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# The flora of NW Peloponnese during the Middle Pleistocene (Vigla Sychainon, Rio-Antirio Basin) - Preliminary results

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## Introduction

The Pleistocene sediments of the Rio-Antirio Basin (Achaia, Greece) have yielded several terrigenous plant assemblages. In this study, numerous plant fossils as disarticulated parts, mainly leaves and defoliate shoots, have been collected from two fossiliferous sites in the Vigla Sychainon area (Vigla I and III). Based on recent data from the micropalaeontological analysis of marine sediments found stratigraphically bellow the plant bearing sediments and especially the presence of the coccolithophore *Emiliana huxley* (Tsoni et al., this volume), a late Middle Pleistocene age can be inferred for the examined plant material. Our main objectives include the description and taxonomic identification of the plant remains, the determination of the palaeoflora and the reconstruction of the regional palaeovegetation.

## Methods

More than 1.500 plant macro-remains, mainly foliage and shoot impressions, were collected by the Paleontology and Stratigraphy laboratory team of the University of Patras. The remains were quite fragmentary and lack organic material preventing cuticular analysis. Initially, the collected material was prepared carefully with thin needles and soft brushes. Afterwards, acrylic resin (Paraloid B72) was used for the conservation of morphological details. The taxonomic determinations and systematic affinities were based mainly on leaf morphology by recording the basic macro-morphological features of the fossils in protocols (e.g. laminar shape, margin type, venation). For the reconstruction of the vegetation, the published data on European plant palaeoassemblages, the autoecology of modern allies and the taphonomical processes that affected the examined material were taken under consideration.

## Results

About 1/3 of the collected plant remains were identified to family or genus level. The great majority of them represents Angiosperm taxa of trees or shrubs [tab. 1, fig. 2]. Fagaceae predominates the assemblage with a deciduous oak which is characterized by lobed leaves (*Quercus*) [fig. 3]. At least two additional oak species, one of them evergreen, also occur. Ulmaceae is represented by *Zelkova* and possibly an elm (*Ulmus*) species [fig. 1]. Moreover, broad-leaved elements such as *Platanus*, *Acer* and *Populus* are identified. Rarely needles of Gymnosperm origin (possibly Pinaceae) are present.

## Conclusions-Discussion

According to the preliminary results from the study of Vigla palaeoflora it can be concluded that:

- The plant assemblage is profoundly dominated by a deciduous oak with lobed leaves.
- The genus *Zelkova* it seems to survive through most of the middle Pleistocene in NW Peloponnese while in central Europe it had disappeared much earlier. Today *Zelkova* is found as a relict species in the Mediterranean area with two endemic species in Crete and Sicily respectively.
- The severe fragmentation of the plant remains probably indicates allochthonous fossil deposition (leaf transportation by winds or likely water currents).
- The assemblage represents a gallery forest with *Platanus*, *Populus*, *Ulmus* and possibly *Zelkova* and *Quercus* that might thrived across an active river channel or a lake. In the lowland surrounding area, a mixed mesophytic forest mostly with deciduous elements such as oaks, maples and *Zelkova* likely occurs.

Further research is required in order to conclude a final definition of the palaeoflora and the palaeovegetional reconstruction. For a more purposeful systematic affinity of the identified taxa, the future study will focus on their comparison to the modern Mediterranean allies and determination to species level.

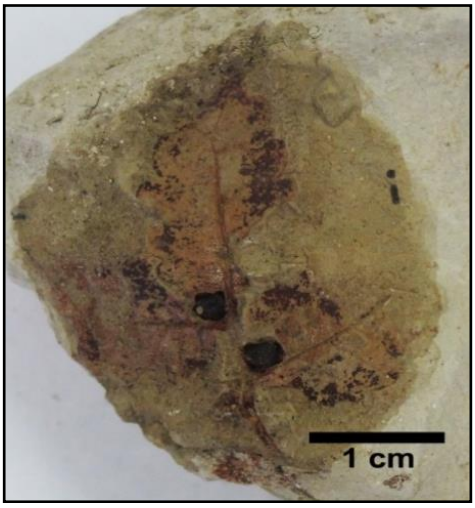


**Figure 1: *Zelkova* sp., twig with attached leaves and fruits.**

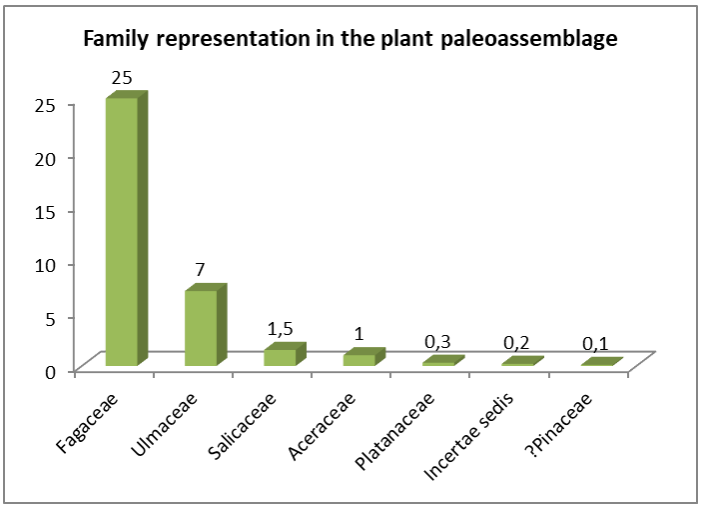


**Figure 2: The Vigla Sychainon palaeoassemblage, plant family representation (%).**

**Table 1. The Vigla Sychainon palaeoassemblage, flora list and frequencies.**

| Family | Genus | Family Frequency |
|---|---|---|
| Gymnospermae | | |
| ? Pinaceae | indet. | rare |
| Angiospermae | | |
| Platanaceae | *Platanus* | rare |
| Ulmaceae | ?*Ulmus*<br>*Zelkova* | common |
| Fagaceae | *Quercus* | abundant |
| Aceraceae | *Acer* | rare |
| Salicaceae | *Populus* | rare |
| indet. | *Dicotylophyllum* | rare |


**Figure 3: *Quercus sp.*, lobed leaf.**

## References


Kleinhölter, K., 1994. Die neogenen Floren der Peloponnes. Ph.D. Thesis, Münster University, Münster.

Kleinhölter, K., 1995. Oberpliozäne Makroflorenaus dem Bereich des Patras-, Rion- und Korinth-Grabens (Peloponnes und SW-Kontinentalgriechenland). Münster. Forsch. Geol. Paläont., 77: 467-478.

Knobloch, E., Velitzelos, E., 1986. Die pliozäne Flora Von Skoura bei Sparta auf dem Peloponnes (Griechenland). Documenta Naturae, 29: 21-28.

Kontopoulos, N., Zelilidis, A., 1992. Upper Pliocene lacustrine environments in the intramontane Rio graben basin, NW Peloponnesus, Greece. N. Jb. Geol. Paläont. Mh., H.2: 102-114.

Tsoni, M., Iliopoulos, G., Koukouvelas, I., Kostopoulou, S., Kontopoulos, N., 2019. Palaeonvironmental evolution of Rio basin during the Middle Pleistocene. In this volume.

Velitzelos, D., Bouchal, M.J., Denk, T., 2014. Review of the Cenozoic floras and vegetation of Greece. Rev. Palaeobot. Palynol., 204: 56-117.

Velitzelos, E., Gregor, H.J., 1990. Some aspects of the Neogene floral History in Greece. Rev. Palaeobot. Palynol., 62: 291-307.