

PALYNOLOGICAL EVIDENCE OF HUMAN IMPACT AND DEFORESTRATION ON WESTERN ROUGH CILICIA, SOUTH COASTAL TURKEY

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Abstract

This study was part of the Rough Cilicia Survey Project, which is an ongoing archaeological investigation of a 60 km coastal strip in southern Turkey. In this paper palynological examination of surface samples and terrestrial sediments samples indicate a pattern of degraded vegetations from western Rough Cilicia is discussed. The previous results of palynological samples indicate a pattern of degraded vegetations. *Plantago* is obtained for areas with serious grazing experience; whereas, *Juniperus oxycedrus* L., *Q.coccifera* L. and *Chenopodiaceae*, *Plantago* characterize the effect of human impact on natural forests.

Keywords: Biogeography, Eastern Mediterranean, Lagoons

Western Rough Cilicia lies on the southern Mediterranean coast of modern Turkey and was administrated in Roman times as part of the Roman province of Cilicia (hence the term “Rough “, contrasting with “Flat Cilicia” to the east). The history of human settlement in southwest Turkey has been studied as a series of archaeological and historical field surveys and excavations. For this region, including western Rough Cilicia, the reconstruction of vegetation and human - induced landscape change is primarily based upon pollen analysis and other paleoecological methods. While archaeological data, including those from excavation and field survey, can sometimes be biased by differential site destruction and modern looting of burials, palaeoecological data tend to be continuous and do not suffer from the chance destruction of archaeological remains. During the 2001 and 2002 seasons of the Rough Cilicia Archaeological Survey Project, geophysical trenches were cut in river basins of the Gazipasa countryside in order to obtain pollen and macrobotanical samples to determine the history of regional vegetation patterns. Pollen was concentrated from 0.4 to 1.1 liter subsamples to which exotic *Lycopodium* spores (c. 12.000 grains per tablet) were added (1). The sediment samples for pollen analysis (~1 cm³ fresh material) were collected as samples and treated using standard palynological techniques ([2], [3]). This method includes HCl, HF, and KOH digestion, before staining with safranin and mounting with glycerine jelly. The pollen percentages are based on the pollen sum of arboreal (AP) and nonarboreal pollen (NAP), excluding spores. The localities of obtained surface samples are represented by three lagoonal areas in the Hacimusa, the Bickici and Delice River basins. Distribution of the pollen grains in Bickici and Delice Rivers differs from that which occurs in the Hacimusa River. Arboreal pollens are represented by *Juniperus oxycedrus* L. and *Pinus* in Hacimusa river as the highest value; whereas, *Juglans* reaches the highest values in Bickici and Delice Rivers. According to our preliminary evidence of surface samples, two different vegetation types are in the study area. Eu- Mediterranean vegetation contains xerophytic shrubs and evergreen vegetation (*Pinus brutia*, *Quercus* and *Erica*, *Artemisia*) and Oro-Mediterranean vegetation includes deciduous forest (*Pinus brutia*, *Q. Cerris*, *Juniperus*, *Cedrus*) The previous results of analysis from the terrestrial sediments samples indicate a pattern of degraded vegetations (Figure 1).

Palynological zones related to the Last Glacial/Interglacial paleoclimatic conditions in the source area, as reflected by the increasing steppe types.

Tab. 1. Types of vegetation and characteristic assemblages in three lagoonal areas

Lagoonal area	Vegetation type	Characteristic assemblages
Hacimusa river	Oro-Mediterranean	<i>Pinus brutia</i> , <i>Q.Cerris</i> , <i>Juniperus</i> , <i>Cedrus</i>
Delice river	Eu-Mediterranean	<i>Pinus brutia</i> , <i>Quercus</i> (ever green) and <i>Erica</i> , <i>Artemisia</i>
Bickici river	Eu-Mediterranean	<i>Pinus brutia</i> , <i>Quercus</i> (ever green) and <i>Erica</i> , <i>Artemisia</i>

References

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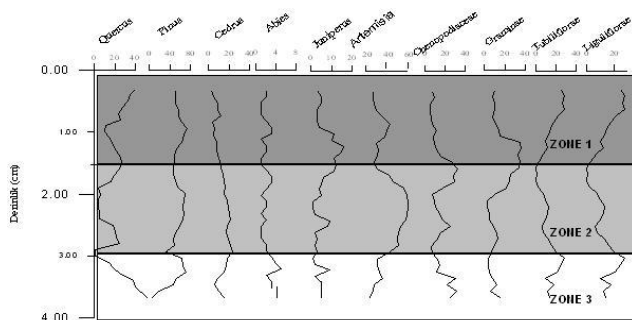


Fig. 1. Relative abundance of dominant pollen types in terrestrial sediments

Plantago is obtained for areas with serious grazing experience; whereas, *Juniperus oxycedrus* L., *Q. coccifera* L. and *Chenopodiaceae*, *Plantago* characterize the effect of human impact on natural forests and their replacement by secondary vegetation. They also reveal the existence of three different