The impact of genotypic vs. environmental variation on leaf litter decomposition in Fremont cottonwood

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Extended Phenotypic Effects

 genetically-based impacts of an organism that affect the composition of another species





1) Leaf litter traits?

2) Aquatic decomposition rates?

3) Aquatic invertebrate community assembly?





1) Leaf litter traits?

- 2) Aquatic decomposition rates?
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Leaf Area

Garden: p<0.001



Specific Leaf Area

Leaf Area/Dry Mass

Garden: p<0.001 Population: p<0.001 Population x Garden: p<0.001



1) Leaf litter traits?

- 2) Aquatic decomposition rates?
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Decomposition





Decomposition

Population x Garden: p = 0.0029



Decomposition x Leaf Area

Average R-squared = 0.21





Leaf discs exposed to the common aquatic shredder Hesperophylax designatus (caddisfly)



Lab Shredding Experiment

Population: p = 0.032



1) Leaf litter traits?

2) Aquatic decomposition rates?

3) Aquatic invertebrate community assembly?

Aquatic Invertebrates

Garden: p=0.001



Conclusions and Management Implications

-source populations and their response to environment varies
-nutrient cycling
-food webs
-potential loss of functional diversity





Photo by David Collins



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Thank you! Questions?

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