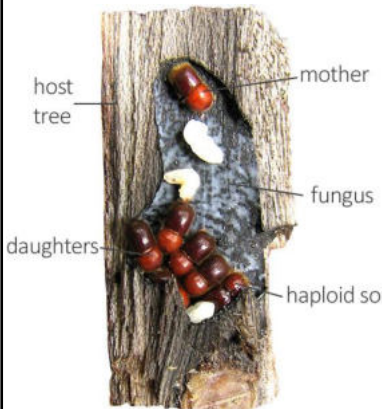


Simulated flood-stress and X-ray tomography unveil susceptibility of tree taxa to ambrosia beetles

1) Study system: ambrosia beetles (Coleoptera: Scolytinae)



host tree

mother

fungus

daughters

haploid son

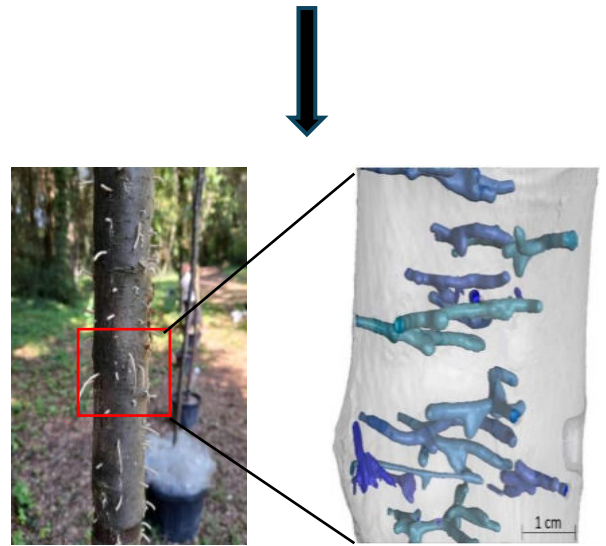
Ambrosia beetles are:

- Wood borers
- Fungus farmers
- Polyphagous
- Common invaders
- Potential pests

Source: Hulcr J
(<https://ambrosiasymbiosis.org/>)

2) Aim of the study

Unravel colonization success of ambrosia beetles in 8 tree species (4 Fagales and 4 Rosales) of temperate region in a common garden setup

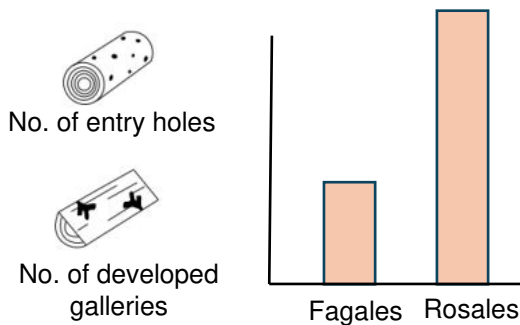


Simulated stress through flooding

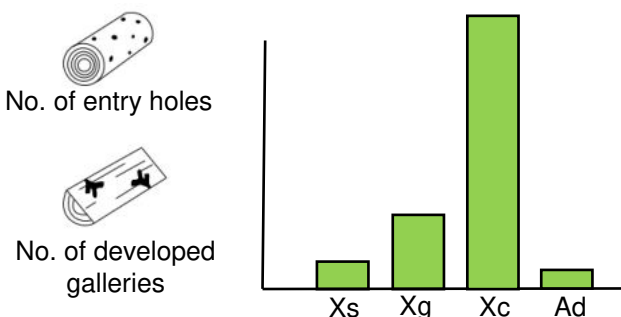
X-ray tomography

3) Main results

i) Attack rate and colonization success by ambrosia beetles in Fagales vs. Rosales



ii) Attack rate and colonization success by *Xyleborinus saxesenii* (Xs), *Xylosandrus crassiusculus* (Xc), *Xylosandrus germanus* (Xg) and *Anisandrus dispar* (Ad)



4) Conclusions

i) X-ray tomography is a reliable method that allows the precise reconstruction, quantification, and measurement of insect performance inside wood

ii) *Xylosandrus crassiusculus* is the ambrosia beetle performing better on flood stressed trees

iii) Rosales tree species are more likely to be attacked and potentially damaged by ambrosia beetles than Fagales in a scenario of increasing flooding

5) Funding

This work was supported by a scholarship grant by Fondazione Cassa di Risparmio di Padova e Rovigo (CARIPARO), by the University of Padua under the 2019 STARS Grants program (project: MOPI) and the 2022 BIRD 227440