

Best practices for native plant revegetation after phragmites management

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Do I need to
revegetate?

Revegetation =
seeding and
planting



- NO: Do not bother to revegetate if your phragmites is not well managed! (3+ years of continuous, effective management)
- YES: Why is revegetation necessary?
 - Native plants that return...often do so slowly and lots of species are missing
 - Prevent phragmites from coming back

How can seeding
and planting help
me achieve my
restoration goals?



Invasion resistance



Recover lost diversity



Gary Crandall

Restore habitat

What factors should guide my choice of revegetation approach?

Trade-offs of ecological, cost, and logistical factors

 Least favorable Most favorable					
Technique	Native cover	Plant establishment	Installation labor	Plant material cost	Equipment needs and cost
Seed	Low	Very low	Very low	Very low	Very high
Plug	Moderate	Low	Very high	Very high	Very low
Sod mat	Moderate	High	Very low	Very high	Very low



Seeding



Planting



Loren Taylor's MS research

What challenges
should I expect?

Conditions can be
highly variable and
unpredictable.

Seeds/seedlings are highly vulnerable: require
consistent soil moisture, shallow flooding.

- ✓ Expect high mortality
- ✓ Use hydrologic infrastructure
- ✓ Plan accordingly: wait a year, choose
another site (bet hedging)



What species should I use? (part 1)

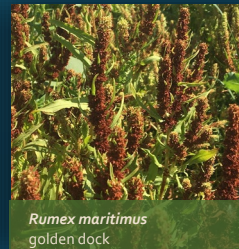
→ hedge your bets
→ remember your goals



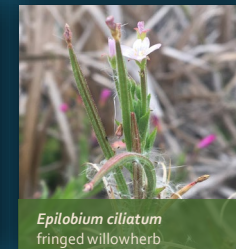
Schoenoplectus acutus
hardstem bulrush



Polygonum lapathifolium
curlytop smartweed



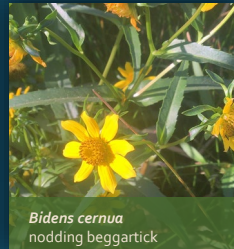
Rumex maritimus
golden dock



Epilobium ciliatum
fringed willowherb



Symphyotrichum ciliatum
Rayless alkali aster



Bidens cernua
nodding beggartick



Bolboschoenus maritimus
cosmopolitan bulrush



Euthamia occidentalis
western goldenrod



Eleocharis palustris
Common spikerush



Puccinellia nuttalliana
Nuttall's alkaligrass



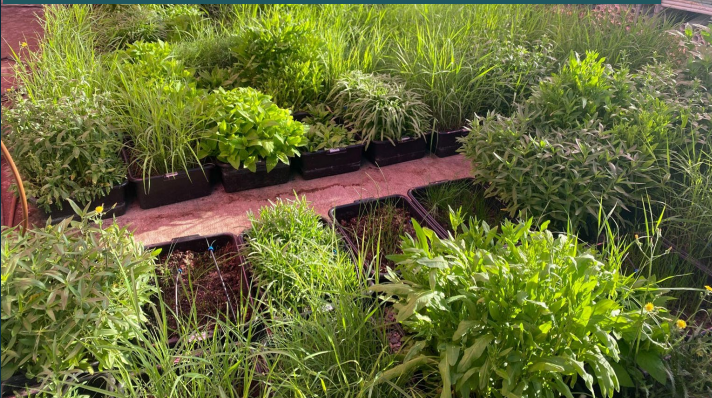
Distichlis spicata
saltgrass

Emergent

Meadow

Playa

Forbs outperforming
graminoids in the greenhouse



Range of species with:

- ✓ Varied hydrologic preferences
- ✓ Different growth forms and phenology
- ✓ For invasion resistance, wildlife and pollinator habitat

What species should I use? (part 2)



Workhorse species

- ✓ Easier to get
- ✓ Less expensive
- ✓ Easier to use
- ✓ Hold the ground



Diverse seed mixes

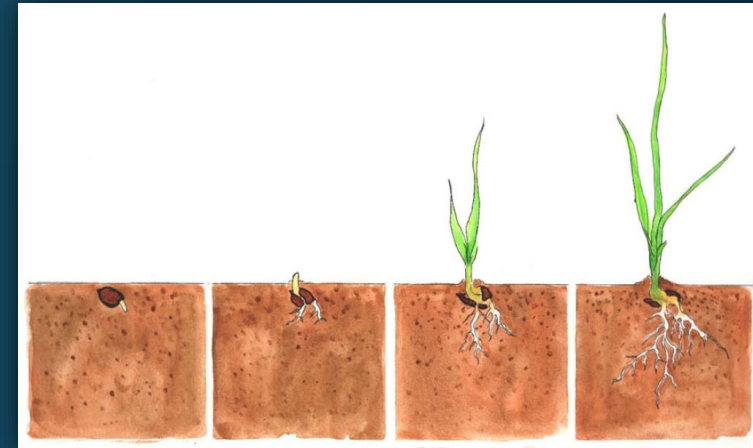
- ✓ Potentially longer timelines (available?)
- ✓ More specialized knowledge (seeds)
- ✓ More effective for invasion resistance, habitat
 - ✓ hedge your bets

*make sure your seeds/plants are “LOCAL”

How much should I seed or plant?

Seeds and seedlings are highly vulnerable

High mortality in the field



Seeding

- Need to seed 3–5x standard rate
- Ideal rates depend on seed mix composition
- FFSL has been targeting ~50 lbs./acre

Plug planting

- Rate: at least 4-9 plants per m²
 - Not well evaluated
 - May need to be much higher



Are there other bet-hedging strategies?

- Add more species diversity and more seeds/plants
- Choose another site (or multiple sites)
- Alter the timing of seed sowing
- Delay germination in part of the seed mix (alter dormancy break w/ cold stratification)
- Sow seeds over multiple years



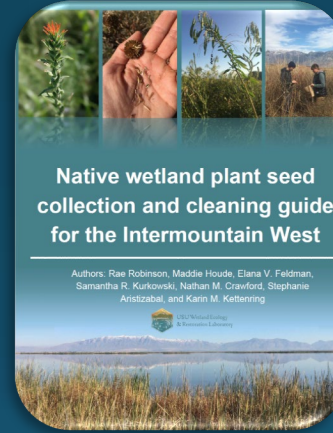
Are there resources available?

<https://extension.usu.edu/wetlands/>

General guidance

Seed-specific guidance

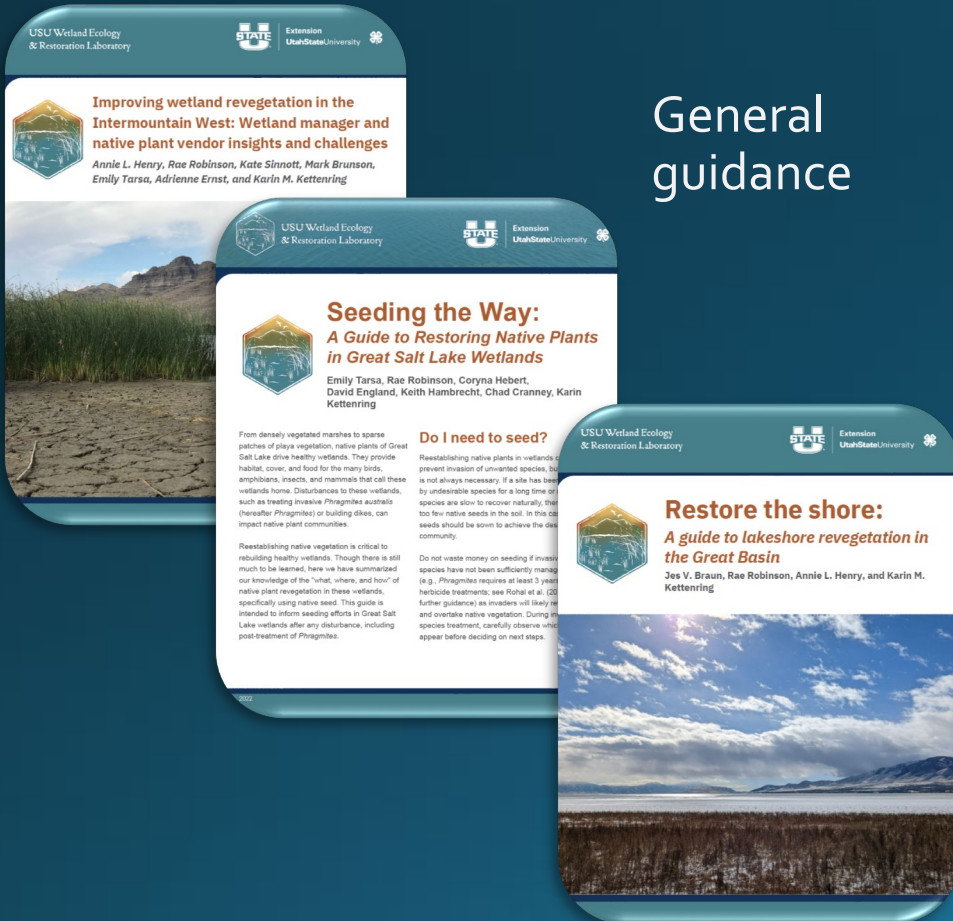
- When, where, and how to collect seeds
- How to clean seeds
- How to test seeds for viability
- How to break seed dormancy
- How to germinate seeds



WAIT, I NEED MORE DETAILED INFORMATION!

New and pending projects

- ✓ Developing very practical tools (FFSL grant)
- ✓ Documenting costs, timelines, practical advice (pending grant; FFSL-led project)

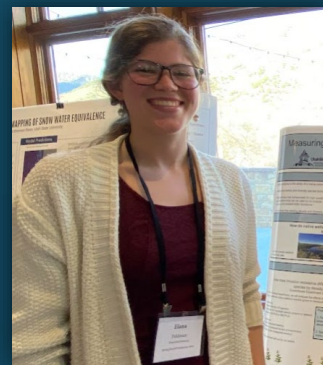




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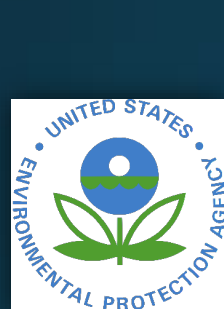
Sam Kurkowski



Montana Horchler



Maddie Houde



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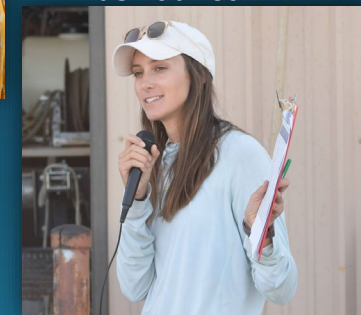
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