

Marjanović, H. & Kern, A.: Decoupling the effect of the forest pest damage from the effects of meteorology using space-borne remote sensing and modelling



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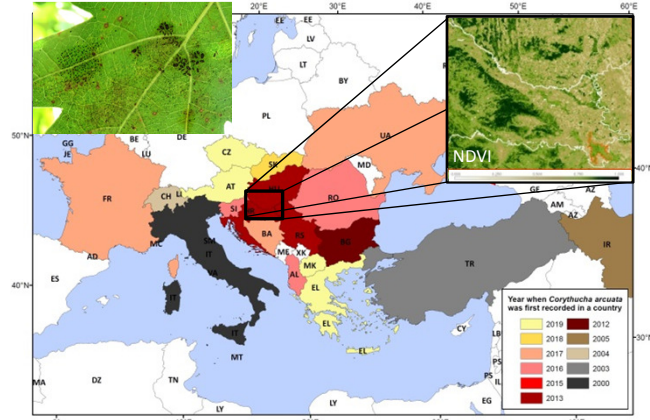
BG3.11 - Natural disturbance,
forest management,
and ecosystem functioning



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The Oak Lace Bug - OLB (*Corythucha arcuata*, Say 1832)



Problem:

The OLB is a new invasive pest, first found in the study area in 2013, causing strong leaf discoloration in oak forests.

Aim:

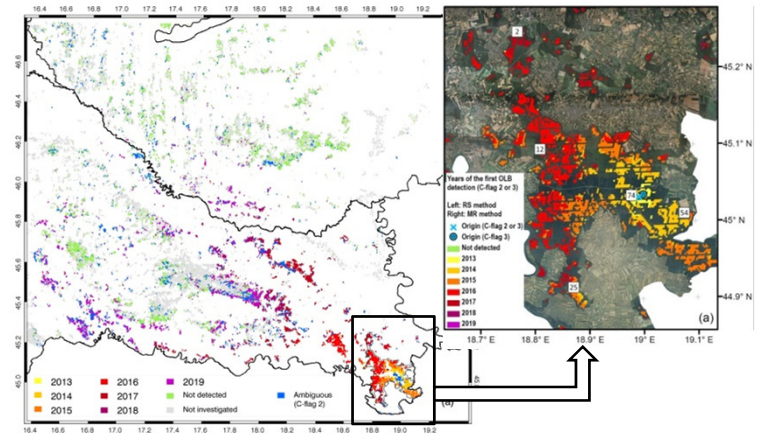
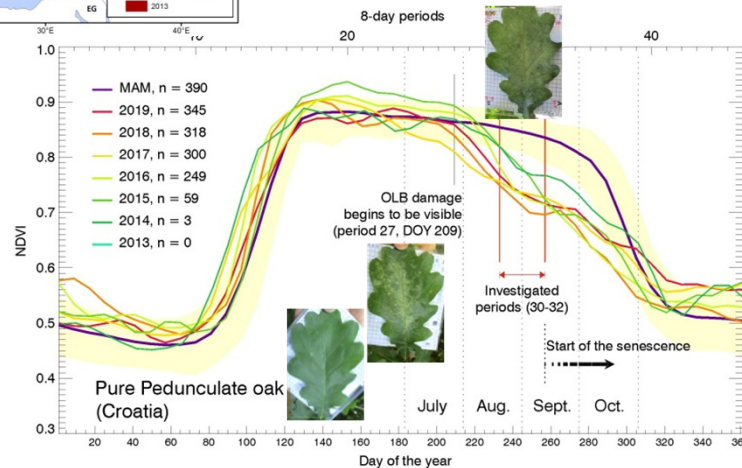
- Build methods to decouple the effect of the meteorology from the effects of the OLB
- Detect the infestation
- Map the spread

Datasets for 2000–2019:

- MOD09Q1 NDVI
- Meteorological data
- Spatially specific tree species datasets

Detection methods

- Pure Remote Sensing
- Residual Z-score of the NDVI model for the period 21 Aug - 13 Sep



Results:

- The OLB damage is proportional to the share of oaks trees
- Detection agreement 61.1% to 93.8% with the *in situ* data
- NDVI decreases down to -14.5% in pure oak forests
- The detected speed of the OLB radial spread in the first 3 years of infestation was under 6 km y^{-1} , but since then it increased to above 50 km y^{-1}
- Human transportation system is the main driver of spread

References: Kern, A., Marjanović, H., et. al. 2021, Detecting the Oak lace bug infestation in oak forests using MODIS and meteorological data. *Agric. For. Meteorol.* (in press)

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