

Early results from the Oxbow Center native plant research program

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Outline for today

- Overview of Oxbow
- Research project summaries
- Some next steps
- Communicating native plant information
- Interesting **P**lant **A**tttributes conversation

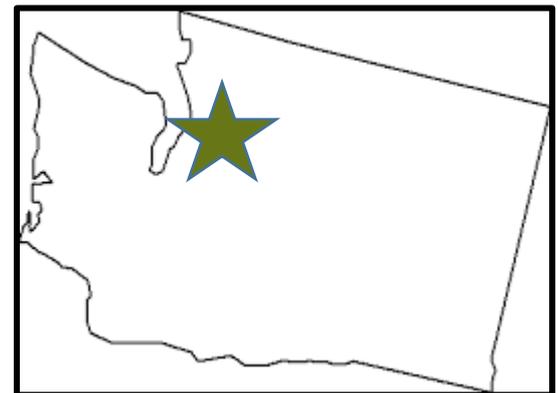
Outline for today

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- Communicating native plant
- **IPA**





- Non-profit organization
- 230 acres of forest and floodplain farmland
- Snoqualmie River Valley, ~25 miles east of Seattle
- Research partnerships
 - University of Idaho (2013)
 - Oregon State University (2016)



Oxbow's mission

To inspire people to eat healthy, sustainably, grown food and to steward our natural resources for future generations. As stewards and students of the land, we:



Grow food using ecologically sound farming methods in support of a healthy food economy



Prepare future generations to steward the world's natural resources



Increase the availability and use of native plants throughout the region



Restore and sustain natural habitats.



Conduct and facilitate research in agriculture and conservation.



Engage the public in conservation action.

Research snapshots

- Comparing water soluble and controlled-release fertilizers in a subirrigation system
- Influence of subirrigation system on seed germination
- Germination, growth and development of western *Asclepias* spp. in a container nursery
- Accelerating camas bulb production

Subirrigation

- Significant gains in water conservation
- Can subirrigation systems work with top-dressed controlled-release fertilizer?
- How sensitive is redosier dogwood to fertilizer type?



Subirrigation

Fertilizers used and application method:

- Nutri-Rich Organic 8-2-4 (Incorporated)
- Osmocote Pro 17-5-11 (3-4 month) (Incorporated)
- Osmocote Pro 17-5-11 (3-4 month) (Top-dressed)
- Peter's Professional 24-8-16 (Added to SI water weekly)



Research snapshots

- No differences between treatments in:
 - seedling mass
 - height
 - root-collar diameter
 - gas exchange
 - media and leachate pH



Germinating into subirrigation systems...

- What happens if you give up on overhead irrigation?



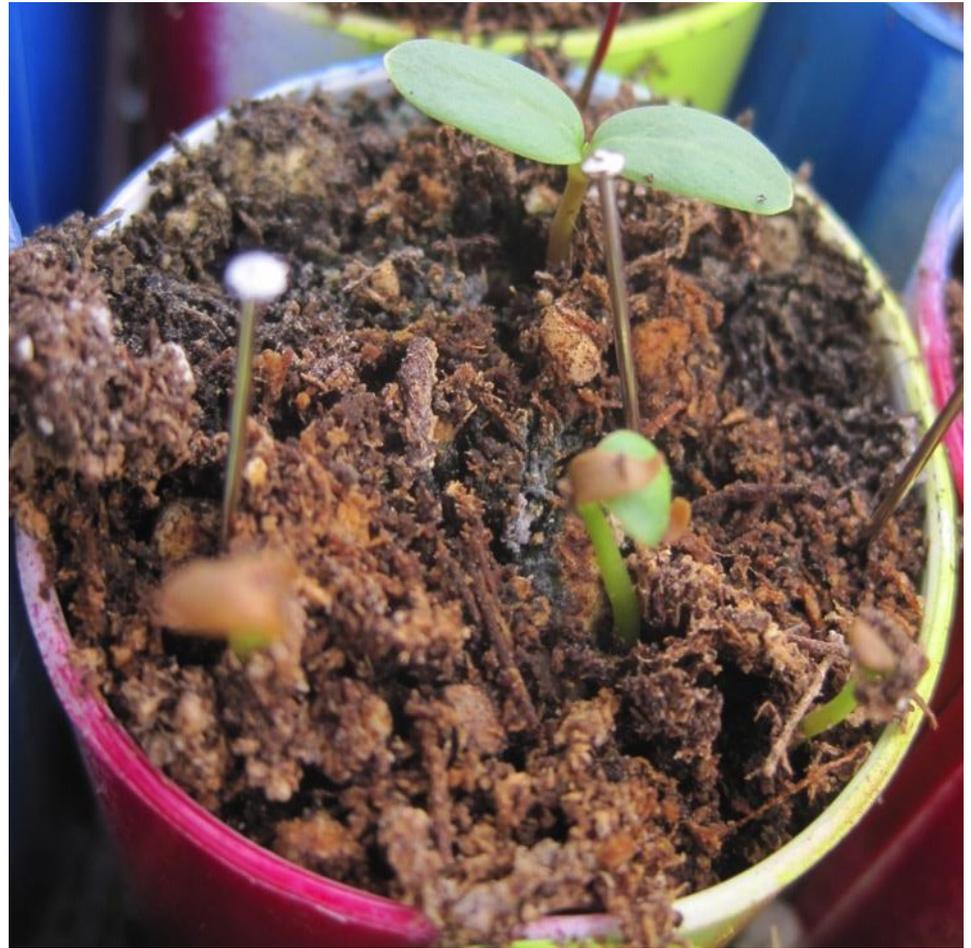
Germination

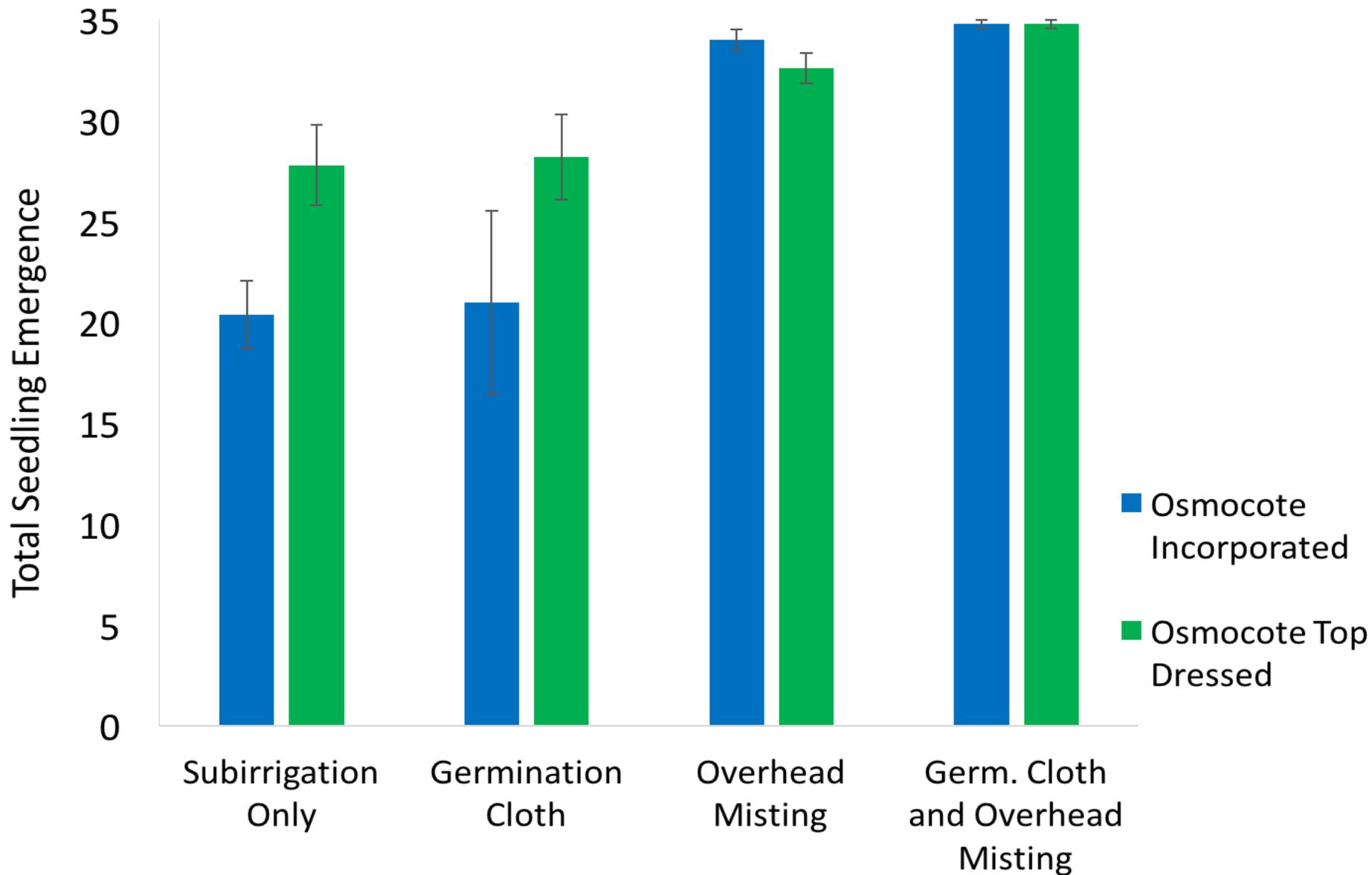
- Fertilizer was top-dressed or incorporated
- Germination cloth was/was not used
- Supplemental misting was/was not used



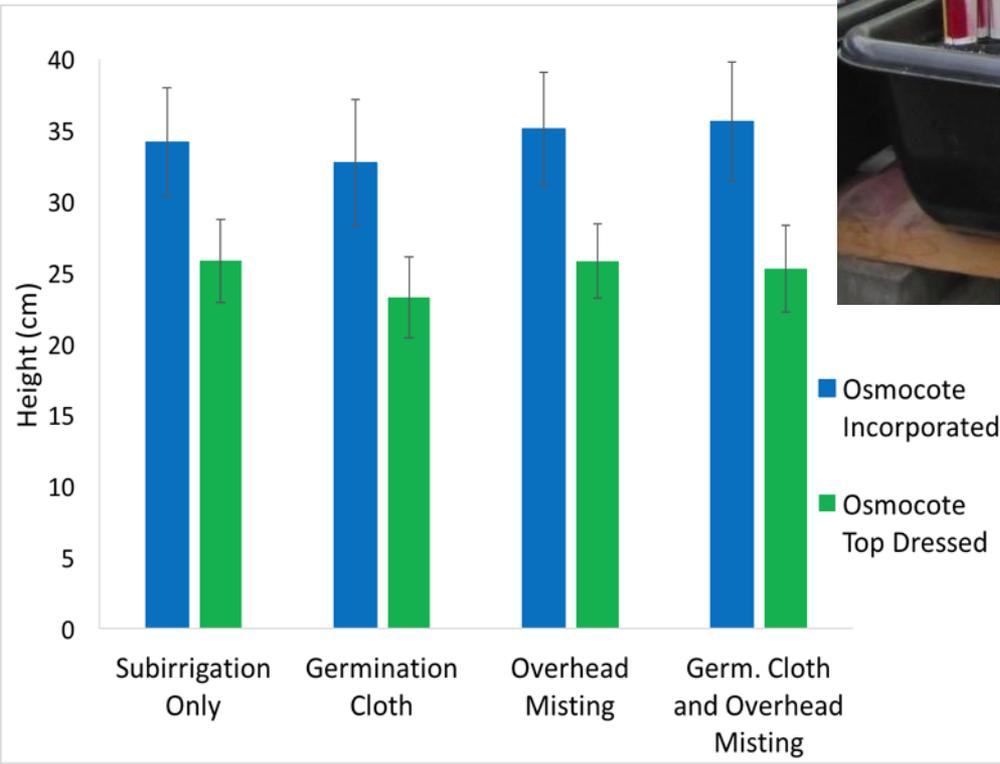
It might work!

- Seed did germinate and emerge in treatments with subirrigation only!





Incorporated fertilizer grew bigger seedlings



Milkweed propagation

- Diminishing populations of milkweed (*Asclepias* L.) is one of the factors contributing to conspicuous population declines of the iconic monarch butterfly
- Showy milkweed (*A. speciosa*) and narrowleaf milkweed (*A. fascicularis*)
- Manipulation of container size (164, 444, 2600 cm³) and rate of fertilizer application 2.7 (low) or 6.5 (high) g L⁻¹



June 26

A. fascicularis

- nearly all plants attained solid root plugs after 22 weeks
- when grown in the 2600 cm³ containers 89% flowered after only 15 weeks



A. speciosa

- firm root plugs developed in 99% of plants after 22 weeks when given the high rate of fertilizer compared to only 41% when given the low rate
- no seedlings flowered

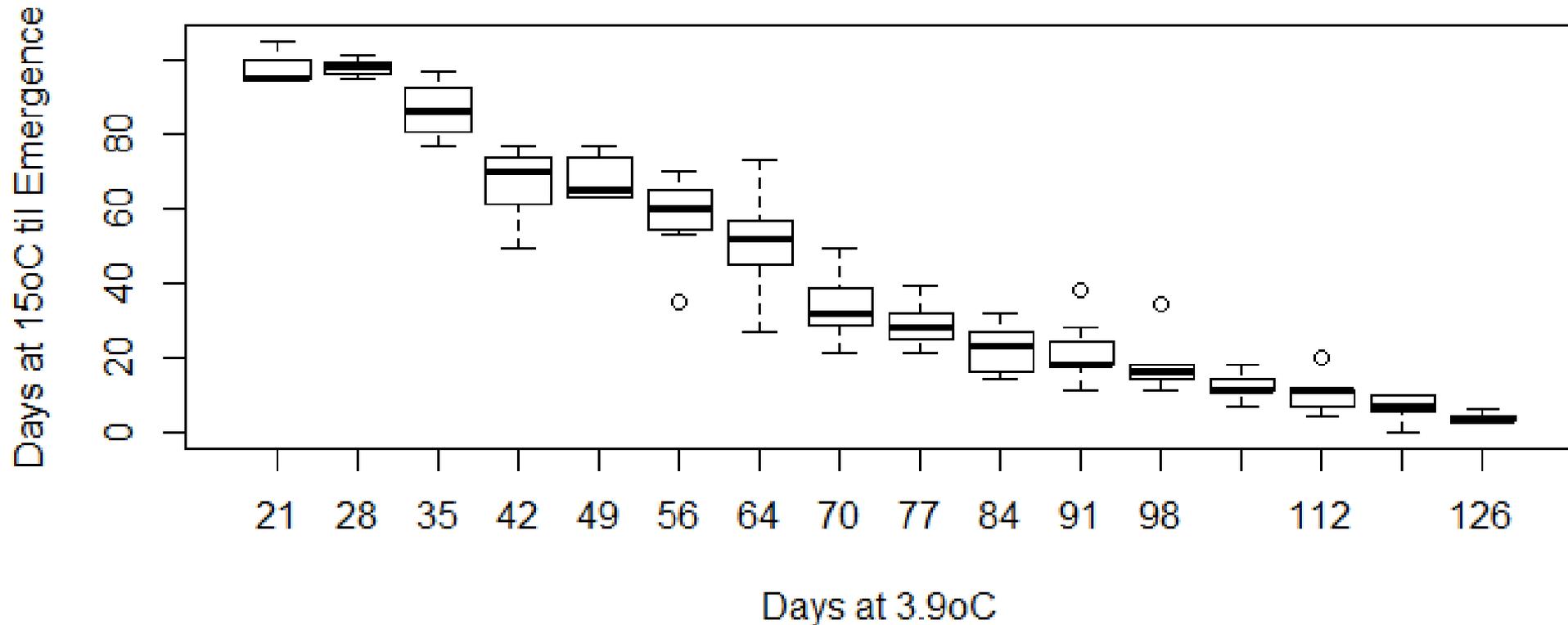


Camas

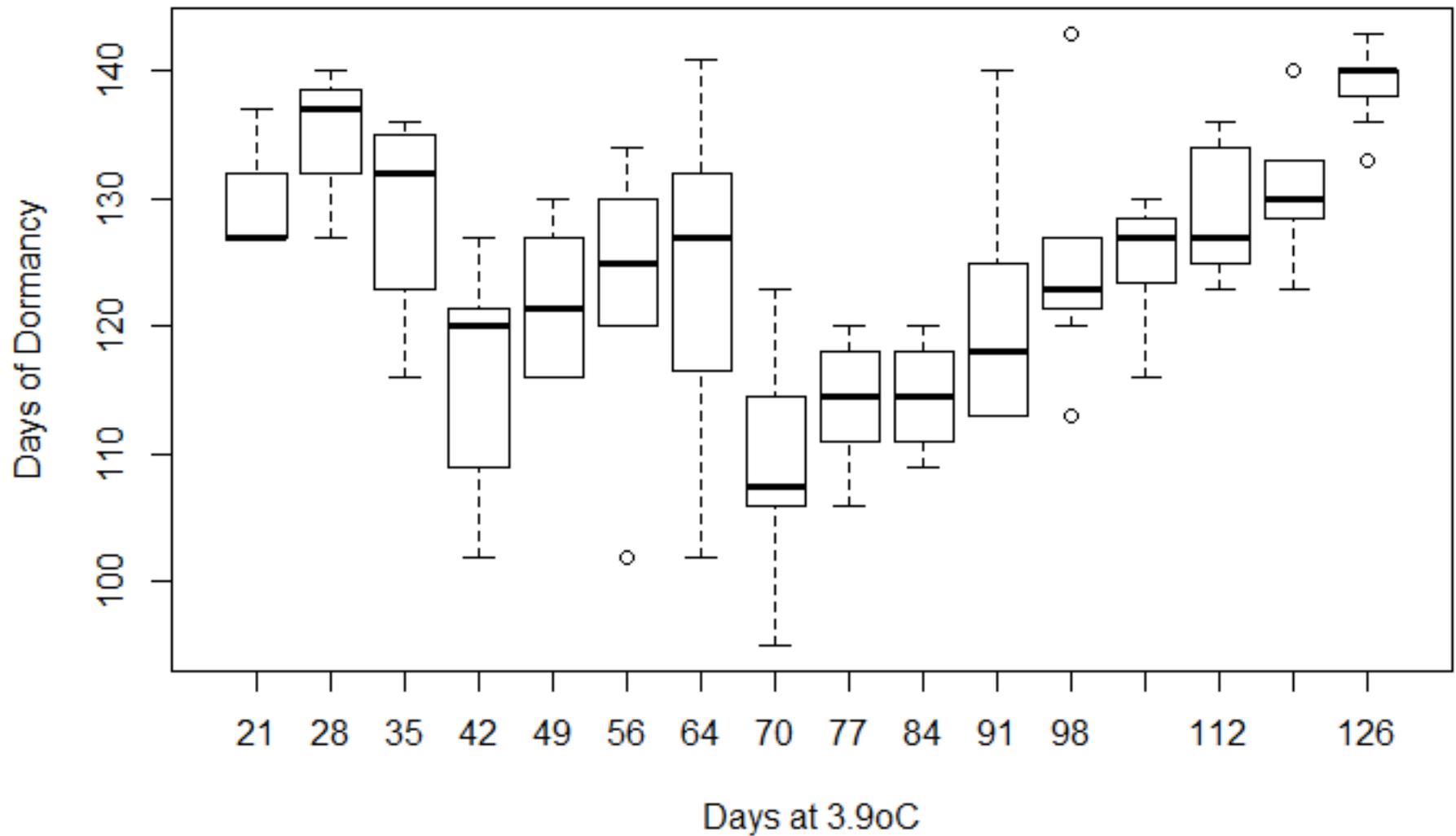


Great camas (*Camassia leichtlinii*)

- Stratified for ~90 days
- Sown, grown for 2.5 months until dormant
- Lifted and placed into chilling, removed every week



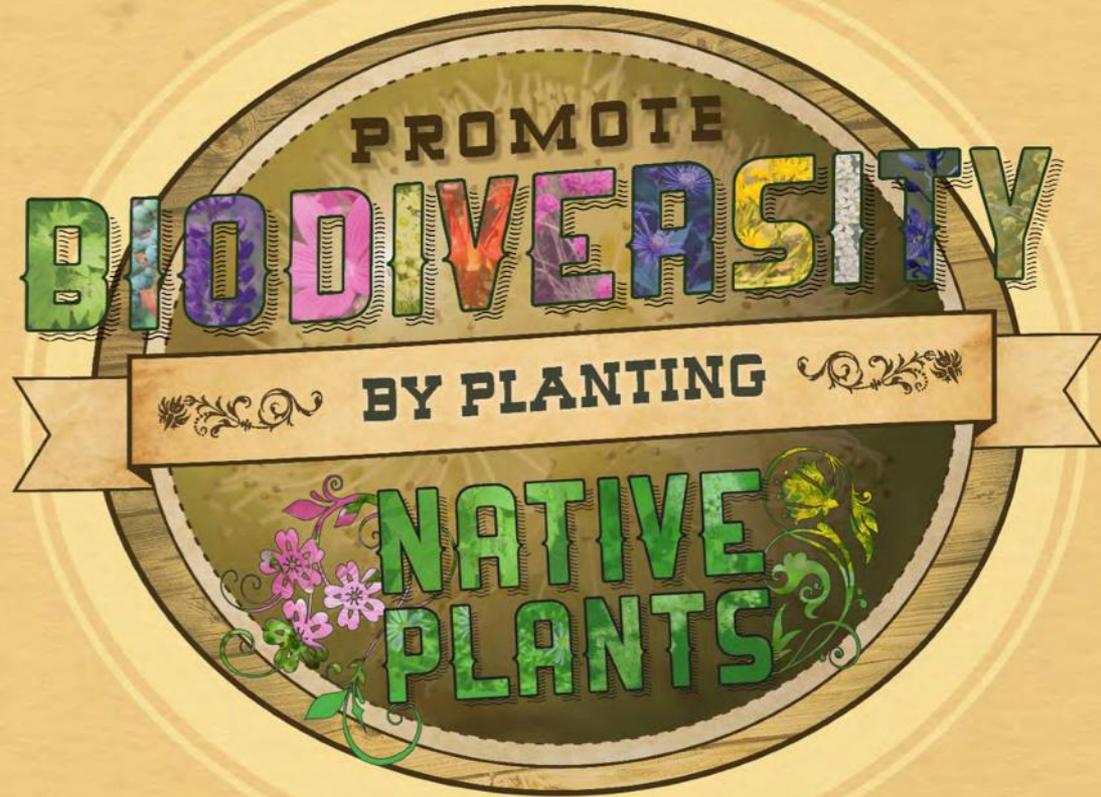
Camas



Marketing materials for native plants!

Graduate student project through McCall Outdoor Science School

If you plant them...
THEY WILL COME.



The Importance of Planting

NATIVE PLANTS



Plant
**COMMON
CAMAS**
(*Camassia
quamash*)

Perennial forb, blue flower, early season blooming period, prefers moist soils, easier to establish from bulb, can tolerate drought post-blooming, *max. height 1-3 ft.*

ATTRACT
*Lady
Bugs*



Native plants are four times more likely to attract native bees and three times more likely to attract native butterflies and moths than nonnative plants [1]

Considering that some 40 million acres in the United States are planted in nonnative grass lawns, the importance of planting native plants has never been so great [2]

Common ornamentals rarely provide adequate pollens/nectar to support pollinator populations. Ornamentals can also outcompete native vegetation, resulting in a loss of biodiversity [1]

PLANTING TIPS

- Choose from shade-tolerant or drought-tolerant species to match site conditions in your garden
- Flower grouping (1 meter in diameter of a single species) provides more accessible food sourcing for pollinators in urban habitat due to visibility and efficiency of nectar gathering; plant in larger blocks of mixed species to avoid weed pressure
- Staggered blooming periods (early, mid, or late season) with multiple species blooming at any given time will provide habitat for a wide range of pollinators; early season bloomers provide critical food sources for emerging bees such as bumble bee queens, mining and mason bees



POLLINATOR HOTELS

If you lack the garden space to cultivate native plants, pollinator hotels are another great way you can help the cause!

Construct simple structures around your home to help ensure habitat for hard-working pollinators by using materials such as:

- Pallets / rotten firewood (drill holes to create cavities)
- Lumber · Stones · Bark
- Masonry blocks / bricks
- Broken ceramic pots
- Hollow plant stems
- Pieces of PVC pipe



BROUGHT TO YOU BY

University of Idaho
College of Natural Resources
MOSS
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Oxbow
Organic Farm and
Education Center
www.oxbow.org

Oxbow Farm will be hosting a sale on native plants and other farm products at their "Oxtober" farm stand every weekend (Thurs-Sun) throughout the month of October.

ADDITIONAL RESOURCES

- [1] The Xerces Society Guide: Mader, E. (2011). Attracting native pollinators. Storey Pub., 2011.
- [2] Tallamy, D. (2014, April 30). Gardening for Life. Retrieved from <http://fourthcornernurseries.com/gardening-for-life/>
- [3] King County Native Plant Resources: <http://www.kingcounty.gov/environment/stewardship/nw-yard-and-garden/native-plant-resources-nw.aspx>
- [4] Oxbow Farm & Conservation Center: <http://www.oxbow.org/>



If you plant them...
THEY WILL COME.



“Our studies have shown that even modest increases in the native plant cover on suburban properties significantly increases the number and species of breeding birds, including birds of conservation concern. As gardeners and stewards of our land, we have never been so empowered to help save biodiversity from extinction, and the need to do so has never been so great...”



**ALL WE NEED TO DO IS
PLANT NATIVE PLANTS!**”

--- Douglas Tallamy

TALL OREGON GRAPE

(*Mahonia aquifolium*)

Perennial shrub, yellow flower, medium moisture requirements, evergreen, attracts long-tongued bee species and mason and bumble bees
max. height 4-8 ft.



EARLY SEASON BLOOMERS



Mason Bee

VINE MAPLE

(*Acer circinalum*)

Perennial shrub, yellow flower, prefers shade and moderate to high moisture soils, leaves change color in the autumn before dropping, attracts mason and bumble bees, host plant for the Western Tiger Swallowtail butterfly, *max. height 20 ft.*



BIG LEAF LUPINE

(*Lupinus polyphyllus*)

Perennial forb, blue flower, prefers moist to moderately moist soils, extensively visited by native bumble bees and blue butterflies (*Icaricia* sp.); establishes well in disturbed soils, *max. height 3-5 ft.*



NATIVE PLANTS OF THE PACIFIC NORTHWEST

PACIFIC NINEBARK

(*Physocarpus capitatus*)

Perennial shrub, white flower, extensively visited by species of small bees, host plant for the Spring Azure butterfly, *max. height 3-8 ft.*



RED COLUMBINE

(*Aquilegia formosa*)

Perennial forb, red flower, prefers a moderate amount of moisture, tolerates partial shade, flowers are very attractive to hummingbird and butterfly species, *max height 1-3 ft.*



Rufous Hummingbird

MIDDLE SEASON BLOOMERS



HENDERSON'S CHECKERMALLOW

(*Sidalcea hendersonii*)

Perennial forb, pink flower, prefers moist conditions (i.e., wet meadows and tidal marshes), hardy plant sets multiple small hollyhock-like flowers, *max height 2-5 ft.*

LATE SEASON BLOOMERS

Spring Azure Butterfly



OCEANSPRAY

(*Holodiscus discolor*)

Perennial shrub, white flower, shade tolerant, attracts bumble bees, tiny sweat bees, and hosts Spring Azure butterflies, *max. height 6-20 ft.*



PINK SEATHRAIFT

(*Armeria maritima*)

Perennial forb, pink flower, grows well in shallow, poor soils along bluffs, inland river-banks, and coastlines, grows in dense tufts, attracts native bees and butterflies, *max height 1.5 ft.*



DOUGLAS ASTER

(*Symphoricarichum subspicatum*)

Perennial forb, purple flower, medium moisture requirements, visited frequently by leafcutter bees and the Woodland Skipper butterfly, establishes well from transplant, *max. height 4 ft.*



The evolution of the Oxbow program

- Fellowships now housed at OSU
- Students in this program will complete studies that align with the objectives of the Oxbow Farm and Conservation Center, including study of native plant seedlings, environmental education, forestry, riparian ecology, restoration ecology, and related fields. Each Graduate Fellow will include a significant portion of their study in residency at the Oxbow facilities located in Carnation WA, in housing provided by Oxbow.

Thank you...

- All of our funding partners
- Staff at Oxbow, U-Idaho Center for Forest Nursery and Seedling Research, and in the Davis Lab Group at Oregon State University
- Stakeholders for support, feedback, and continuous ideas for new research
- And... Tom Landis, Kas Dumroese, Jeremy Pinto, and Doug Jacobs, great mentors and partners!

<https://vimeo.com/187997694>





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