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OAKSCAPE PROJECT

ARCHAEO-PALAEOBOTANICAL RESEARCH FOR A HISTORY OF OAK FOREST IN THE "PARCO NATURALE COSTA OTRANTO-LEUCA E BOSCO DI TRICASE" (SOUTHERN ITALY)

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STUDY AREA

Today, the easternmost region of Italy, Apulia, has A HIGH DIVERSITY OF OAKS with up to 12 species and a series of hybrids and ecotypes (**Fig.1**). Both the ecological and species richness can be explained as a consequence of its geographical position and its role as a glacial *refugium*, even if other causes related to human actions can't be ruled out (migrations, colonization, land use strategy etc.).

...SO, WHAT IS THE HISTORY OF OAK FORESTS IN SOUTHERN APULIA IN TERMS OF SPECIES RICHNESS, CHANGES IN COMPOSITION (AND RELATED CAUSES) AND POSSIBLE INTRODUCTION OF NEW SPECIES?

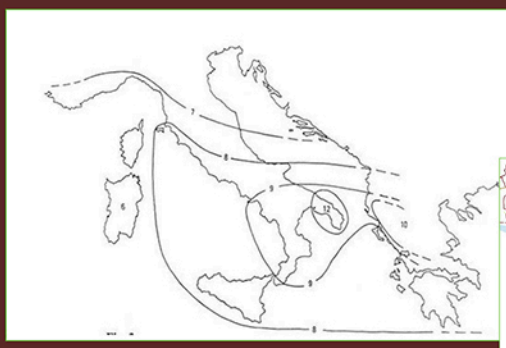
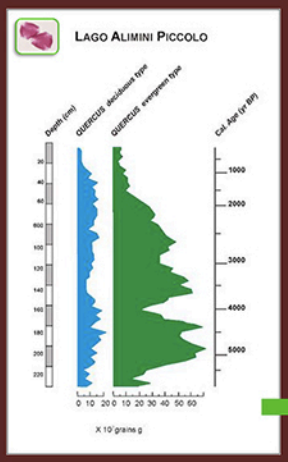


Fig. 1- On the left: Patterns of isopories labelling South Apulia as the richest area of *Quercus* species among the surrounding territories. Relative amount of taxa are indicated (from Schirone and Spada 1995).
At the bottom: Localization of archaeological sites mentioned in the text and the area of the "Parco regionale naturale Otranto- Santa Maria di Leuca e Bosco di Tricase" .

PALEO-ARCHEO-BOTANICAL EVIDENCES: STATE OF ART



POLLEN DATA available for the Salento area during the last 5500 years (Di Rita and Magri 2009) paint a picture in which Mediterranean vegetation is characterized by the steady presence of oaks, marked by several fluctuation events through time, caused by climate changes and/or human activities (**Fig. 2**).
The taxonomic resolution of the palynological data do not however enable us to clearly define the species richness beyond reference to two distinct groups of OAKS: DECIDUOUS AND EVERGREEN.

Fig.2 - Lago Alimini Piccolo. Pollen concentration diagram for selected taxa (from Di Rita, Magri 2009- modified).

On the other hand, ANTHRACOLOGY allows us to further distinguish a THIRD GROUP: THE SEMI-DECIDUOUS OAKS.

Anthracological data collected during the last decades from several archaeological sites located in the working area by the Laboratory of Archaeobotany and Palaeoecology, show the large amount of evergreen oak charcoals in the assemblages; they attest the broad and unvaried use of evergreen oak woods for several human activities (carpentry, firewood,etc..), from the Neolithic to Post-medieval period.
In contrast, deciduous and semi-deciduous oaks are less frequently used: as showed in Tab.1 deciduous oaks are attested from middle Bronze Age to Medieval period, while semi-deciduous oaks from Hellenistic to Late Medieval period.

Tab.1- Deciduous and semi-deciduous oaks found in the archaeological contexts of the Salento area.

ARCHAEOLOGICAL SITE	CHRONOLOGY	DECIDUOUS OAK	SEMI DECIDUOUS OAK
ROCA (MELENDUGNO)	FROM MIDDLE TO LATE BRONZE AGE (1500-1100 BC)	x	–
SCALO DI FURNO (PORTO CESAREO)	BRONZE AGE (II MILLENNIUM BC)	x	-
CASTRO (LOC. CAPANNE)	HELLENISTIC PERIOD (IV-III CENTURY BC)	x	x
	MEDIEVAL PERIOD (XIV CENTURY)	x	-
	POST-MEDIEVAL PERIOD, (XVI CENTURY)	x	-
CASTELLO CARLO V (LECCE)	MEDIEVAL (XII CENTURY)	-	x
MURO LECCESE	POST-MEDIEVAL PERIOD (XVI-XVII CENTURY)	-	x
APIGLIANO (MARTANO)	MEDIEVAL PERIOD (XIII-XIV CENTURY)	x	-
QUATTROMACINE (GIURDIGNANO)	MEDIEVAL PERIOD (IX AL XIV CENTURY)	x	-
SUPERSANO	MEDIEVAL PERIOD (VII-VIII CENTURY)	x	-

Today, only one semi-deciduous oak species grows in the Salento: the VALONIA OAK (*Quercus ithaburensis* subsp. *Macrolepis)*, that has his westernmost presence in southern Italy at the "Parco regionale naturale Otranto- Santa Maria di Leuca e Bosco di Tricase" **(Fig.3)**. The reason of Valonia oak's presence is still an open question: we don't know if it is indigenous or not, and if so, when and why it was introduced in southern Apulia.

Fig.3 - Geographical distribution of *Quercus aegilops* L. subspecies (from Scaramuzzi 1960).

OAKSCAPE PROJECT APPROACHES:

DENDROCHRONOLOGICAL ANALYSIS carried out on Valonia Oak Trees located in the Natural Park allow us to date back the "la Falanida" wood at least from the **1848**

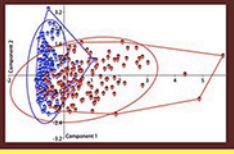
[This dendrochronological study has resulted in a new master chronology from 1848 to 2016 that may contribute to the intensification of the dendrochronological network in South-East Europe. So, it may be used in comparison with other valonia oak trees that grow in the east Mediterranean area.

(Dendroclimatological studies are underway)]

Id.	Period A.D.	Mean ring width (mm)	SD	autocor.	MS
LE02001Q	1896-2016	90,0	48,3	0,668	0,270
LE02002Q	1848-2007	218,8	121,3	0,865	0,171
LE02003Q		95,0	36,5	0,720	0,204

SPECULATING THAT ANCIENT CHARCOALS REFERRED TO SEMI-DECIDUOUS OAKS RECOVERED FROM ARCHAEOLOGICAL SITES MAY CONCERN VALONIA OAKS, FURTHER STUDIES ARE REQUIRED IN ORDER TO SUPPORT OUR HYPOTHESIS.
WITH THE AIM OF SKETCHING A "HISTORY" OF OAK FORESTS IN APULIA DURING THE MILLENNIA IT COULD BE ALSO INTERESTING TO FIND OUT WHICH SPECIES GROUPED IN "DECIDUOUS OAKS" CHARCOALS GREW IN THE SALENTO.
AS A CONSEQUENCE, OUR ONGOING STUDIES SUGGEST THE USE QUANTITATIVE TECHNIQUES TO ANALYZE MORPHOMETRIC CHARACTERISTICS OF WOOD ANATOMY, AND THEN TO PROCESS DATA BY MEANS OF MULTIVARIATE ANALYSIS.
THE GOAL IS TO ANALYZE THE DIVERSITY OF OAKS WOOD ANATOMY FIRST IN A MODERN CONTROL COLLECTION AND SUBSEQUENTLY IN ARCHAEOLOGICAL SAMPLES, SO AS TO HIGHLIGHT SIMILARITIES AND DIFFERENCES BETWEEN THEM

THE REFERENCE COLLECTION IS COMPOSED BY MODERN *Q. MACROLEPIS* , *Q. TROJANA*, *Q. VIRGILIANA*, *Q. AMPLIFOLIA*, *Q. DALECHAMPII*, SAMPLED AT THE "PARCO REGIONALE NATURALE OTRANTO- SANTA MARIA DI LEUCA E BOSCO DI TRICASE", WHILE ANCIENT CHARCOALS COME FROM ARCHAEOLOGICAL SITES LOCATED VERY CLOSE TO THE NATURAL PARK (TAB.1 and FIG.1)
18 MORPHOMETRIC DESCRIPTORS WILL BE DETERMINED (AREA, PERIMETER, ROUND ETC.) AND THE DATA OBTAINED WILL FORM THE TRAINING DATASET USED FOR THE STATISTICAL ANALYSIS.



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