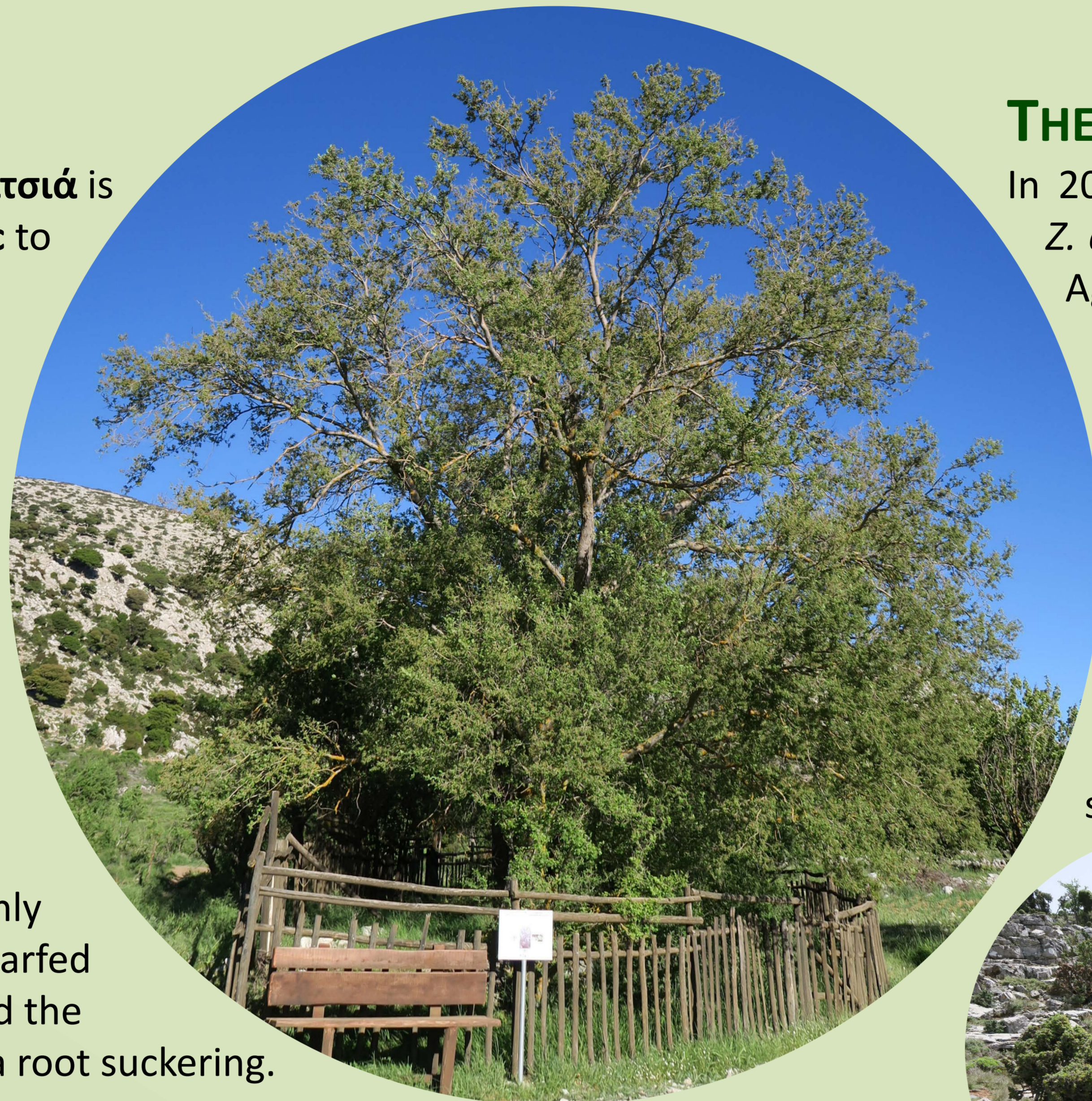


INTEGRATED CONSERVATION ACTIONS FOR THE RELICT AND ENDEMIC CRETAN TREE *ZELKOVA ABELICEA* (ULMACEAE)

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THE SPECIES

Zelkova abelicea (Lam.) Boiss. or **αμπελιτσιά** is a tree species of the elm family, **endemic** to the mountains of Crete (Greece) and is used to make the traditional Cretan shepherd stick or **κατσούνα**. The species is classified as endangered on the IUCN Red List. **Overbrowsing** by goats and **trampling** and **soil erosion** due to the presence of flocks (both ovine and caprine) are the most important threats to the species. Only ca. 5% of individuals are full-grown, with a well-developed crown and will be able to bear fruit. All other individuals have a dwarfed shrub-like morphology due mainly to overbrowsing and will not fructify. Dwarfed individuals can be very old (> 600 yr), and the species often reproduces vegetatively via root suckering.



Zelkova abelicea tree



Shepherd stick - κατσούνα

THE PROJECT

In 2014 was launched a project for the conservation of *Z. abelicea* in collaboration between the Mediterranean Agronomic Institute of Chania, the four Forest Directorates of Crete and the University of Fribourg (Switzerland), with actions aiming at:

- 1) the implementation of **in situ** measures for protecting *Z. abelicea* against its most important threat: browsing
- 2) the **ex situ** conservation of all known populations of the species
- 3) **increasing public awareness**

The first phase of the project ended in 2016 and a second phase will extend until 2020.



Dwarfed & browsed *Z. abelicea*

Leaves & fruit

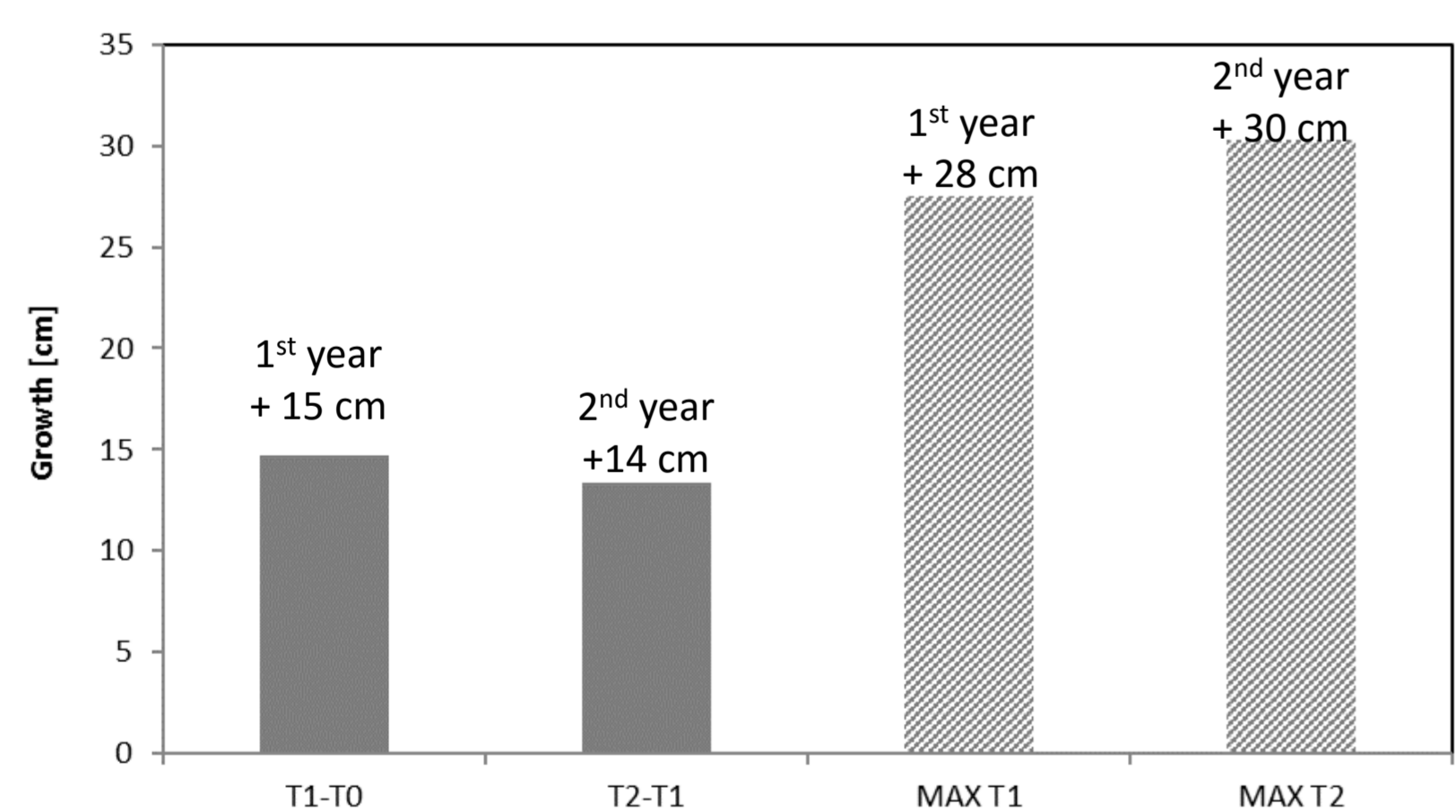
Goat on a dwarfed tree

ACTIONS & RESULTS FOR 2014-2016

IN SITU 32 plots with *Z. abelicea* individuals were fenced throughout the mountains of Crete. Only small plots (2.5-360m²) were established to avoid deliberate destruction and minimize impact on land user activities. As soon as fences were installed, *Z. abelicea* dwarfed individuals began to grow and elongate and vegetation cover to change.



Differences in vegetation cover between inside the fenced plot (left) and outside (right) in an area under strong browsing pressure



Average growth (left) and average maximal shoot elongation (right) of *Z. abelicea* dwarfed individuals one (T1) and two (T2) years after fencing



Elongated shoots on dwarfed *Z. abelicea* individuals. The longest measured shoot was 120 cm the first year and 57 cm the second year after fencing.

PUBLIC AWARENESS AND OUTREACH Actions for the sensitization and awareness of the wide public on the importance of *Z. abelicea* conservation and the project actions are organized. The active involvement of local stakeholders is crucial for securing a positive outcome and a long term sustainability of the project actions.



Information leaflet



Public event in a village

EX SITU Fruits were collected from populations with fruiting trees, but sound seed proportions were found to be very low (between 0-9% only). Stolon and shoot cuttings were also collected for vegetative propagation from populations where there are no fruiting trees. So far, vegetative propagation shows low success and further investigations are needed to develop more effective protocols. The plants obtained from seeds or cuttings are used to establish ex situ collections in order to preserve the genetic diversity of the species. The first ex situ plantation was established in 2016 on public land offered by the Municipality of Plataniyas in the Levka Ori. 50 young trees were planted by pupils of a local primary school.



Fruits of *Z. abelicea*



Cuttings for vegetative propagation



Z. abelicea seedlings



Tree planting in the ex situ plantation