

Vegetation dynamics of the Hyrcanian forests of northern Iran since the Last Glacial Maximum

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Abstract

A 12m core with 15 ¹⁴C dates from a peatland at 1,200 m elevation provides the history of the Hyrcanian forests of N Iran over the last 20,000 years. For the LGM (19,500-16,900 cal. BP), the pollen record indicates the presence of sparse stands of beech, oak, and birch associated with elm and hornbeam around the study site. High values of ARTEMISIA, CHENOPODIACEAE AND AMARANTHACEAE (C-A), and UMBELLIFERAE, together with finds of HIPPOPHAE pollen suggest a dry or cold environment at higher elevations. Remarkable is a dip of AP and conspicuous peaks of C-A, ARTEMISIA, and SINAPIS TYPE pollen around 17,300 cal. BP. The period 16,900-14,500 cal. BP shows a rise of oak and a strong decrease of beech. ARTEMISIA, C-A, and UMBELLIFERAE still dominate the pollen assemblage and reveal, with the continuous curve of EREMURUS, the prevalence of steppe (i.e. drier and colder) conditions. The period 14,500-13,150 cal. BP shows a substantial rise of QUERCUS, CARPINUS, and ULMUS and the virtual disappearance of ARTEMISIA, C-A, and UMBELLIFERAE, reflecting the Allerød interstadial phase. From 13,150-12,100 cal. BP, the radical decline of AP types and pronounced peaks of ARTEMISIA, C-A, UMBELLIFERAE, and EPHEDRA persuasively reflect the Younger Dryas cold episode. The early Holocene (12,100-8,100 cal. BP) shows increased values of QUERCUS, ULMUS, and CARPINUS, abundant SALIX and strongly diminished ARTEMISIA, C-A, and UMBELLIFERAE. Over the last 8,500-8,100 years QUERCUS has been replaced by FAGUS and CARPINUS indicating the establishment of contemporary, i.e. temperate, climatic conditions. ALNUS pollen whose values were moderate until around

3,200 cal. BP turns into one the main AP types in the recent times. Similarly, PTEROCARYA starts to rise at 3,200 cal. BP followed by a dramatic decline at 1,200 cal. BP, a feature also observed in other palynological studies from northern Iran and Georgia. The occurrence of JUGLANS pollen since 1,350 cal. BP may point to the cultivation of walnut in the Caspian region of N Iran.

Key words: palynology, late-Pleistocene, Holocene, Last Glacial Maximum, Hyrcanian forests, Iran.