

MISSOURI
BOTANICAL GARDEN
HERBARIUM



NY 6631682



PLANTS OF ARKANSAS
Herbarium of National Arboretum

Castanea ozarkensis Ashe

MARION COUNTY: Elev. 355m, Lat. 36.164564, Lon -
92.50735 (NAD83).

County Roads 661 and 663 between Warrior Creek Mountain
and George Treat Hollow. Quercus, Carya, and Pinus
dominated forest. *C. ozarkensis* was flowering at time of
collection.

Jeffrey D. Carstens, Cole D. Hopkins, and Joe D. Graf
JDC/CO/2015/029/685 20 May 2015

Regeneration Niche of Ozark Chinquapin (*Castanea ozarkensis*) in Native Ozark Forests

Jenn Rosen¹, Matthew Albrecht², Quinn Long², J. Leighton Reid², James C. Trager³



Ozark Chinquapin

Susceptible to Chestnut blight



- Led to a population bottleneck
- Ex situ conservation is necessary
- Limiting factors for seedling recruitment

Chinquapin Restoration

Limiting factors for seedling recruitment

Environment



Chinquapin Restoration

Limiting factors for seedling recruitment

Environment



Microhabitats



Chinquapin Restoration

Limiting factors for seedling recruitment

Environment



Microhabitats



Consumers



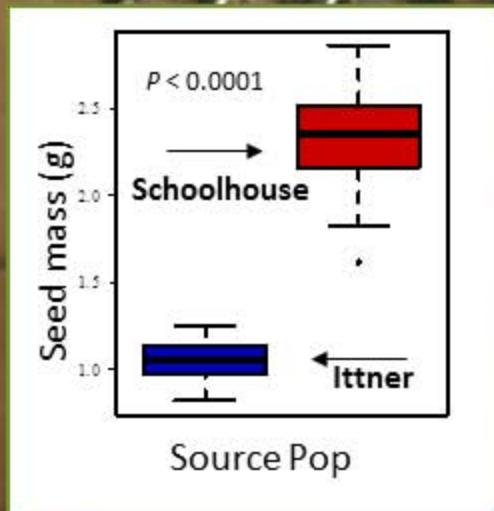
Hypotheses

High seed predation under natural conditions

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- i. Seedling growth will be positively related to light availability.
 - ii. Seeds introduced to shrub thickets will show greater rates of seed predation than seeds introduced into open microhabitats.
 - iii. Seeds excluded from consumers will show greater rates of emergence than seeds exposed to consumers.
 - iv. Larger seeds will be more likely depredated than smaller seeds.

Seeds

Two maternal families ($n = 320$ seeds total)

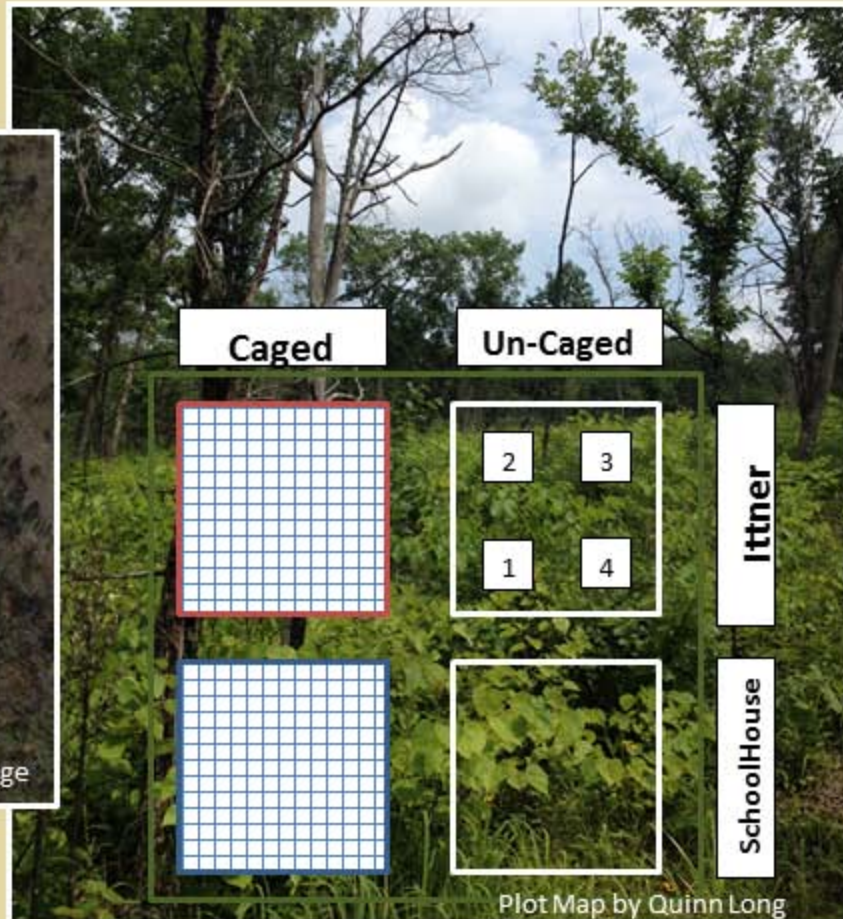


Schoolhouse

Ittner

Experimental Design

Seeds were planted in an upland woodland



Data Collection

Sites were monitored weekly for seven weeks

Monitoring



Soil pH analysis

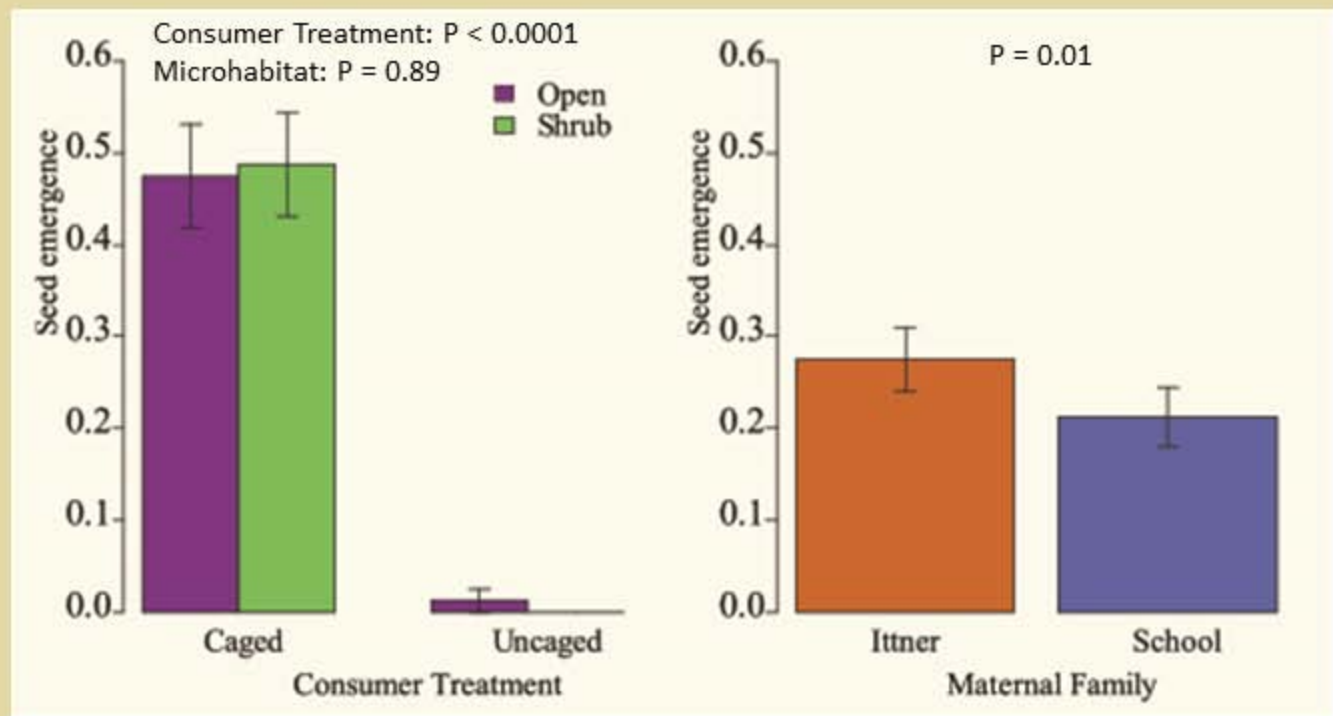


PAR



Seedling Emergence

Consumer treatment affects seed emergence

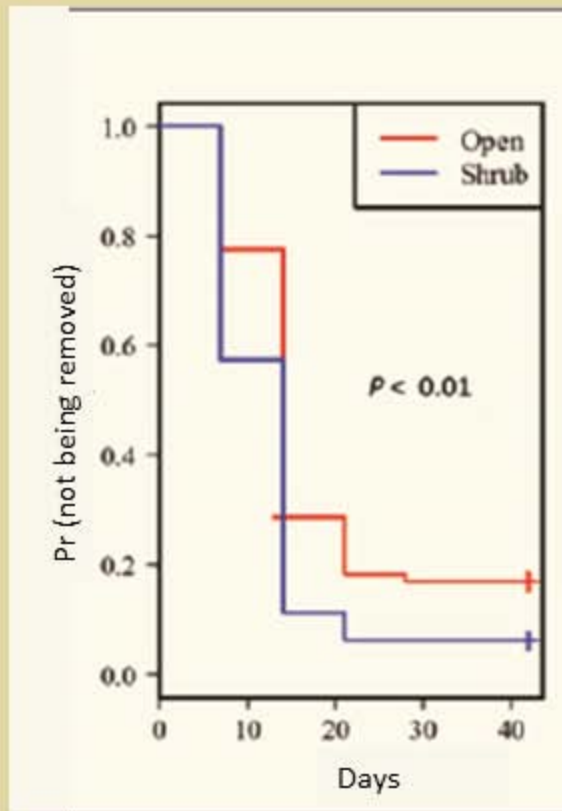


- Similar microhabitat seedling emergence
- Higher 'Ittner' seedling emergence

Seed Removal and Predation

Consumers show microhabitat preference

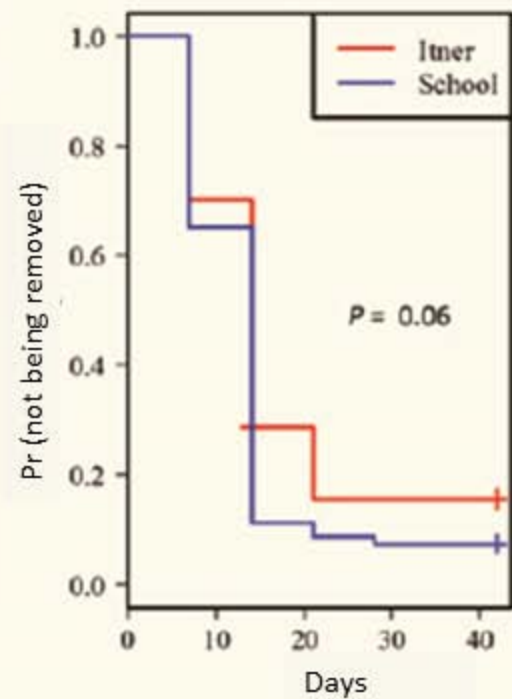
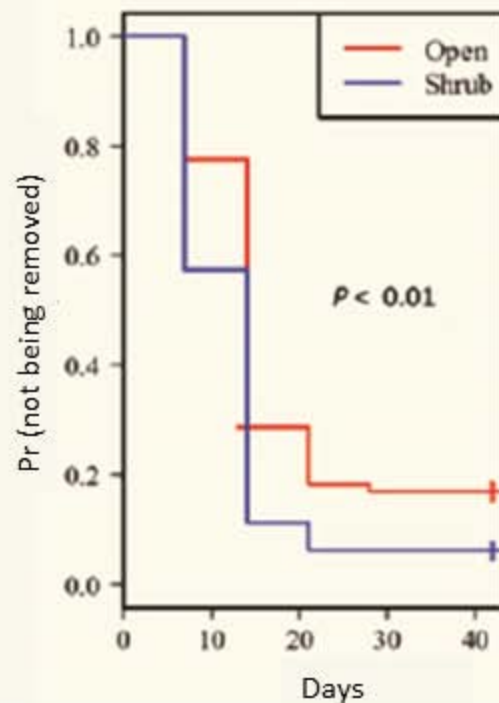
- Consumers invaded shrub plots first
- Predators consumed 'Schoolhouse' seeds first



Seed Removal and Predation

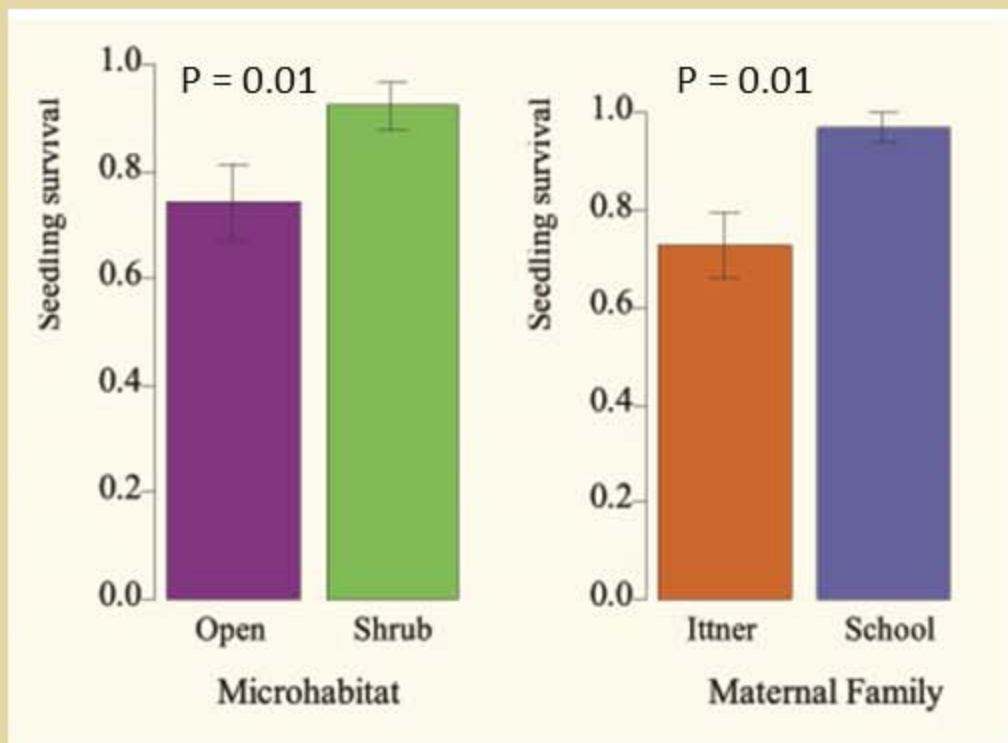
Consumers show microhabitat preference

- Consumers invaded shrub plots first
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Seedling Survival

Microhabitat correlated with seedling survival

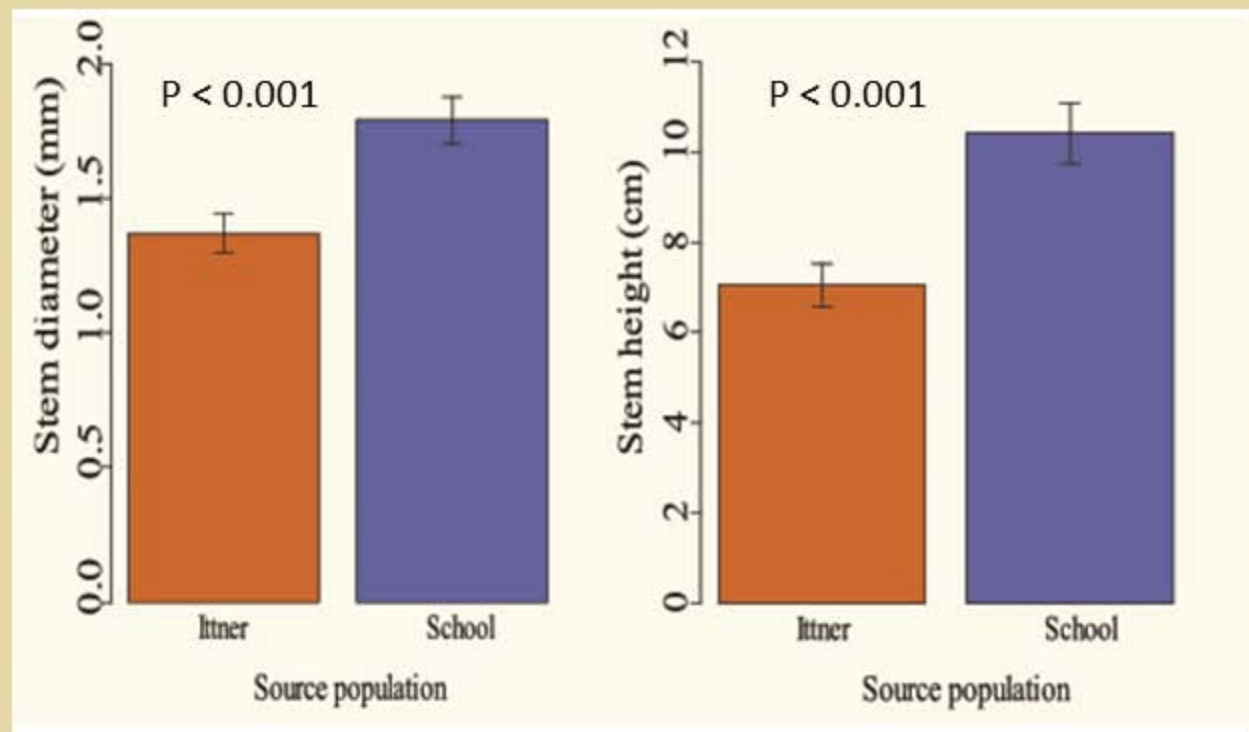


- Higher seedling survival in shrub plots
- Higher 'Schoolhouse' seedling survival

Seedling Growth

Significant maternal family differences

- 'Schoolhouse' seeds were larger in stem diameter
- 'Schoolhouse' seeds were overall taller



Concluding Remarks

Consumers influence rates of seedling emergence

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- i. Light availability did not affect seedling growth.
 - ii. Microhabitat structure influences small mammal behavior.
 - iii. Without consumer exclusion, seedling emergence declined.
 - iv. Large-seeded species are consumed before small-seeded species.

Restoration Implications

Effective exclusion may be necessary



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- Exclude seeds from consumer access
 - May be more beneficial to transplant saplings

Acknowledgements

Thanks to everyone involved

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WORLDWIDE
BIOLOGICAL LABORATORY
HERBARIUM
No. 661152

Herbarium
No. 661152
Date: 10/10/1998
Collector: S. G. ...
Locality: ...



Thank You