánica, Facultad de Ciencias, Universidad de Granada, 18071 Granada, Spain

(d) LETG CAEN GEOPHEN-UMR 6554 CNRS, Normandie University, 14032 Caen Cedex 5, France

(*) Corresponding author: Nils Broothaerts; nils.broothaerts@kuleuven.be

Abstract

Quantifying and reconstructing past vegetation changes is an important step to fully understand human-environment interactions in the past. In this study we present a reconstruction of arboreal cover of six study sites in the Gredos Range (central Spain) over the last 3000 years based on multivariate statistical analysis (cluster analysis and non-metric multidimensional scaling, NMDS) of 186 modern pollen samples, modern vegetation data and six detailed fossil pollen records. The integrated approach allows distinguishing eight modern vegetation communities and linking the fossil pollen records with these vegetation communities as modern analogues. The information of the arboreal cover of the modern pollen sites was used to estimate the past arboreal cover of the fossil pollen sites in the Gredos Range. This estimated arboreal cover shows a higher level of landscape openness than suggested by the original pollen percentages data. Our results show that the evolution of the arboreal cover through time differs along an altitudinal gradient, with a decrease in arboreal cover during the Roman and Visigoth periods (2000 – 1240 cal BP) at low altitudes and