WP3
Wood provenancing

Full partners

USC - UNIVERSITY OF SANTIAGO DE COMPOSTELA

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UDL – UNIVERSITÉ DE LORRAINE

Anne Poszwa

DEPENDENCIES

Potential provenancing areas ➔ WP1

Wood obtained from shipwrecks ➔ WP2

Individual Projects

ESR9 (USC, 36 months)
ESR10 (WU, 36 months)
ESR11 (USC, 36 months)
ESR12 (UdL, 36 months)

ER3 (USC, 20 months)

ESR9

University of Santiago de Compostela

Marta Domínguez Delmás

Starting date **2014.09.01**

Development and implementation of a tree-ring data network for the assessment of the date and provenance of Iberian ship timbers

- ✓ Identification of potential areas for finding long living pines and oaks
- ✓ Sampling of living trees and references buildings in the selected areas
- ✓ Construction of reference chronologies using 'classical' dendrochronological techniques
- ✓ Extension of the living chronologies using buildings located close to the selected stands
- ✓ Dating of shipwrecks using the reference chronologies

ESR10

Wageningen University

Linar Akhmetzyanov

Starting date **2014.08.01**

Application of ecological wood anatomy for species determination and wood provenancing of oak and pine from Atlantic Iberia

- ✓ Collection of wood samples in the same or close areas to ESR9
- ✓ Sampling of living trees at key areas for the description of specific features (microclimatic effects, species identification, forest management practices…)
- ✓ Identification of potential quantitative and qualitative anatomical characteristics of oaks and pines to describe wood provenancing
- ✓ Construction of a tree-ring database of anatomical markers for high-precision provenancing

ESR11

University of Santiago de Compostela

Mohamed Traoré

Starting date → **2014.10.01**

Identification of potential biomarkers of wood provenancing

- ✓ Sampling of living trees in the geographical regions used by ESR9 and ESR10
- ✓ Use of wood from buildings and shipwrecks provided by other participants
- ✓ Application of pyrolisis, FTIR-ATR analyses and trace elements to identify potential biomarkers for provenancing
- ✓ Assessment of the temporal and spatial variations of biomarkers

ESR12

Université de Lorraine

Fadi Hajj

Starting date **2014.09.01**

Geochemical fingerprinting of potential source areas of the wood

- ✓ Sampling of the physical environment (soils, rocks and water) and living trees in the areas selected by ESR9, ESR10, and ESR11
- ✓ Use of wood from living trees, and from buildings and shripwrecks provided by other participants
- ✓ Isotopic analyses in rocks, soils, and in wood from living trees, buildings and shipwrecks
- ✓ Identification of geochemical markers in the physical environments that could be related to wood originated from the same areas

ER3

University of Santiago de Compostela

Paul Copini

Starting date **2015.04.01**

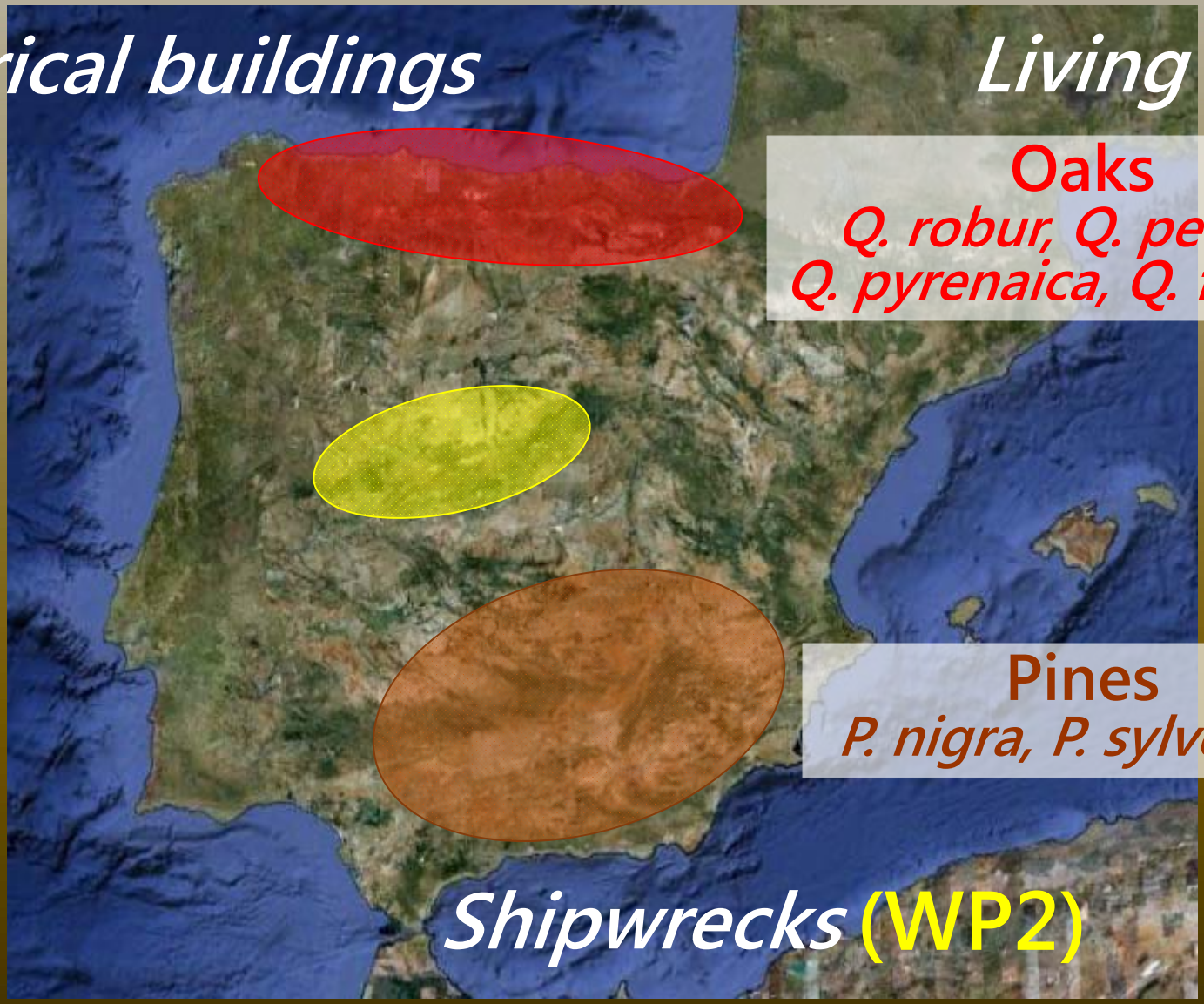
Provenancing timber from a multidisciplinary approach: dendrochronology, wood anatomy and geo/dendrochemistry

- ✓ Integration of methodologies applied by all ESR of WP3
- ✓ Elaboration of a methodology for the precise dating and provenancing of ship timbers
- ✓ Cross-validation of the methods
- ✓ Application to undated samples from shipwrecks

Main target areas

Historical buildings

Living trees

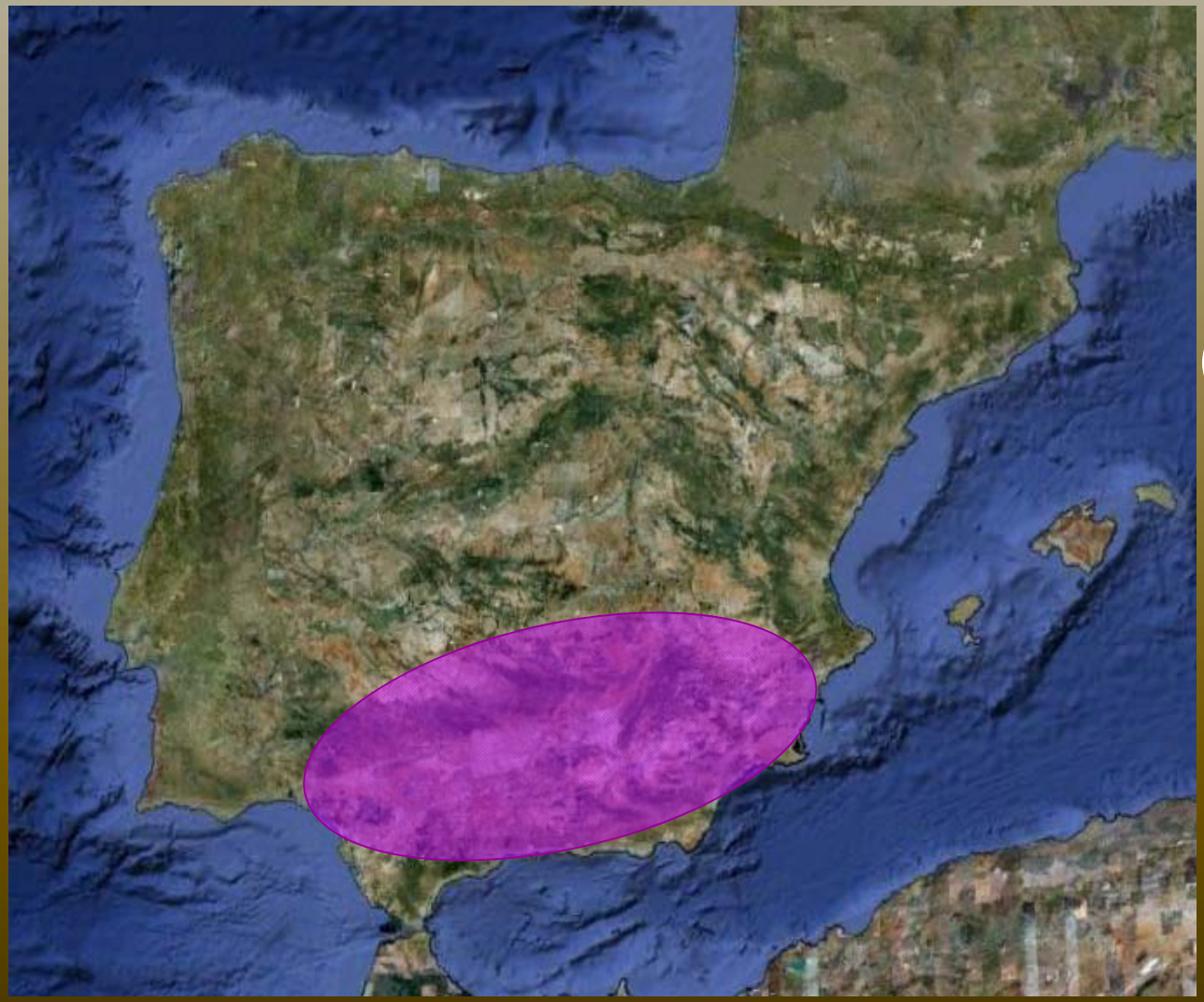


Oaks
Q. robur, Q. petraea
Q. pyrenaica, Q. faginea

Pines
P. nigra, P. sylvestris

Shipwrecks **(WP2)**

Work carried out until now



One common sampling campaign in Andalusia (November 2014)

Buildings

Living trees

All ESRs involved

MILESTONES

M5	Establishment of a network of oak and pine tree-ring chronologies for dating and provenancing timber used in ships in the 16th-18th centuries
M6	List of anatomical characteristics that allow reliable differentiation among respectively, deciduous oak and pine species and differentiation between stem and branch wood
M7	Identification of biomarkers and geochemical tracers for oak and pine species growing in the Iberian Peninsula in areas associated with Early Modern timber production for shipbuilding
M8	Characterization of the geochemical composition of the wood of timber-finds from shipwrecks

To be delivered by June 2017!!!