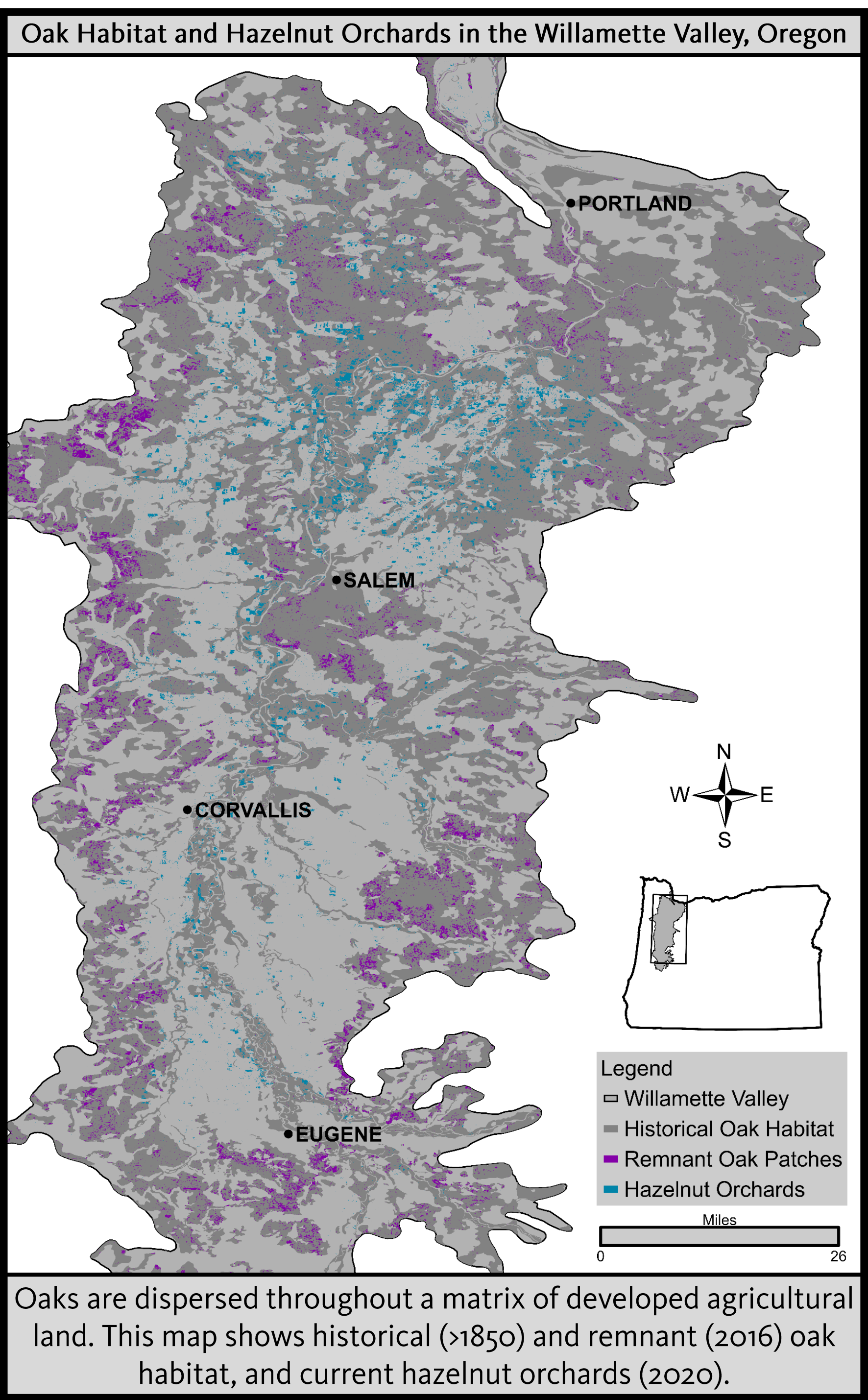


Hogs and Hazelnuts: adaptively managing pest spillover in the agricultural-wildland matrix

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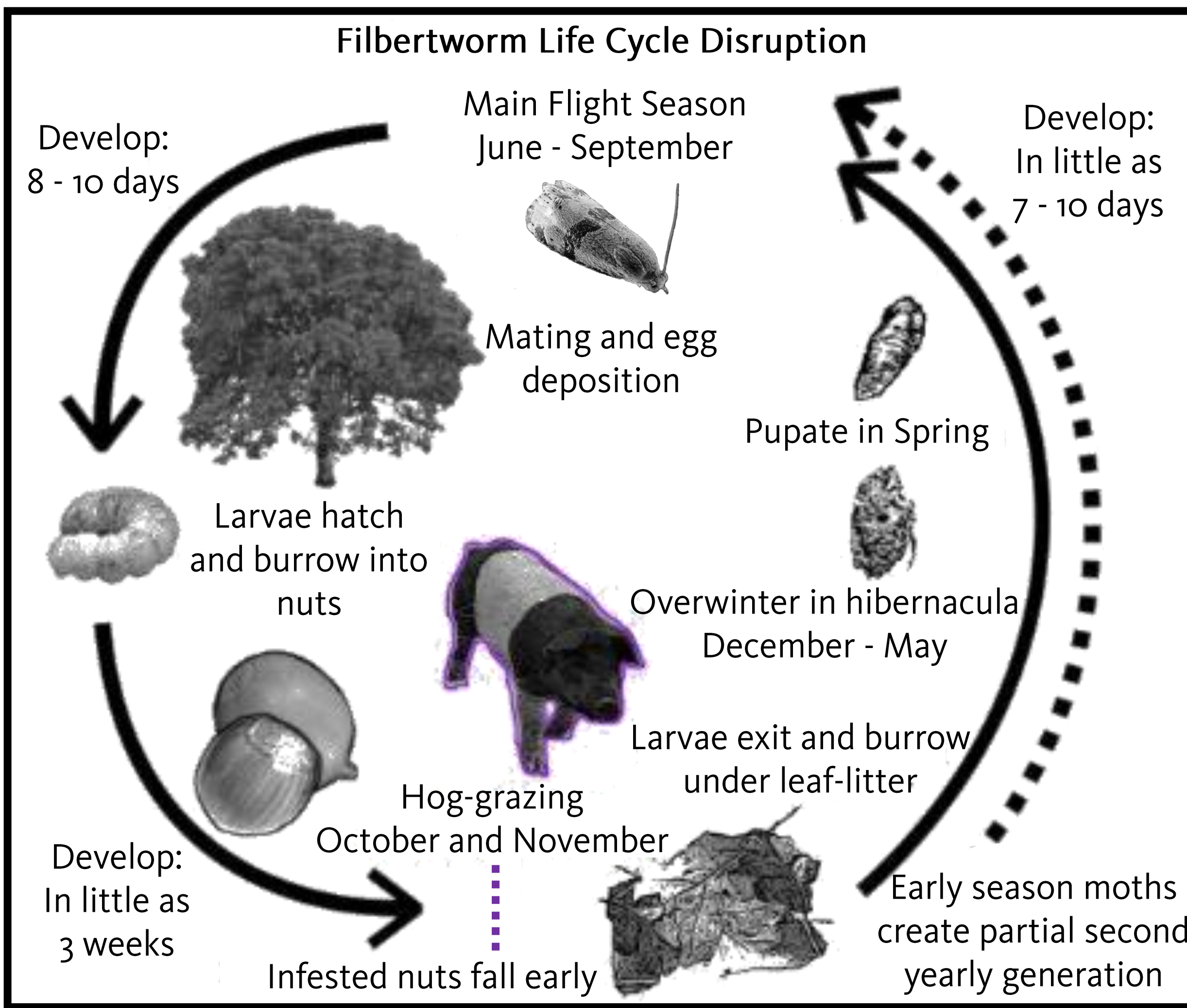
Imperiled oaks harbor filbertworm, the key economic pest for domestic hazelnuts



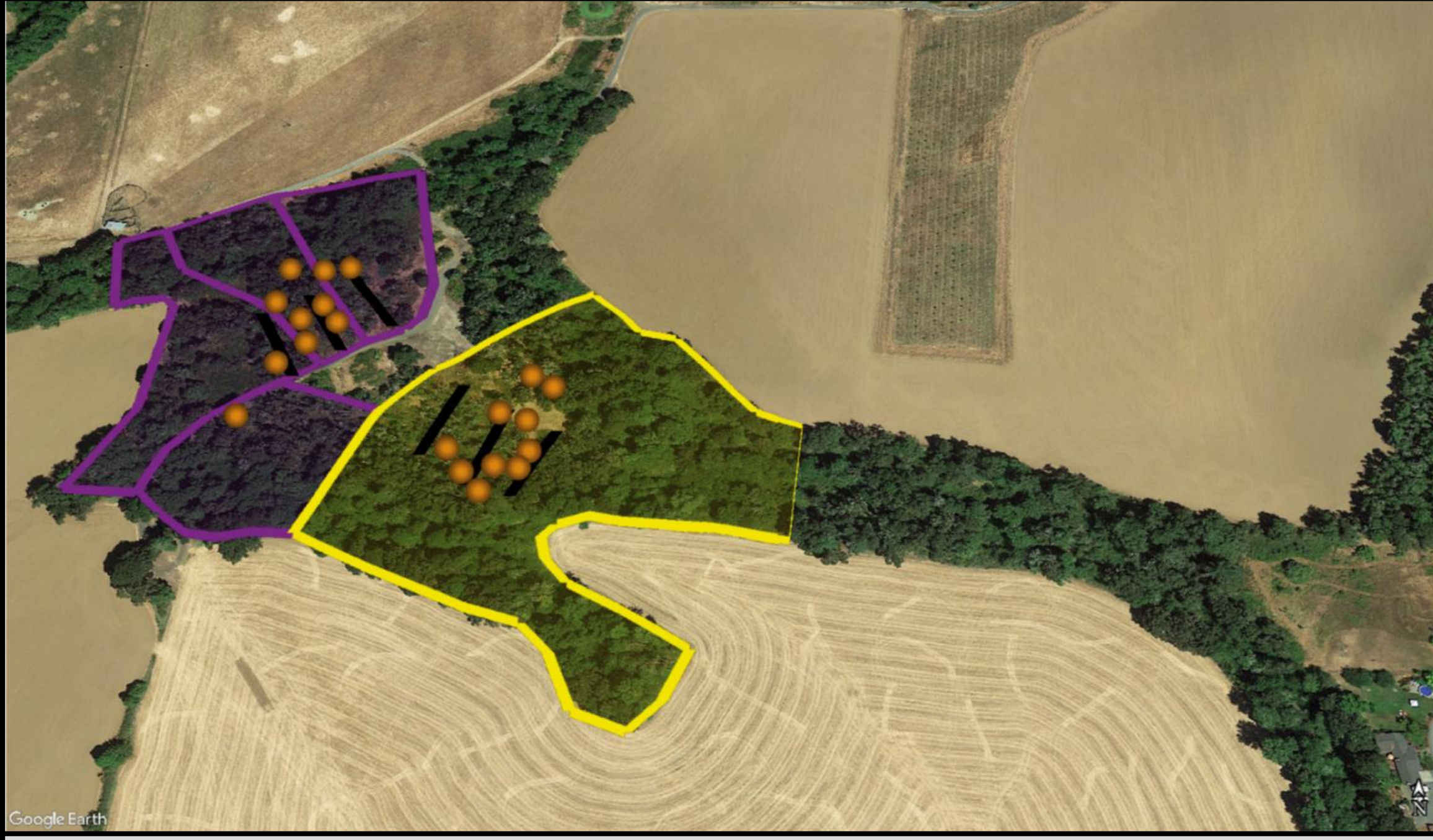
domestic hazelnuts

- Pest spillover from wildlands to farms can create conflict between habitat conservation and agricultural production
- Oregon white oaks (*Quercus garryana*) comprise one of the most imperiled habitats in Oregon and are mostly on private land
- The Willamette Valley in Oregon accounts for almost all of the hazelnuts (*Corylus avellana*) grown nationwide
- Spillover of the native filbertworm moth (*Cydia latiferreana*) from remnant habitat incentivizes oak removal to reduce pesticide cost and decrease crop loss

Experimental design: Before-After-Control-Impact (BACI)



Grazing paddocks (purple) and control section (yellow) in an oak woodland at My Brothers' Farm – Creswell, Oregon



Emergence Traps (orange dots) were placed under mature oak trees and Acorn Plots were sampled under the same trees each year along with Vegetation Transects (black lines) during 2018 and 2020



- Emergence traps were sampled for filbertworm every two weeks throughout the flight season
- Starting in 2018, ≈ 20 hogs were allowed to forage for 4-5 days in each 2-acre paddock

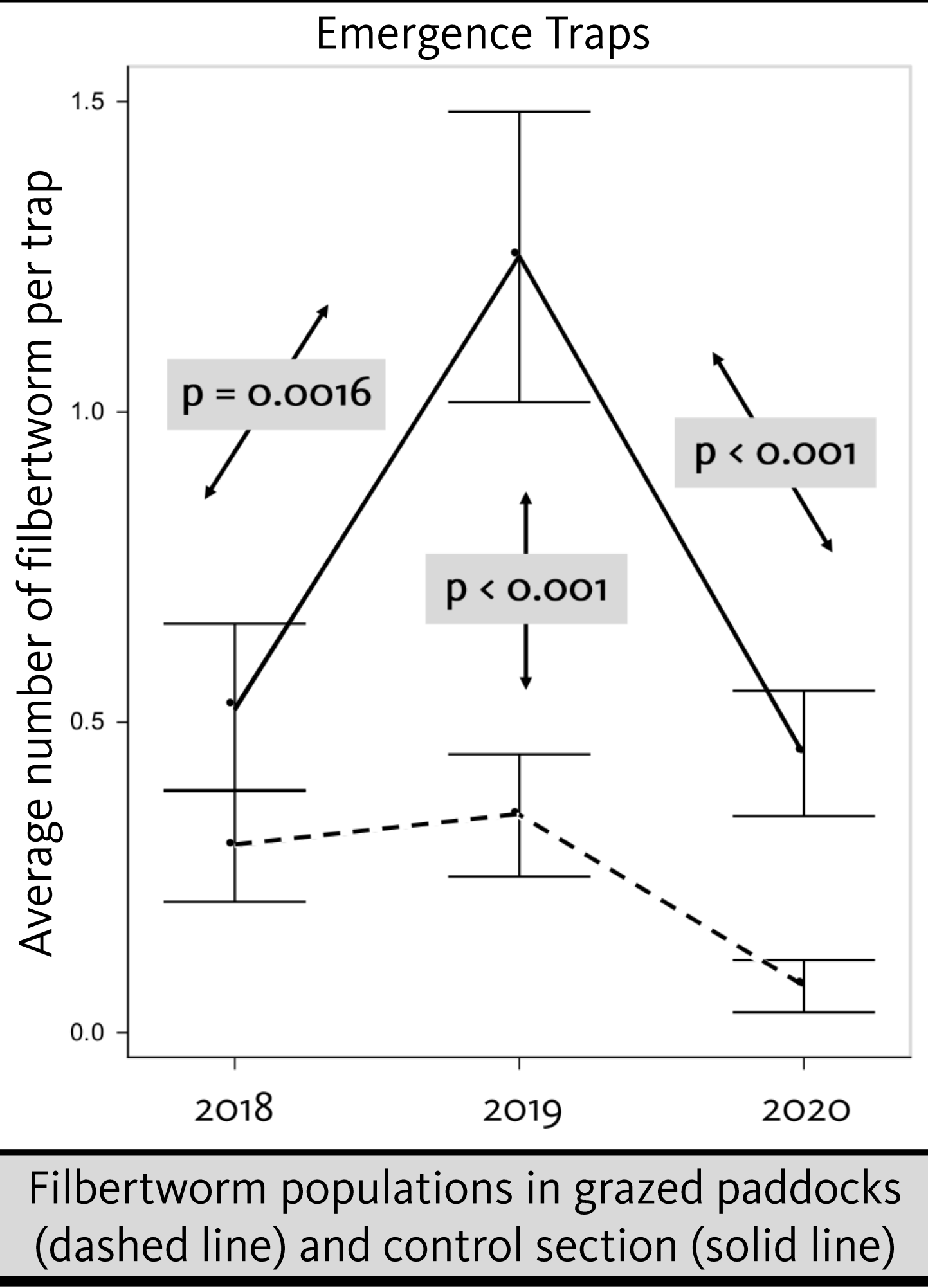
Grazing is a promising tool for adaptively managing pests on farms

- Pest management strategies that utilize known disturbance regimes can help align conservation principles with economic goals
- Disrupting the life cycle of agricultural pests with prescribed grazing treatments is a growing agroforestry practice
- Successfully resolving conflicts in landscapes where agriculture and wildlands interact is increasingly important in the coming decades



Domestic hogs (*Sus domesticus*) have historically grazed oak habitat in other parts of the world and have significant economic and ecological potential if carefully managed

Prescribed hog-grazing reduces filbertworm pest pressure over two years



- Hogs were extremely effective at removing infested acorns with insignificant change in understory vegetation cover
- Local filbertworm populations in the grazed paddocks diverged from the control with near-zero emerging in 2020
- Increased commercial demand for nature-friendly pork and decreased pest spillover potential are economic gains for ecologically diversifying farms in the Willamette Valley
- Although hog-grazing may not be practical in some cases, prescribed burns and alternative grazers such as goats could be contextual tools for further adaptively managing filbertworm