

# Preliminary results of the long-term monitoring of the unique population of *Horstrissea dolinicola*: a steno-endemic, threatened plant of Crete, Greece

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## Introduction

*Horstrissea dolinicola* Greuter, P. Gerstberger & B. Egli (Apiaceae) is a dwarf perennial geophyte endemic of Crete and it is only found in a few limestone sinks (dolines) on Mt. Ida (Psiloritis) at about 1,500 m. a.s.l. *H. dolinicola* has been categorized as CR (Critically Endangered) and is one of the Top 50 Mediterranean Island Plants by the IUCN/SSC Mediterranean Plant Specialist Group. Its unique population is confined to an area with livestock farming. Although the species is well adapted to withstand extreme grazing pressure, livestock installations present a threat to its survival. Recent *in situ* conservation actions implemented in the framework of the project CARE-MEDIFLORA (2016-2019) include the creation of a detailed distribution map of the population, population reinforcement, relocation of livestock installations and the establishment of a Plant Micro-Reserve for the species where permanent monitoring plots were established. The monitoring results obtained so far are presented and discussed.



*H. dolinicola* flowering plant



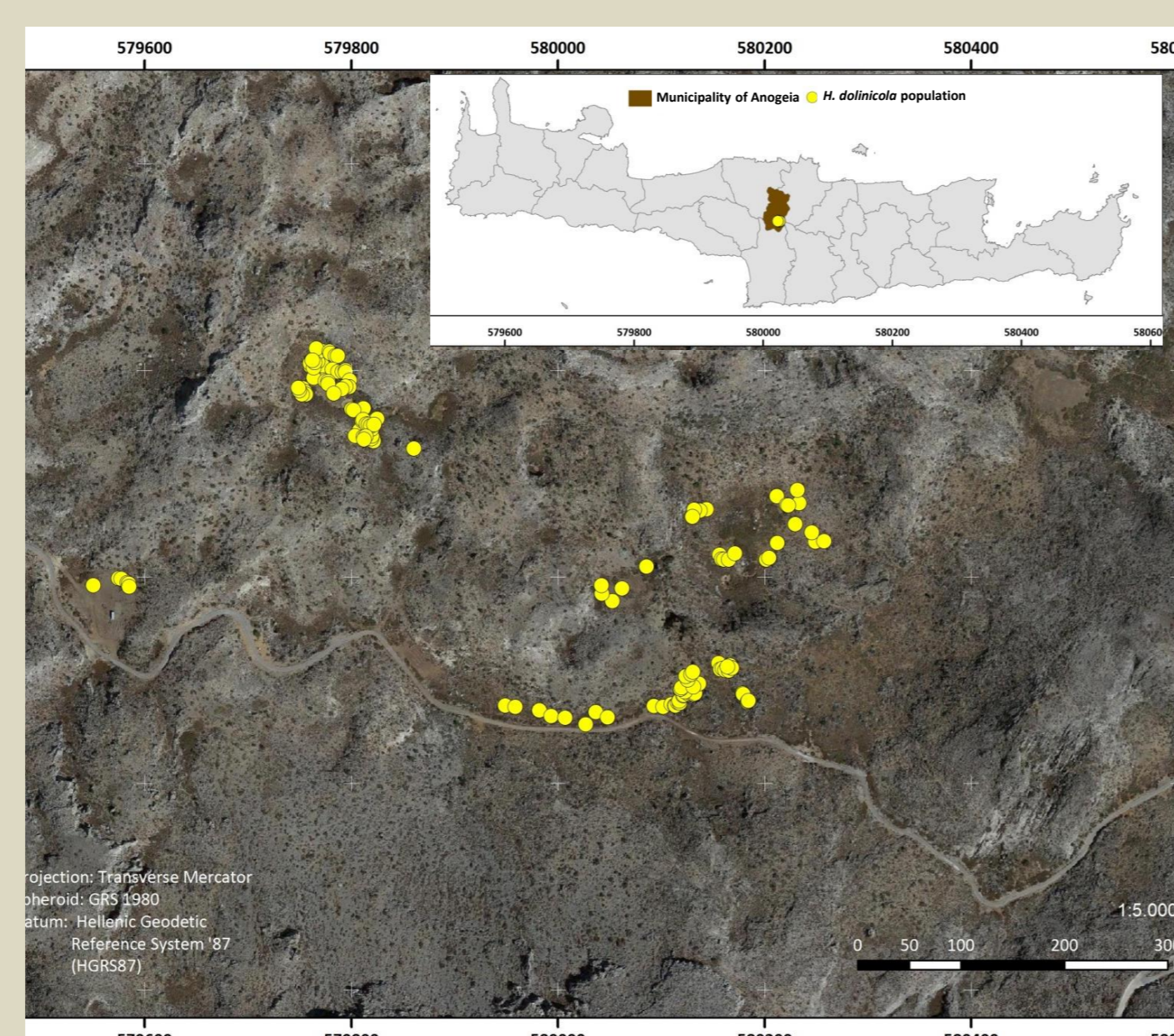
*H. dolinicola* in vegetative stage

## Methodology

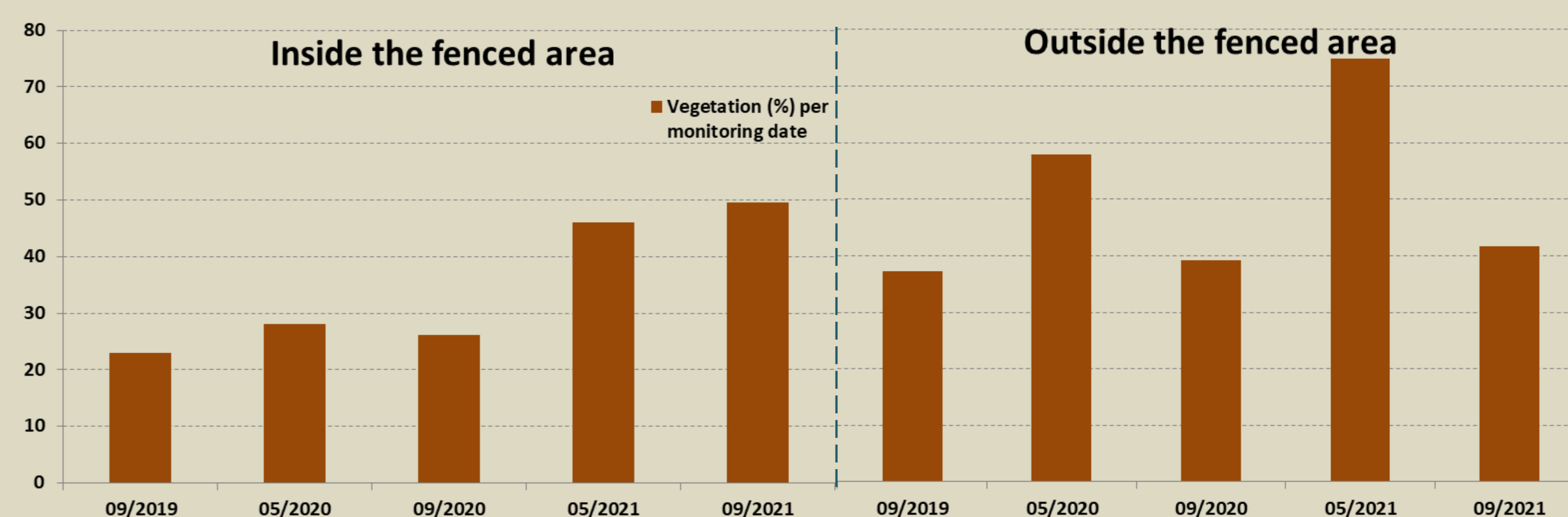
- Reproductive protocol according to Fournaraki & Thanos (2009) was used
- Population reinforcement via 180 seeds (method 1) and 92 first year seedlings (method 2) in protected cages in 2017
- 9 permanent monitoring plots (each 20m<sup>2</sup>), 2 inside the fenced area - 7 outside were established and monitoring twice annually (in spring - vegetative stage, in autumn - flowering stage)
- Vegetation cover monitoring twice annually at 2 plots inside the fenced area and 2 outside



The fenced area

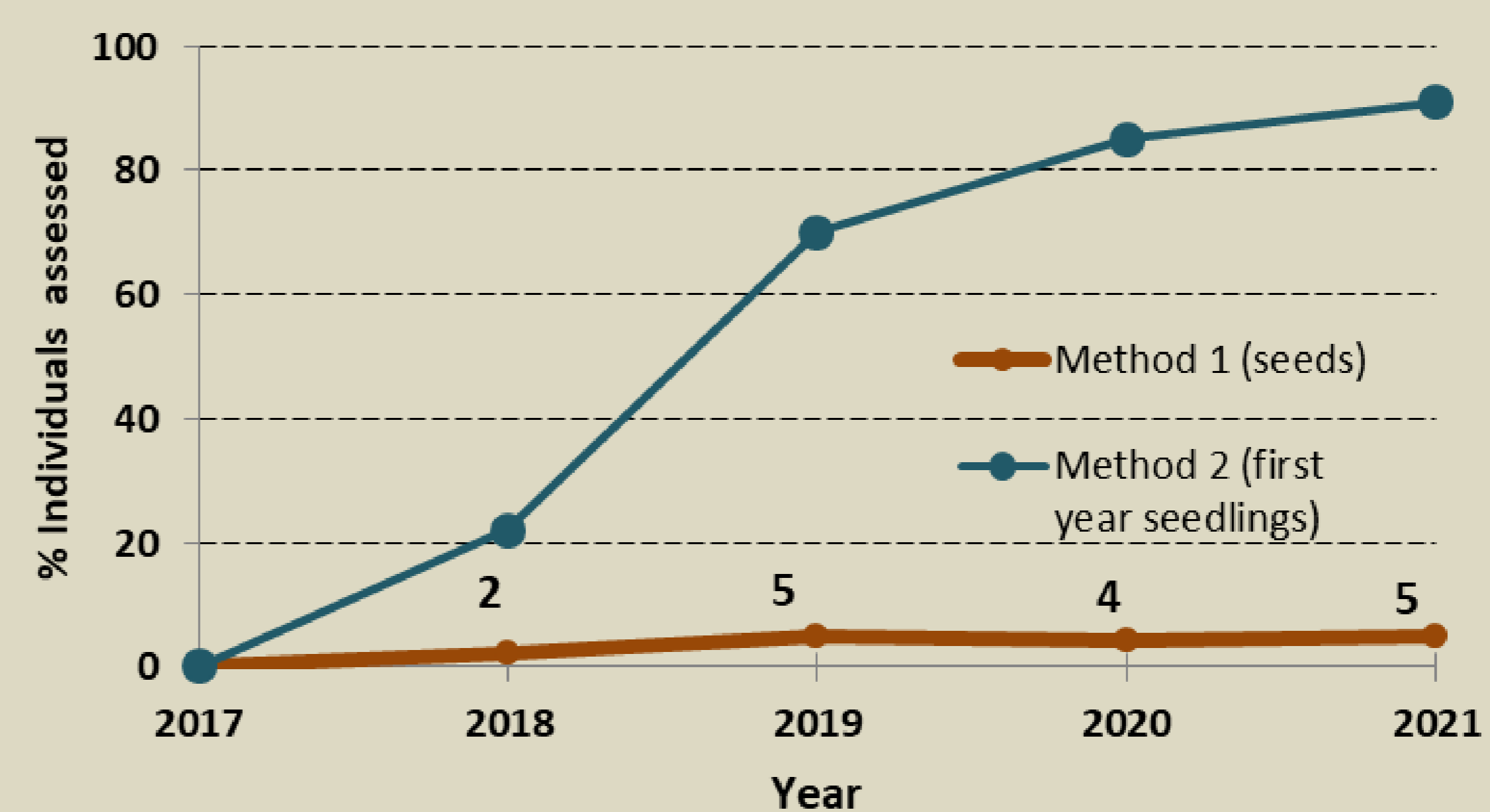


*H. dolinicola* distribution



Vegetation **inside the fenced area increases** within the years after the fence establishment while vegetation **outside the fence decreases** every autumn due to grazing.

## *H. dolinicola* reinforcement with method 1 (seeds) & method 2 (first year seedlings)



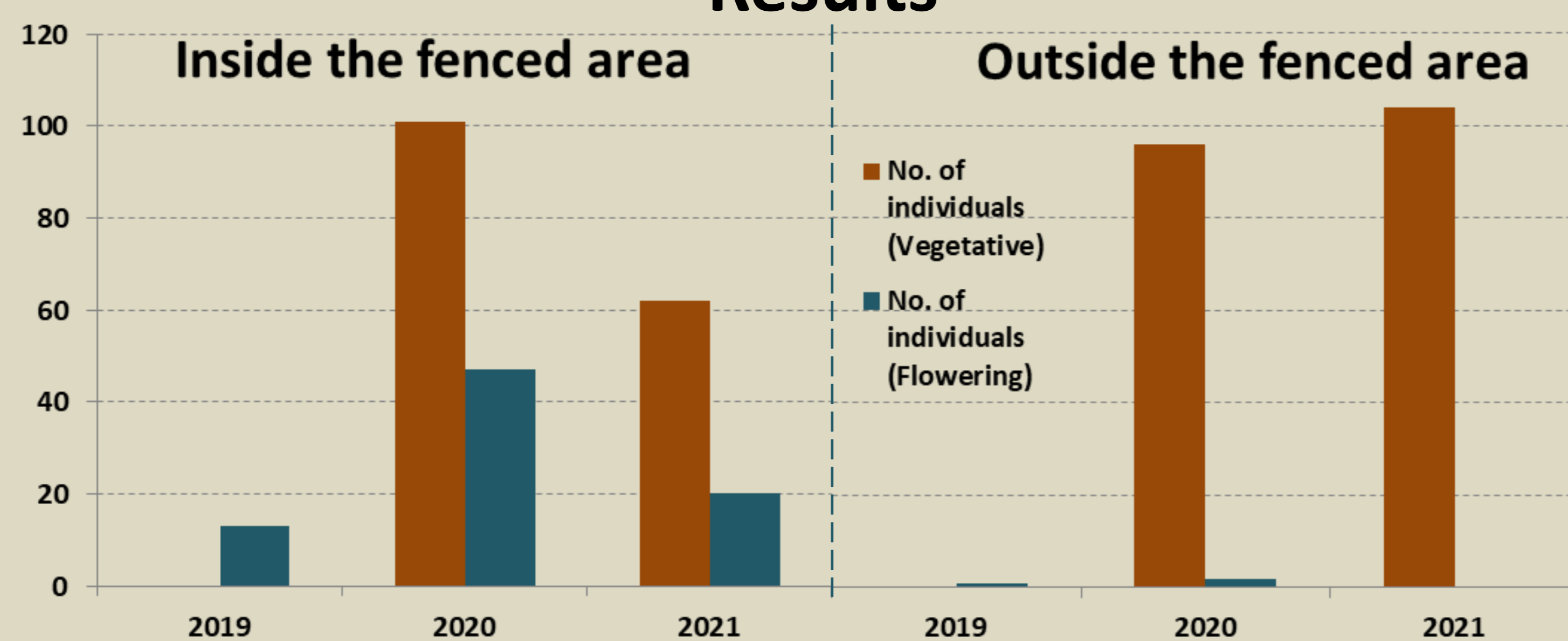
Tuber of first year seedling



Fruit

Population reinforcement via **first year seedlings** (method 2) is far more successful than reinforcement with seeds

## Results



There is no significant statistical difference between the number of individuals in vegetative stage inside and outside the fenced area.

**BUT**

Individuals **inside** the fenced area are **far more likely** to flower than those outside the fence that get trampled.

## Conclusions – Discussion

- H. dolinicola* is adapted to grazing, but data from monitoring so far indicates that trampling appears to affect its reproductive capability
- Overall vegetation of the dolines is **strongly affected** by overgrazing
- The **most optimal** population reinforcement strategy is by first year seedlings rather than seeds

More data collection through monitoring is needed to have a more solidified opinion regarding the effect of livestock farming on the *H. dolinicola* population.

The possibility that flowering seasonality affects the monitoring results should be kept in mind.

## References

Fournaraki C., Thanos C.A. 2009. Germination strategy of *Horstrissea dolinicola* (Umbelliferae), an endemic and threatened plant of Crete. Hellenic Botanical Society. 11<sup>th</sup> Hellenic Scientific Conference. University of Athens, 8-11 October 2009.

Fournaraki, C., Gotsiou, P., Markaki, E., Kokkinaki, A., Kargiolaki, H., & Maria, E.-A. (2021). *Horstrissea dolinicola*: A steno-endemic, threatened plant on Mt. Ida (Psiloritis), Crete, Greece. In Global conservation translocation perspectives: 2021: case studies from around the globe (pp. 298–302). IUCN SSC Conservation Translocation Specialist Group (CTS-G).

## Acknowledgements

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