

PRESS RELEASE

ITALUS: THE OLDEST EUROPEAN TREE DISCOVERED IN POLLINO NATIONAL PARK

At the boundary between Calabria and Basilicata, in southern Italy, a team of researchers has discovered a pine tree that started growing 1230 years ago. Using an innovative method that combines dendrochronology and radiocarbon dating the scientists have reported that Italus is the oldest tree in Europe. The research has been published in the journal Ecology, published by the Ecological Society of America. In the most recent decades Italus shows a resurgence of growth, in common with other extremely old pines of the Pollino massif, one of the largest wilderness areas in Europe.

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After four years of exhaustive field surveys, a joint research team made of researchers from the DendrologyLab at the University of Tuscia and Pollino National Park managers discovered the oldest tree in Europe, dating back to 1230 years ago. Their discovery has been published in *Ecology*, Ecological Society of America's journal. <<We decided to name it *Italus* in honor of the Enotri king who ruled on this region during the Late Bronze Age, a key period of transition from pastoral activities to agriculture and permanent settlements>> **says Gianluca Piovesan**, professor at the Department of Agriculture and Forest Sciences of University of Tuscia (Viterbo) and Chief Scientist for this research programme.

Defining the exact age of *Italus* was a real challenge: **the inner part of the trunk was missing, so that scientists had to develop a multistep radiocarbon dating method based on wood samples taken from the roots.** <<We asked to the physicists of CEDAD in Lecce to help with radiocarbon dating because tree-ring series from wood cores did not initially synchronize the stem with the roots. - Piovesan recalls – **“Thanks to the wiggle matching method, the reliability of radiocarbon dating was very high”** says Gianluca Quarta, professor at the University of Salento.” “This is another important success of the group I am coordinating at CEDAD, where we use a particle accelerator to solve scientific problems in different fields” comments Lucio Calcagnile, head of CEDAD in the Department of Mathematics and Physics at the University of Salento.

This combined method gave *Italus* an age of at least 1229 years in 2017. This is the first time that dendrochronology and radiocarbon analysis has been combined to determine the age of an extremely old and hollow tree.

Despite its age, *Italus* showed a remarkable growth behavior in recent decades. In agreement with most old pines in the Pollino massif, *Italus* is adding new wood to its stem. The environmental factors responsible for this increase are under study because it counters the widespread growth decline and dieback that various Mediterranean ecosystems have recently experienced. **“This is not surprising from a biological point of view because aging is not programmed among trees – they can potentially be immortal”** says Alfredo Di Filippo, Assistant Professor at the Department of Agriculture and Forest Sciences of University of Tuscia (Viterbo).

Pollino National Park is among the largest protected areas in Italy, and is known for its very old trees. Another tree close to a thousand year of age was discovered about 30 years ago by Franco Biondi, professor of Natural Resources and Environmental Science at the University of Nevada in Reno, USA, who is also a member of the research team. On these mountains, **patches of old-growth forests have escaped intense logging campaigns** that, as noted by Norman Douglas in the early 1900s, transformed the forest landscape to "almost bare slopes once

clothed with these huge primeval trees" (from old Calabria). **The continued presence at the top of the Pollino massif of a boreal belt of *Pinus heldreichii* is in fact a unique feature of modern Apennine forests.**

Pollino National Park is candidate to become one of the wildest areas in Europe, not only for the presence of millennium-old pine forests but also for several other ancient woods, including several stands of old-growth beech, one of which was declared a UNESCO World Heritage site in 2017.

<<It is surprising how, in a region with a long history of landscape transformation, **trees in remote areas could last for over a millennium, following their own natural cycle.** They are now playing an irreplaceable role in nature conservation and sustainable development. **The integrity of trophic chains in Pollino National Park is documented by the presence of many species that have disappeared in managed forests, such as the elusive xylophagous beetle, *Buprestis splendens* (The Goldstreifiger beetle), one of the rarest coleopterans in Europe**>> says Piovesan.

G. Piovesan, F. Biondi, M. Baliva, E. Presutti Saba, L. Calcagnile, G. Quarta, M. D'Elia, G. De Vivo, A. Schettino, A. DiFilippo, The oldest dated tree of Europe lives in the wild Pollino massif: *Italus*, a strip-bark Heldreich's pine. Ecology in press DOI: 10.1002/ecy.2231

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