Planting for Native Bees

Lynda Boyer, Heritage Seedlings & Liners 3.25.21

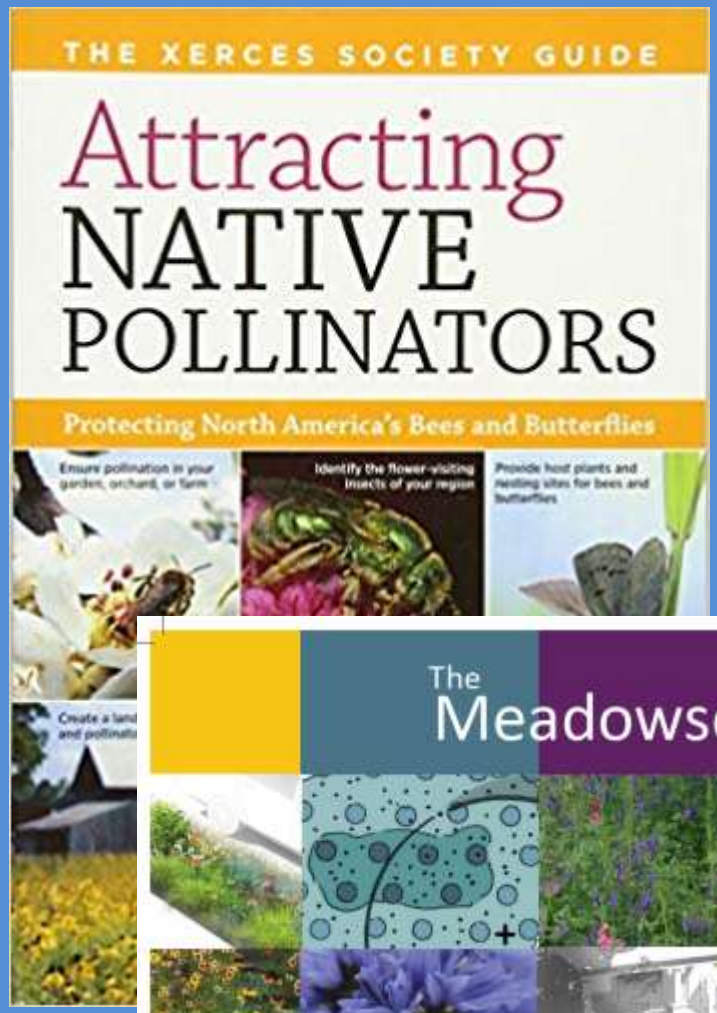
For more information and tours visit www.heritageseedlings.com

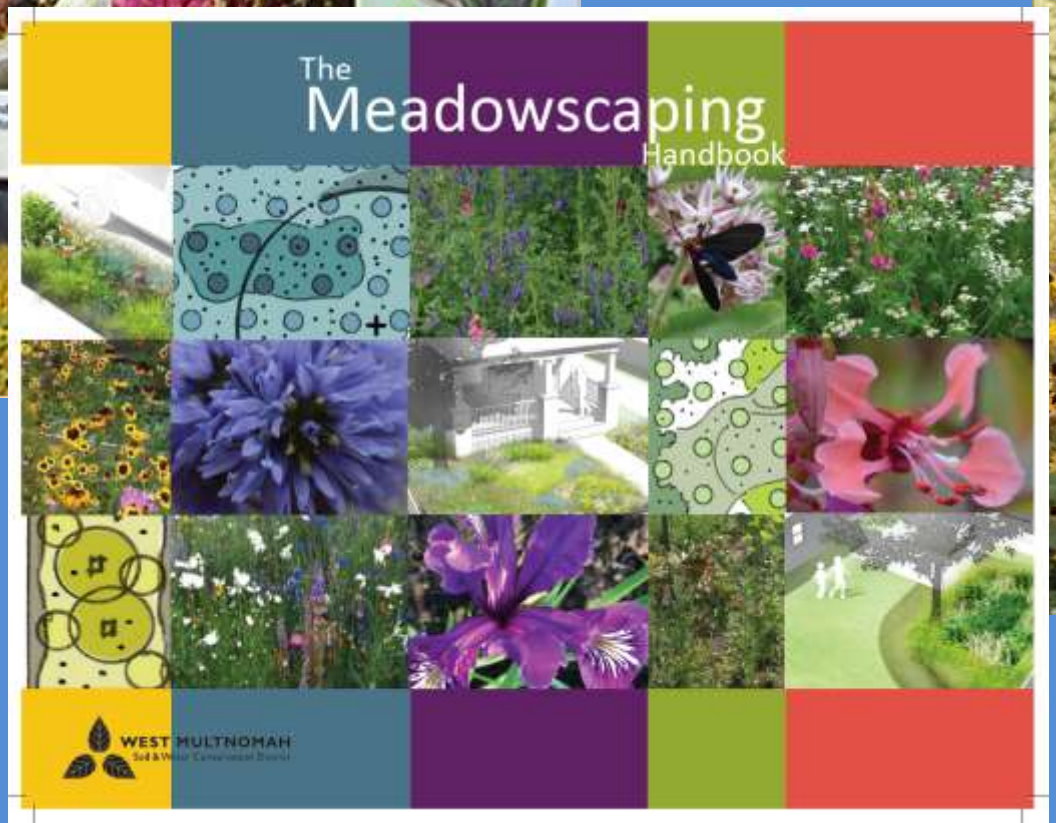
Oregon Native Seed and Stewardship Pages

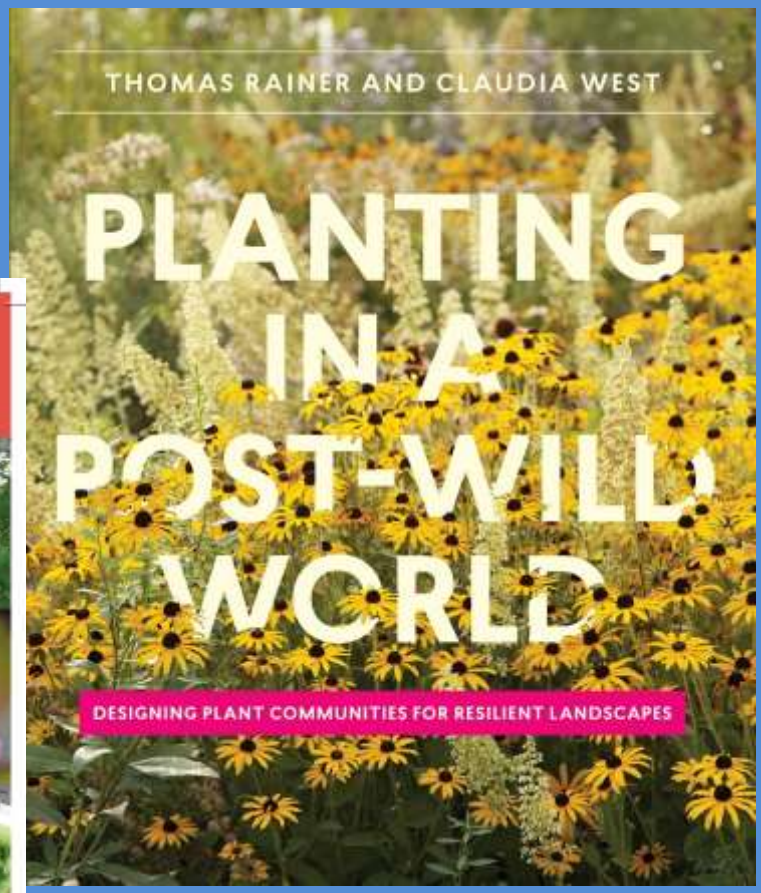
Education and Advocacy

Gain an awareness of the role your *regional native plants* play in our gardens, the suburban/rural interface, agriculture lands, and remnant habitats

HOW YOU CAN DO IT
Great Publications







HOW YOU CAN DO IT
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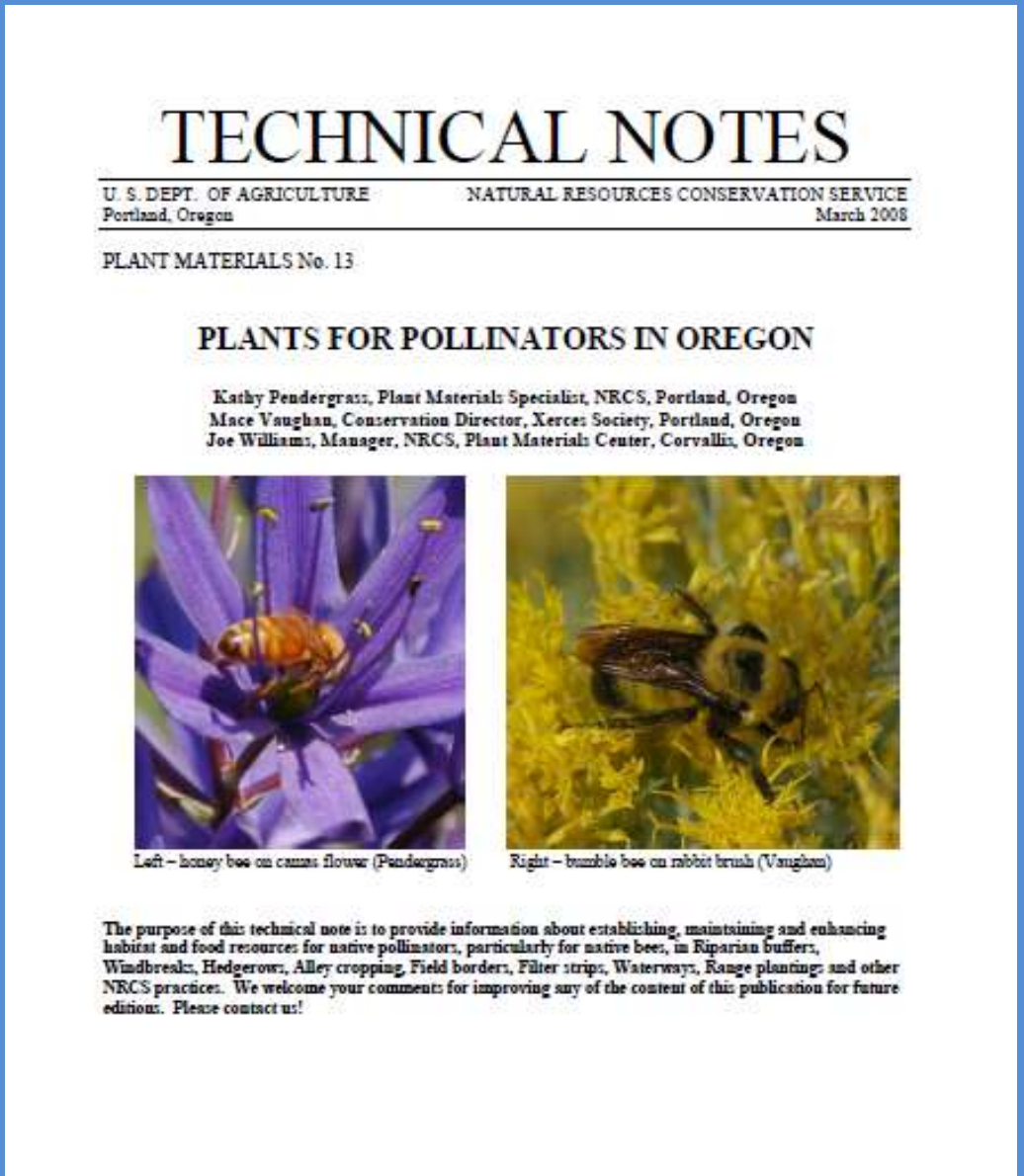


TECHNICAL NOTES

U. S. DEPT. OF AGRICULTURE
Portland, Oregon

NATURAL RESOURCES CONSERVATION SERVICE
March 2008

PLANT MATERIALS No. 13

PLANTS FOR POLLINATORS IN OREGON

Kathy Pendergrass, Plant Materials Specialist, NRCS, Portland, Oregon
Mace Vaughan, Conservation Director, Xerces Society, Portland, Oregon
Joe Williams, Manager, NRCS, Plant Materials Center, Corvallis, Oregon

Left – honey bee on camas flower (Pendergrass)

Right – bumble bee on rabbit brush (Vaughan)

The purpose of this technical note is to provide information about establishing, maintaining and enhancing habitat and food resources for native pollinators, particularly for native bees, in Riparian buffers, Windbreaks, Hedgerows, Alley cropping, Field borders, Filter strips, Waterways, Range plantings and other NRCS practices. We welcome your comments for improving any of the content of this publication for future editions. Please contact us!

Plants for Pollinators in Oregon

Pendergrass, Vaughan, & Williams

Publication from NRCS

HOW YOU CAN DO IT

Great Publications

POLLINATOR PLANTS

Maritime Northwest

Nootka rose, Douglas aster, and Pacific ninebark

The Maritime Northwest is a diverse geographic region, encompassing the coastline and coastal range of southern Vancouver Island, Washington, Oregon, and northern California; the grasslands of the Puget Trough and Willamette Valley; and ending on the eastern side of the Cascade Mountains. Large elevation and rainfall changes throughout this region have created diverse plant communities, ranging from the temperate rainforests of the Olympic Peninsula, the oak savannah grasslands of the Valleys, and the evergreen forests and subalpine meadows of the Cascade range.

Corresponding to this striking diversity of plant communities is an equally remarkable range of pollinators, including the once prominent Western bumble bee (*Bombus occidentalis*). Imperiled butterflies, including the Oregon silverspot (*Speyeria zerene hippolyta*), Taylor's checkerspot (*Euphydryas editha taylori*), Fender's blue (*Icaricia icarioides fenderi*), and Puget blue (*I. i. blackmorei*) butterflies also inhabit this region. As a group, these and other pollinators maintain healthy, productive plant communities, provide food that sustains wildlife, and play an essential role in crop production.

Providing wildflower-rich habitat is the most significant action you can take to support pollinators. Adult bees, butterflies, and other pollinators require nectar as their primary food source. Female bees also collect pollen as food for their offspring. Native plants, which are adapted to local soils and climates, are usually the best sources of nectar and pollen for native pollinators. Incorporating native wildflowers, shrubs, and trees into any landscape promotes local biological diversity by providing shelter and food for wildlife. Native plants are better adapted to regional climate cycles, do not need fertilizers, and are less likely to become weedy.

This guide features regional native plants that are highly attractive to pollinators and are well-suited for small-scale plantings in gardens, on business and school campuses, in urban greenspaces, and in farm field borders. In addition to supporting native bees and honey bees, many of these plants attract nectar-seeking butterflies, moths, and hummingbirds, and some are host plants for butterfly and moth caterpillars. With few exceptions, these species occur broadly across the region and can be purchased as seed or transplants. Please consult regional Floras, the Biota of North America's North American Plant Atlas (http://bonap.net/napa), or the USDA's PLANTS database (http://plants.usda.gov) for details on species's distributions in your area.

BRING BACK THE POLLINATORS

Our Bring Back the Pollinators campaign is based on four principles: grow pollinator friendly flowers, protect bee nests and butterfly host plants, avoid pesticides, and spread the word. You can participate by taking the Pollinator Protection Pledge and registering your habitat on our nationwide map of pollinator corridors.

www.bringbackthepollinators.org

THE XERCES SOCIETY

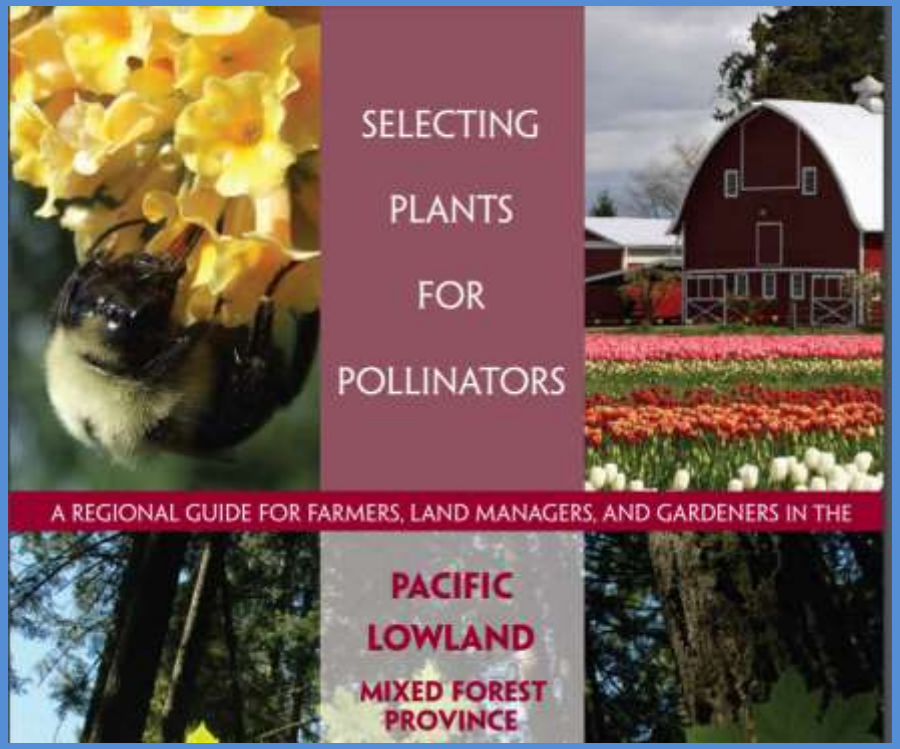
FOR INVERTEBRATE CONSERVATION

Pollinator Plants: Maritime Northwest

http://www.xerces.org/wp-content/uploads/2014/09/MaritimeNorthwestPlantList_web.pdf

Selecting Plants for Pollinators

https://www.pollinator.org/guides



Compared to honey bees, native bees are the bees-knees!

- Hundreds of species pollinate food crops
- More efficient pollinator of certain species
  - Apple, cherry, blueberry, cranberry, tomato
- Forage earlier & later in the day; in colder & wetter weather
- Insurance against honey bee decline (50% since ‘50)
- Support more native plants & habitats

Oregon Bee Project https://www.oregonbeeproject.org/

- The State of Oregon created the Project which recognizes that native bee species are vital to the food supply and the natural environment.
- Oregon Bee Atlas – ODA, OSU & citizen scientist working to collect and identify Oregon's native bees.
- Oregon Flagship Farms are recognized for providing pollinator habitat and safe use of pesticides in farming practices. (Heritage is one of them ☺)
- Bee collection in our native seed production area (former ag and pasture land) in 2019 by Stephanie Hazen found and abundance of genera.

2019 Bee Collection Summary

- 451 bees collected via soap trap & net on 22 native species and 6 non-native species
- 20 genera of bees in 5 of the 7 families
- Mining bees, hollow stem nesters (Hylaeus), mason bees, long-horned bees, bumblebees, and 4 genera of Cuckoo Bees (nest parasites that use the pollen/nectar resources collected by other bees to feed their own larva)

Why plant native plants?

- Native plants are 4 x more likely to attract native bees than non-native plants (evolved together)
- Planting natives to attract native bees builds support for native plant communities in the landscape
- Increases diversity of birds in the landscape


Photo Eliza Lindsay


Photo Stephanie Hazen

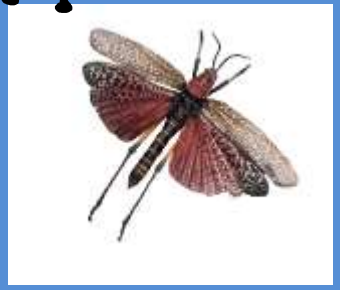
96% of terrestrial birds rear young on

BUGS

Native Plant Diversity

Insect Diversity

Bird Diversity



Principles of Native Bee Planting

- Provide the full range of bloom times from spring to late summer; 3+ species at any time (this may include mid-Western natives due to more late-summer bloomers)
- Pay special attention to early & late season
- Plant a diversity of plants: species, flower size, type and color (blue, purple, violet, white yellow)
- Use plants with good sources of nectar AND pollen
- Plant clusters of same species as room allows
- Leave gaps for bare ground for ground nesters

Designing Your habitat

Different layers and flowering plants with full season bloom-period will attract different species and provide other habitat benefits

- Trees - insects, birds, nesting habitat
- Shrubs – insects, birds, cover for wildlife
- Forbs/Wildflowers - diverse insects, larva
- Bunchgrasses - beneficial insect forage, larval growth in butterflies, nesting

Where to Create & Enhance Bee Habitat? ……almost anywhere!

- Urban and suburban gardens and residential yards
- Parking strips and parks
- Urban landscapes such as roofs, walls, and courtyards
- Hedgerows along woods, farm fields, roads, fence lines, and under powerlines
- Unproductive farm or forest land such as slopes, corners, and poorly drained soils out of reach of irrigation
- Stream sides, woods, meadows, wetland and pond edges

Residential yards can have diverse and successional native plantings

Parking strips - perfect for our drought-tolerant natives

Underused Areas in Urban Areas

OSU Horticultural Dept (Al Shay leading the charge) went under the radar to create prairie spaces by taking over small nooks and crannies around OSU Facilities and Housing grounds

GO AL!!!!

Some Favorite Plants for Bees

- Native shrubs: Oregon grape, western spice bush, California lilacs (Ceonothus), western crabapple, cascara, vine maple, Indian plum, serviceberry, oceanspray, mock orange, ninebark, Nootka & clustered rose, snowberry, evergreen huckleberry, and salal.
- Native perennials: columbine, camas, lupine, self-heal, penstemon, yarrow, stonecrop, goldenrod, nodding onion, Oregon iris, Oregon geranium, checkermallow, milkweed, Phacelia sp, and Oregon sunshine.
- Flowering fruit plants: blueberry, strawberry, raspberry, apple, pear, plum, kiwi, peach, cherry, and quince.

Bee Niches – mix it up!

- Generalists (like **bumblebees**) depend on succession of flowers from **early spring** (queen emerges) until **late summer** (when colony dies)
- **Cuckoo bumble bees (top right)** are nest parasites and bioindicator of healthy host bee population
- **Specialists bees** pollinate 1-2 plant families but collect nectar from more (e.g. chapleg, sunflower, and **long-horned bees (bottom right)**
- **Short-tongued bees** use shallow flowers like aster, carrot family vs. **Long-tongued bees** favor deep flowers like penstemon
- Small dark **sweat bees** like exposed, compacted soil, e.g. driveway cracks

Bee Lifecycle

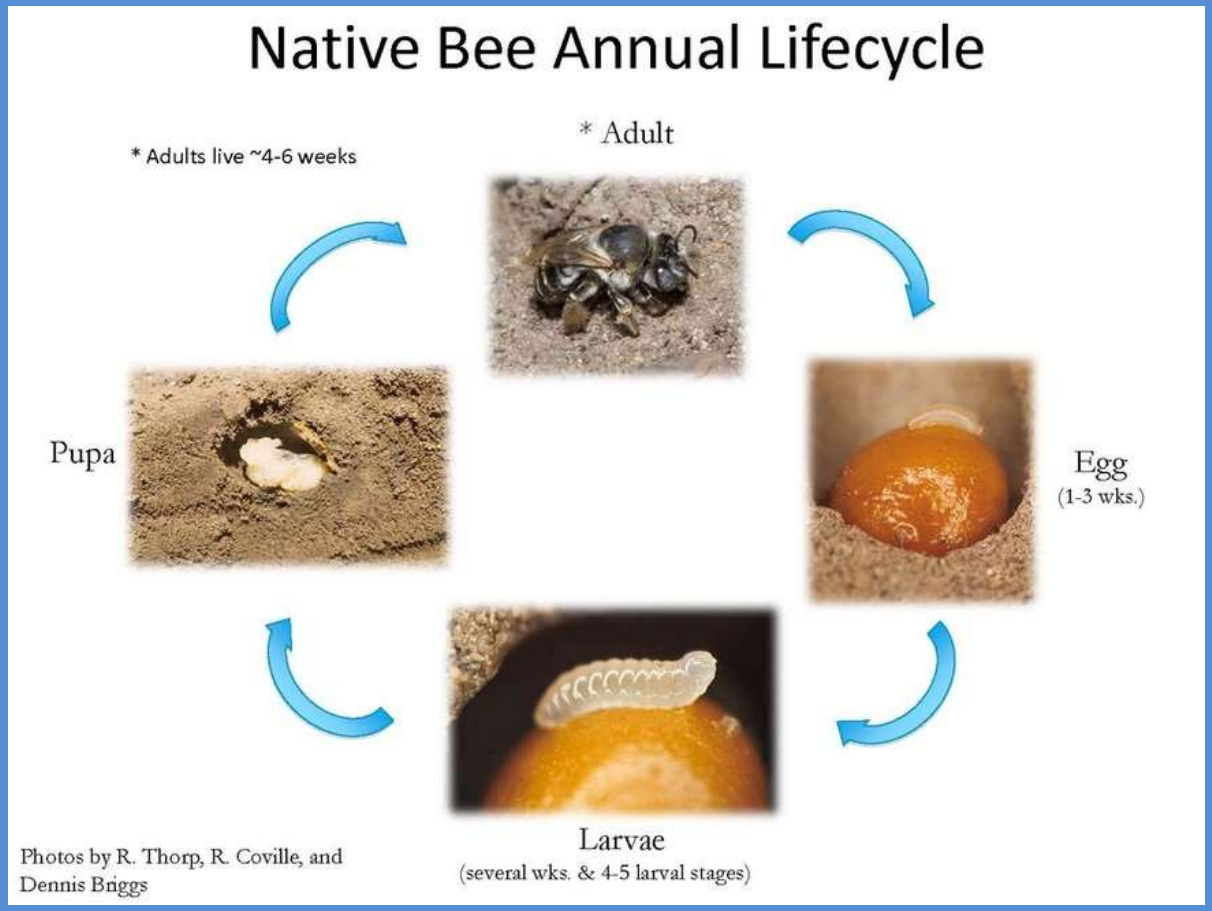
FORAGING

- Mining bees active early spring
- Mason bees active spring or early summer (March – June)
- Green sweat bee active in summer
- Leaf-cutter bees active early-mid summer

Native Bee Nesting

- About 70% nest in the ground
  - After mating, solitary female excavates a tunnel, gathers pollen and nectar making "bee bread", lays eggs, larva consume it and overwinter as a pupa (include green sweat, long-horned, digger, and mining bees)
- Most other species nest in wood
  - Often use dead trees or downed wood
  - Holes made by beetles
  - Hollow/pithy stems (mason bees)– leave them standing!
- Social bumble bees
  - Might use abandoned rodent hole; under bunch grasses, brush piles, stumps
  - Colony might have a couple hundred worker bees

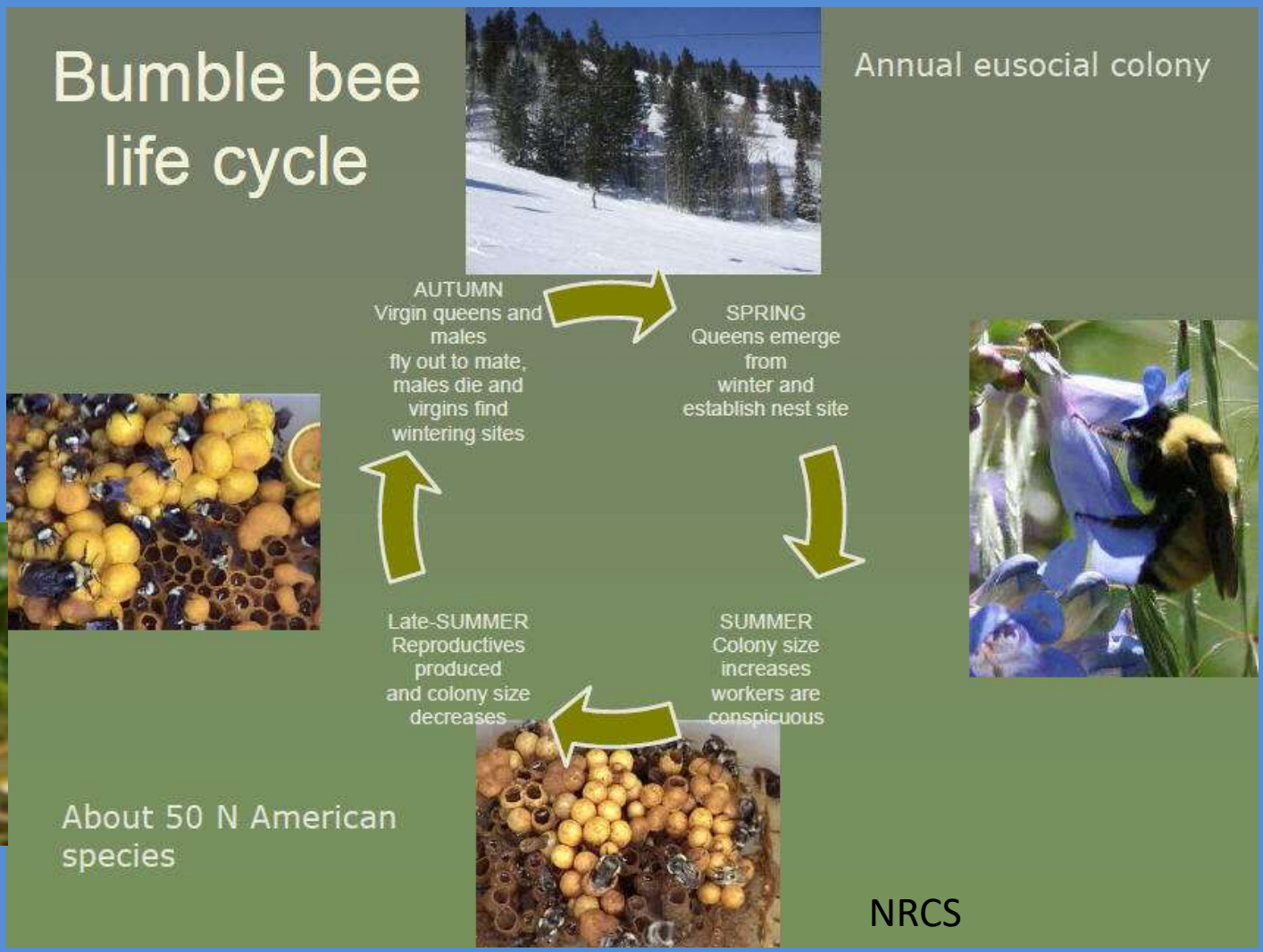
Native Bee Ground/Cavity Nesting



Most solitary bees female lives a 4-6 weeks. But, some sweat bees (*Halictus* and *Lasoiglossum*) have two or three generations each year so are present over a longer period of time

Bumble Bees have a **Full season life cycle**

Sleeping worker bees



Native Hedgerow Planting at Heritage Working Farm

Native rose, snowberry and Oregon grape (an important early blooming spp) one edge

Native bunchgrasses other edge and flowers (plants and seed) in between – annuals flourish first year ☺

Year 2 June

Perennials in full bloom ☺
Lupine, Oregon sunshine,
Yarrow, Self-heal galore!!!

Year 3 June – Native bees galore

Shrubs starting to bloom enhancing pollinator value

Nearby hedgerow planted with later-blooming species Goldenrod and Narrow-leaved milkweed

Our Urban Home in West Salem
still a haven of native bee diversity

2007

Arborvitae were the first to go!!!!!

Ecological desert with nary a bee, butterfly, or beetle to be found

- *Our garden is now about 50% Oregon native plants*
- *The FOCUS was planting for native bees with flowers from April-Sept*
- *The former desert is now an* ***OASIS for bees*** ☺

Early April
*Fawn lily
*Common camas

2018

Late-April
*Tall camas
*Large-leaved avens
*Western buttercup

Early-May

*Tall checkerbloom
*White camas (wild colorform from Benton County)
*Oregon geranium
*Ookow
*Large-leaved avens (blooms most of summer if deadhead)

Early-May

*Straight-beaked buttercup (amazing garden plant)
*Douglas' meadowfoam (amazing garden plant)
*Large-leaved avens (yup, it spreads around so keep it in check with…more plants!)

Mid-May

*Apple tree (for bees, people and birds perches!)

*Fringecup (shaded by plants in foreground)

Fern-leaved lomatium (also a good perch and structural interest in fruit)

*Green-flowered alumroot (bee magnet and structural interest in fruit)

Early-June – *Layered structure*

*Mix of Oregon natives, mid-western natives, and ornamentals

*Slim-leaf onion and polomonium (Jacob's ladder) along the border

Family Portrait

Background to foreground: Western yarrow, Oregon geranium, Evergreen huckleberry (food AND native) Alumroot, Slender cinquefoil; Avens, native Seal-heal, Slim-leaf onion, Spiked primrose (annual)

Early July

Note: the Willamette Valley is a summer drought habitat system so most of our native perennials bloom-out by the end of July

Incorporation of mid-western perennials and late-blooming non-native perennials keep the garden beautiful AND provides critical resources for native bees

Early August

Early-Sept

Favorite Bee friendly mid-summer perennials – fleabane, small globe thistle, black-eyed Susan, blazing star (Liatris), veronica, penstemon

ID the bees in your garden!

The Meadowscaping Handbook WMSWCD

G – Pollinators That May Be Found in Urban Portland Gardens *

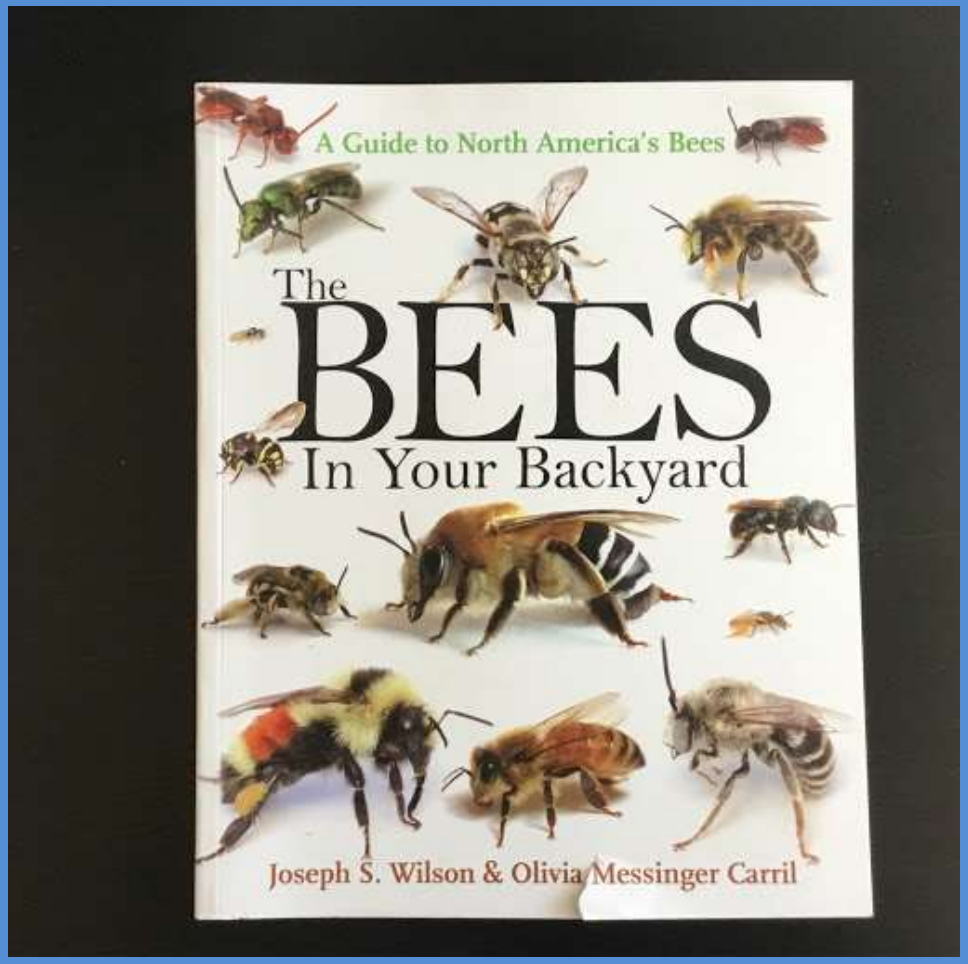
BUMBLEBEES	Bombus vosnesenskii (yellow faced)	
	Bombus melanopygus (blacktailed)	
	Bombus mixtus (fuzzy horned)	
CHAP LEGGED BEES	Bombus californica (California)	

*Adapted from Appendix A of the Maritime Northwest Citizen Science Monitoring Guide, Xerces Society, 2014 (unpublished) / corroborated by Mace Vaughn, personal communication (February 2015)

MEDIUM DARK BEES	Andrena spp. + Melandrena spp. (mining bees)	
METALLIC HAIRY BELLY BEES	Osmia spp. + Hoplitis spp. (mason bees)	
SWEAT BEES	Agapostemon spp. (green sweat bee)	
	Halictus spp. (stripped sweat bee)	

Photo Credit:
Left Column (top to bottom): Mace Vaughan, The Xerces Society; Kammy Kern-Korot, WMSWCD; Mace Vaughan; Mace Vaughan
Right Column (top to bottom): Mace Vaughan; Mace Vaughan; Matthew Shepard, The Xerces Society; Mace Vaughan

ID the bees in your garden!



….or you can be lazy and ask bee nerdy friends like I did!

Bombus melanopygus on lungwort late-April

Bombus sp. on white camas

Osmia sp. (mason bee) Cavity attracted to yard art

Ceratina sp. (carpenter bee – stem nesters) on buttercup

Lasioglossum sp. (sweat bee – ground nester) on Douglas' meadowfoam - May

Melissodes sp. (pollinate composites – ground nester) on western goldenrod

Lasioglossum (*Dialictus*) *sp. (sweat bee) on Farewell to spring - July*

Long-horned bees sleeping on Gilia

Bumble bee and sunflower bee (Melissodes sp) on sunflower

Other things you can do for pollinators

- Provide bare dirt and wood; don't over-mulch or use plastic; especially in sunny spots, dedicate a dirt path
- Other nesting structure, e.g. pithy stems
- Use care with insecticides/neonicotinoids; look out for garden store products e.g anti-aphid (amino chloropid) and treated nursery plants. Use beneficial nematodes for crane-fly control!
- Avoid organic-approved pyrethrin, spinosad pesticide – danger to bees; neem oil ok when not applied directly to bees; citrus may inhibit pollination
- Practice IPM; spray at night; avoid blossoms
- Minimize ground disturbance, tillage
- Provide shallow water
- Provide mud for mason bees (clay soil)
- Clean or replace artificial nest structures
- Leave existing habitat undisturbed

Keep it dirty and “messy”

Overwintering bumble bees will live in a leaf

Nest sites - bare ground and wood

Bees seen entering or leaving holes in the ground are a sure sign of an active nest site. These mining bees were flying on a sunny, April morning. (Photograph by Matthew Shepherd.)

Beetle–tunneled snags, like this one, and patches of bare ground are important nesting sites for solitary bees. (Photograph by Matthew Shepherd.)

Photos: Farming for Bees

Nest sites

Our wind chimes!

Photos: Farming for Bees

Where to Buy Native Plants

- Plantnative.org [lists vendors by state and city]
- Retail: Xera Plants, Inc., Bosky Dell, Portland Nursery, Doak Creek, Grays Garden Center, Territorial Seed Co, Fox Hollow, Willamette Gardens, Watershed Garden Works (WA), Planta nativa (WA), Las Pilitas (CA but wow what a selection!)
- Wholesale (buy with friends!): Willamette Wildings, Seven Oaks, Champoeg, Scholls Valley, Trillium Garden, Beaver Lake, Heritage Seedlings (some spp.), Fourth Corner Nursery (WA)
- Soil and Water Conservation District plant sales

Note: Vendors will often donate to public space projects!

If you can't Buy it GROW IT!

- Willamette Wildlings (our seed and mixes in small packets)
- Pro Time Lawn Seed (special Heritage mixes in small packets and showy milkweed)
- Heritage Seedlings ($500 min so buy with friends!): 100 species of graminoids and forbs by oz, lb, and mixes.
- Native Seed Production Manual – Corvallis PMC – the bible of seed needs!!!!
- Website Info *Native Plant Network*: https://npn.rngr.net/npn/propagation

Seed Sowing Ideas – fall dormant bulbs, corms, and tubers like Lomatium spp.

Bulb Crate with Full Sides 23x16x8 (try milk crate?)

Lomatium triternatum

THANK YOU

Restored Native Prairie on Heritage Seedlings Farm