OSU EXTENSION SERVICE

Native Plants

Creating Habitat for Birds and Pollinators

Oregon State University

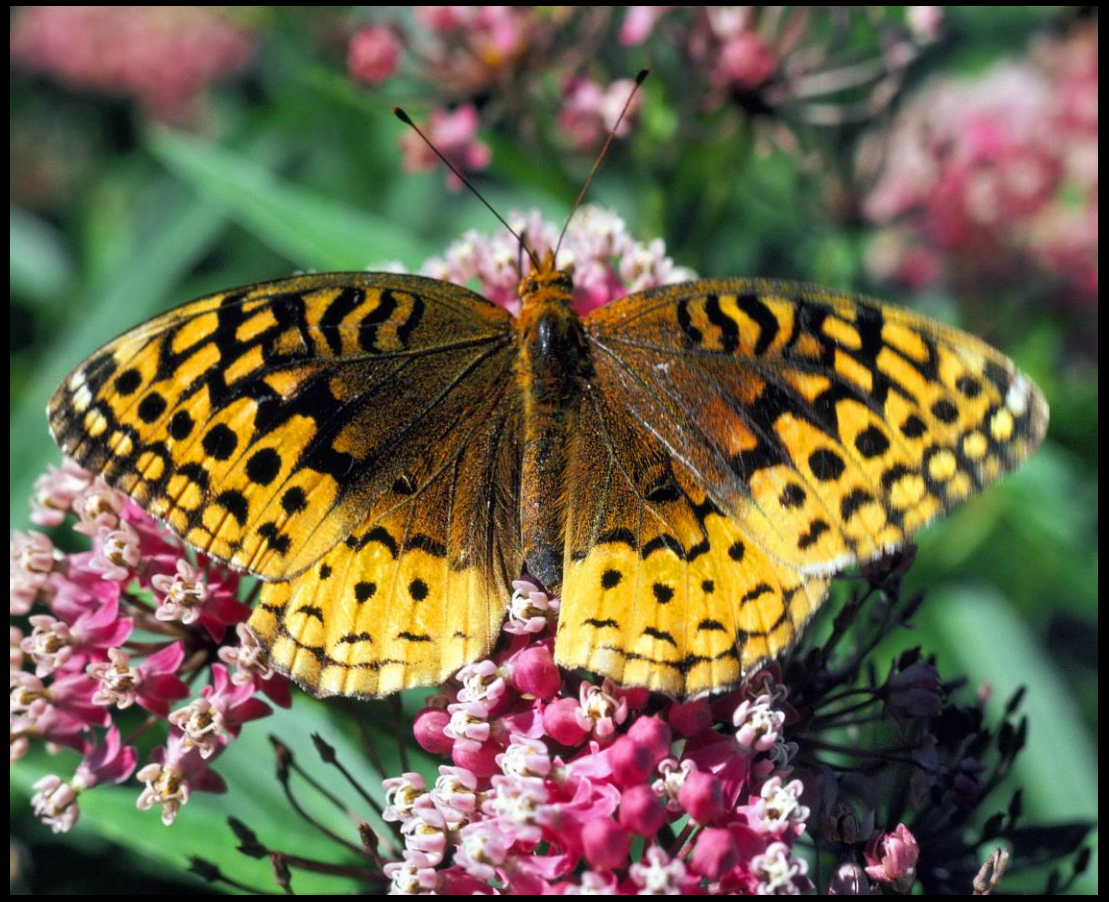
What is a Native Plant?

- Plants that occur naturally in a region in which they evolved.
- Native plants have formed symbiotic relationships with native wildlife over thousands of years
- Vital to preserving biodiversity.

Advantages of Native Plants

- Grow under a wide variety of conditions.
- Many are drought tolerant.
- All are adapted to local garden soils in places of origin.

Native Plants and Habitat



- Specialized relationships are the rule in nature.
- The most important specialized relationships are among insects and plants.
- Vital to ecosystem functioning and local carrying capacity.

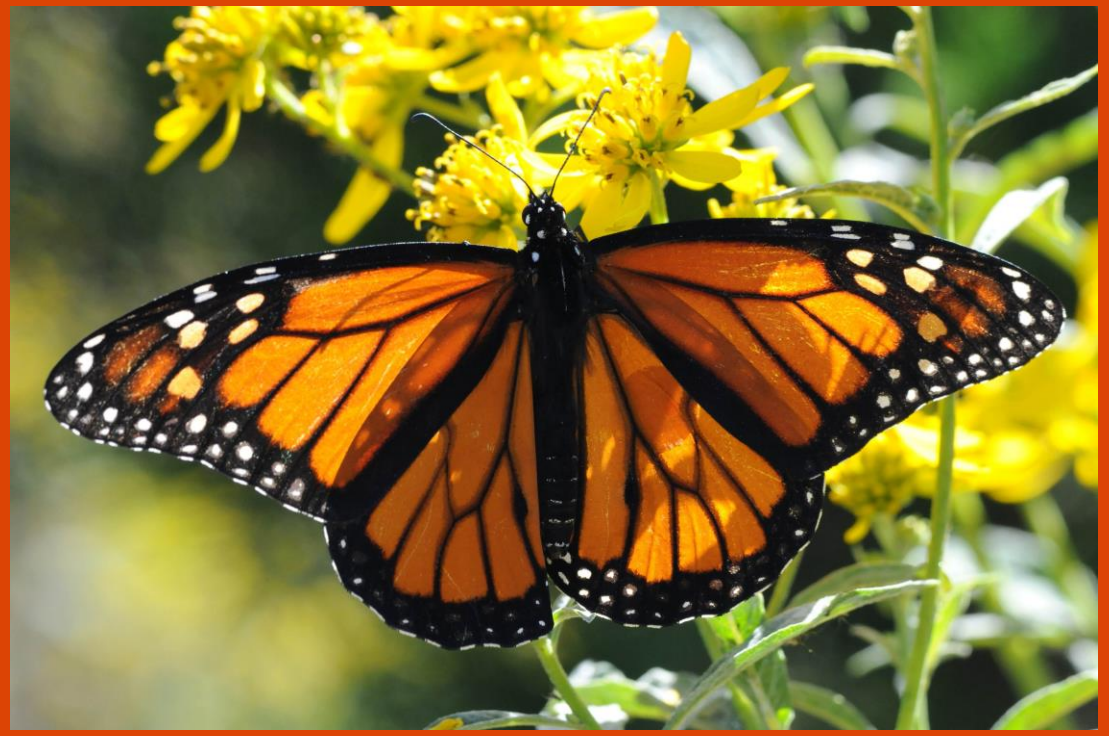
Native Plants and Habitat

- Carrying capacity is the ability of a place to support a species.
- The type of plants determine the habitat's abundance and diversity of animals.
- Why have specialized relationships developed?

Specialized Relationships

- Plants have toxins in their leaves
- Milkweeds use toxic cardiac glycosides to protect their leaves
- Monarchs have developed the enzymes to make cardiac glycosides less toxic

Specialized Relationships



- The ability to detoxify cardiac glycosides does not confer the ability to detoxify other toxins.
- The monarch butterfly has a specialized relationship with milkweed.
- Loss of milkweed habitat has resulted in a 96% reduction of monarch populations.

Specialized Relationships

- Can monarch butterflies adapt to other plant species?
- Not within the decades that destruction of milkweed habitat has occurred.
- Asking the monarch butterfly to evolve from their specialized relationship with milkweed is like asking humans to develop wings.

Specialized relationships

- Monarchs are not exceptions
- 90% of insects that eat plants are specialized.
- As we replace native plant communities with lawns and ornamentals insects that depend on native plants decline.

Native Plants and Habitat

- Caterpillars are seriously diminished when introduced plants replace native plants.

- Yards dominated by introduced plants produce 75% less caterpillar biomass and are 60% less likely to have breeding chickadees.

Importance of Insects

- Insects pollinate 88% of plants.
- Insects are the primary means by which the food in plants is delivered to animals.
- Insects rapidly decompose dead plants.

Native Plants and Habitat

- To sustain insects and other animals we need the plants that support them.
- Determining which insects have the greatest impact on local food webs determines which plants we need most.
- Caterpillars are more nutritious than than most insects; are high in protein and fats and are the best source of carotenoids for birds.

Carotenoids

- Essential component of a healthy bird diet.
- Stimulate immune systems, improve color vision and sperm vitality, and are antioxidants.
- Major component of feather pigments.

Caterpillars

- Transfer more energy from plants than any other plant eaters.
- 97% of bird species feed their young caterpillars.
- One clutch requires 6,000 to 9,000 caterpillars.

Native Plants and Habitat

- Native plants are far superior in their ability to sustain caterpillars but vary in their ability.

- Keystone Plant: Native plants that contribute more than most others to food webs.

- A landscape without keystone genera will support 70 to 75% fewer caterpillar species even if the landscapes contains 95% native plants.

Keystone Plants

- Keystone plants are essential. 14% of native plants make 90% of food for caterpillars.
- Keystone plants differ by region of the country.
- Two types of keystone plants.
  - Host plants that feed 90% of butterflies and moths
  - Plants that feed specialist bees

Native Plants and Habitat

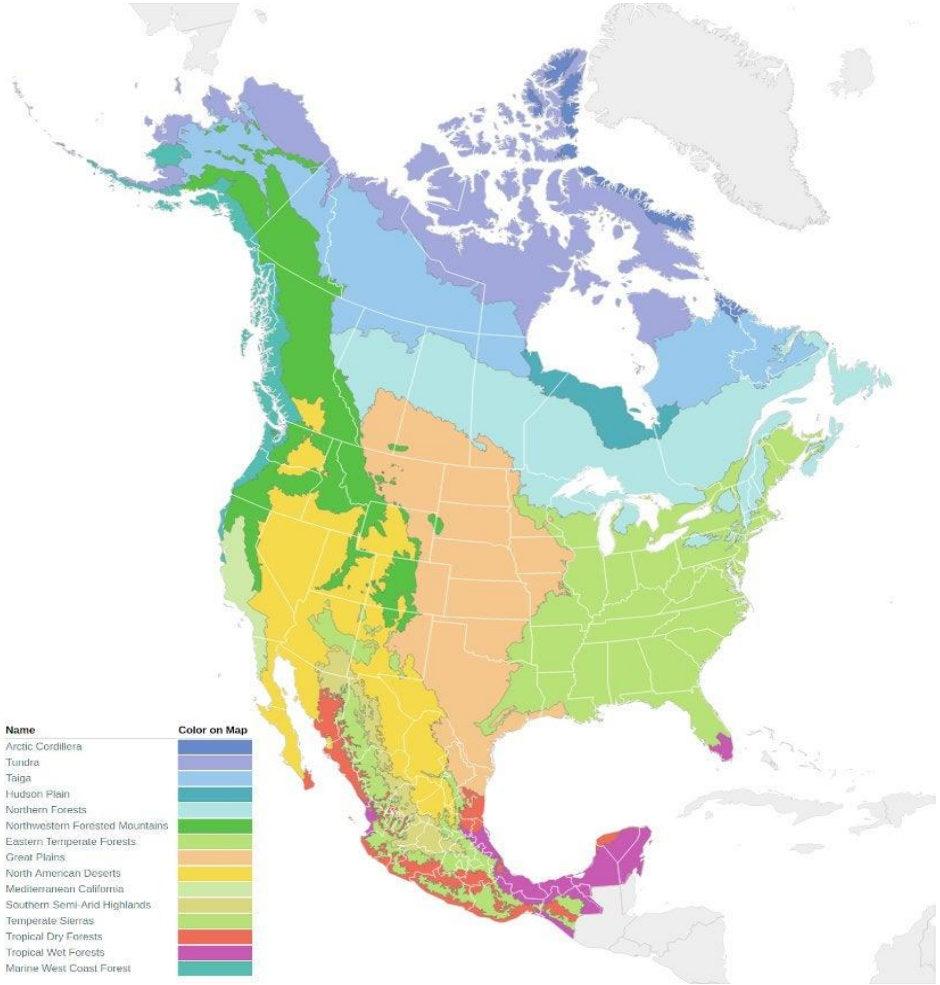
- Oregon has 600-800 species of native bees.
- 25% of Oregon native bees are host-plant specialists.
- Meet the needs of specialist bees and the generalists will follow.

Native Plants and Habitat

- Plant keystone species with bloom period that starts in February and ends in October.

- Plant in clusters.

Keystone Plants by Ecoregion



- Entomologist Dr. Doug Tallamy and research team identified keystone plants that support butterfly and moth species.

- Native host plants of pollinator specialized bees were researched by pollinator conservationist Jarrod Fowler.

Keystone Plants Ecoregion 6

Plant Type	Plant Genus	Sample of Common Species (not all encompassing)	# Caterpillar Species that Use this as a Host Plant	# of Pollen Specialist Bee species that Rely on this Plant
Trees	*Prunus*	Oregon cherry *(Prunus emarginata)*, Chokecherry *(Prunus virginiana)*	206	
	Populus	American aspen *(Populus tremuloides)*, balsam poplar *(Populus balsamifera)*	197	
	Betula	Water birch *(Betula occidentalis)*, Resin birch *(Betula glandulosa)*	177	
	Quercus	Red oak *(Quercus rubra)*, Deer oak *(Quercus sadleriana)*	169	
	Alnus	Grey alder *(Alnus incana)*, Sitka alder *(Alnus sinuata)*	166	
	Pinus	Lodgepole pine *(Pinus contorta)*, Ponderosa pine *(Pinus ponderosa)*	165	
	Malus	Oregon crabapple *(Malus fusca)*	139	
	Acer	Bigleaf maple *(Acer macrophyllum)*, Rocky Mountain maple *(Acer glabrum)*	107	

Keystone Plants Ecoregion 6

Plant Type	Plant Genus	Sample of Common Species (not all encompassing)	# Caterpillar Species that Use this as a Host Plant	# of Pollen Specialist Bee species that Rely on this Plant
Shrubs	*Salix*	Shining willow *(Salix lasiandra)*, Scouler's Willow *(Salix scouleriana)*	256	26
	Vaccinium	Dwarf bilberry *(Vaccinium caespitosum)*, Black huckleberry *(Vaccinium membranaceum)*	111	
	Chrysothamnus	Yellow rabbitbrush *(Chrysothamnus viscidiflorus)*	21	18
	Ericameria	Rubber rabbitbrush *(Ericameria nauseosa)*		13

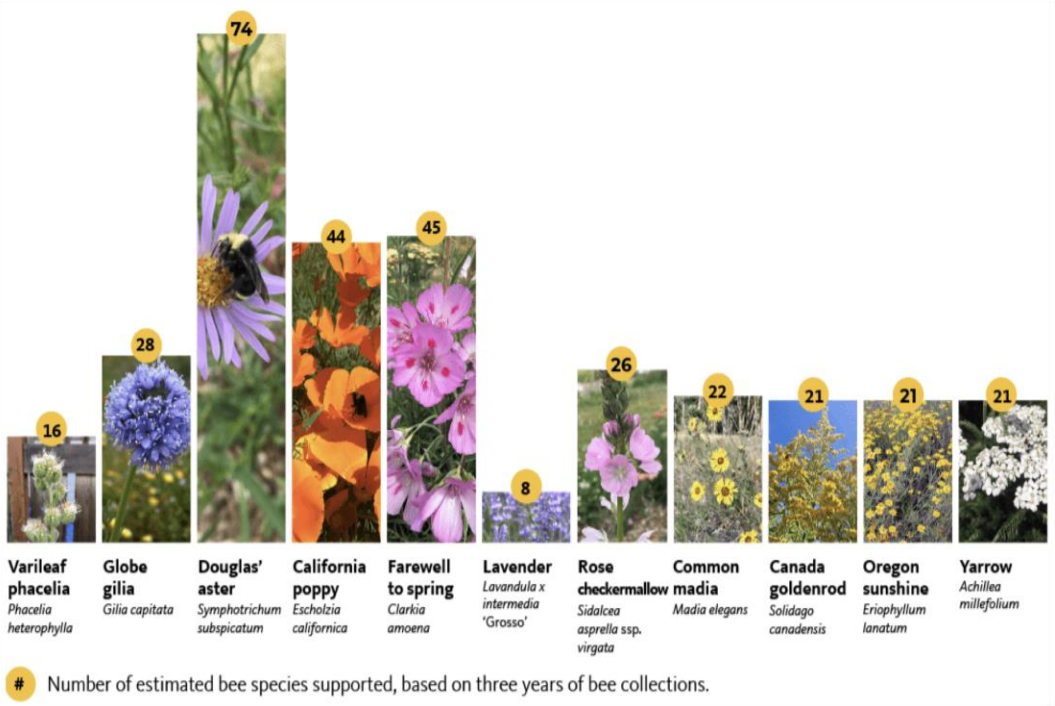
Keystone Plants Ecoregion 6

Plant Type	Plant Genus	Sample of Common Species (not all encompassing)	# Caterpillar Species that Use this as a Host Plant	# of Pollen Specialist Bee species that Rely on this Plant
Flowering Perennials	*Solidago*	Western goldenrod *(Solidago lepida)*, Rocky Mountain goldenrod *(Solidago multiradiata)*	52	48
	Helianthus	Common sunflower *(Helianthus annuus)*, Prairie sunflower *(Helianthus petiolaris)*	39	81
	Grindelia	Idaho gumplant *(Grindelia nana)*, Curlycup gumweed *(Grindelia squarrosa)*	8	75
	Gutierrezia	Broom snakeweed *(Gutierrezia sarothrae)*		72
	Heterotheca	Hairy false goldenaster *(Heterotheca villosa)*	8	56
	Erigeron	Cutleaf daisy *(Erigeron compositus)*, Shortray fleabane *(Erigeron lonchophyllus)*	14	38
	Symphyotrichum	Western aster *(Symphyotrichum ascendens)*, Eaton's aster *(Symphyotrichum eatonii)*	2	31
	Senecio	Drawf mountain ragwort *(Senecio fremontii)*, Arrow leaf ragwort *(Senecio triangularis)*	22	29

Native Plants for Bees

- A recent OSU study monitored bees on 23 wildflowers.
- 10 plants identified that attracted an abundance and diversity of native bees and have unique associations with native bees.
- All plants grow well in full sun and are drought tolerant.

Native Plants for Bees



- The abundance of bees on lavender is comparable to natives but diversity is lacking.
- Most of the bees on lavender are non-native honey bees and common yellow-faced bumble bees.

Native Plants and Habitat

- Plant native plants rather than cultivars and hybrids.
- Cultivars are identified by a cultivar name that follows the genus and the species, e.g., *Eschscholzia californica* ‘Moonshine’
- Hybrids are identified with an x between the genus and species name, e.g., *Lavandula x intermedia*

Native Plants and Habitat

- Native bees in particular are attracted to larger blocks of flowers.
- Benefits of larger blocks are particularly pronounced for smaller bees which have 150’ – 300’ foraging ranges from their nest.
- Shrubs and trees are able to pack a lot of flowers in a small area.

Spring Blooming Keystone Plants

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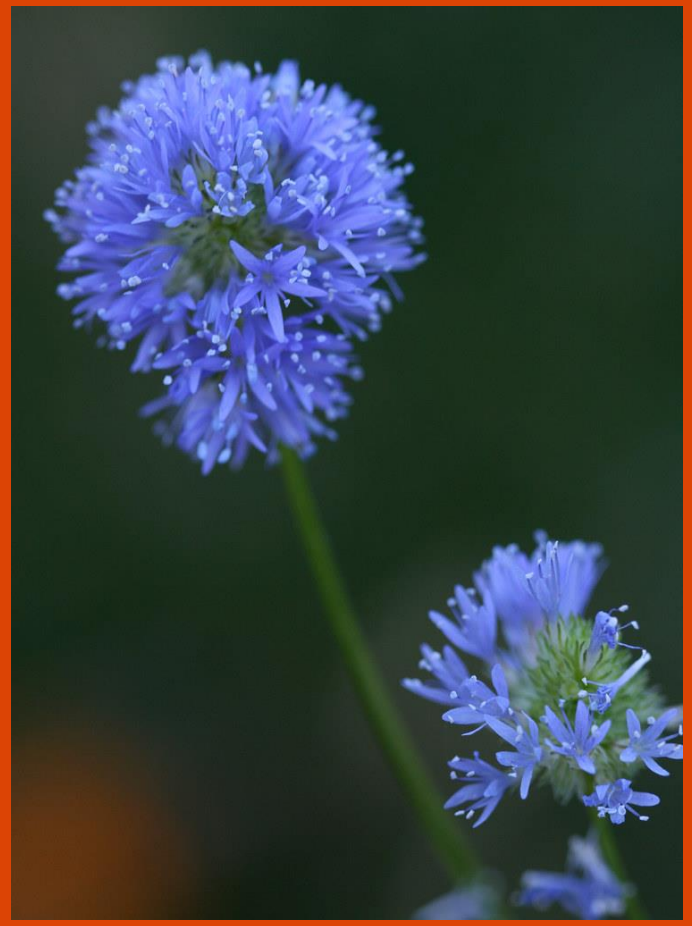
- Big Leaf Maple
- Vine Maple
- Oregon Cherry
- Crabapple
- Willow
- Cascara
- Evergreen Huckleberry
- Red Flowering Currant
- Tall Oregon Grape
- Oregon Sunshine

Summer Blooming Keystone Plants



- Varileaf Phacelia
- Showy Milkweed
- Globe Gilia
- California Poppy
- Sunflower
- Farewell to Spring
- Rose Checkermallow
- Summer Lupine

Fall Blooming Keystone Plants

- Rabbitbrush
- Common Madea
- Canada Goldenrod
- Common Yarrow
- Douglas Aster

The Mighty Oak

- Studies show that the genus *Quercus hosts more caterpillars and insect life than any other genus in the Northern hemisphere.*
- *2 species are native to the Willamette Valley – the Oregon white oak and the California black oak.*

The Mighty Oak

- More than 200 native wildlife species are dependent on the Oregon white oak.

- An insect survey at a single site in Lane County found 35 species of moths and butterflies using the foliage of the Oregon white oak.

The Mighty Oak

- It is estimated that more than 500,000 acres of oak savanna covered the PNW in the early 1850's
- Less than 1% of the pre-settlement acreage remains.

Adding Native Plants

- Identify area to replant (start with a small manageable area)
- Cover with black plastic, plywood in early Spring.
- Take up covering in the fall, skim the surface to remove dead grass.
- Dig up the roots of invasives.
- Break up clumps of dirt.
- Plant perennials in the fall.
- Mulch with compost, leaves or wood chips.
- Use drip irrigation until established.

Adding Native Plants

Adding Native Plants

Removing Blackberries in Large Areas

- Hire it out
- Jeff Jones of Habitat Contracting LLC through a grant (SBNA)
- Mowed and brush cut in the Spring, sprayed with Vastlan in the Fall
- Vastlan used for habitat restoration in riparian areas.

Diversify the Forest

- For large acreage consult with Lane County OSU Forestry and Natural Resources Program
- Thin the forest.
- Clear trees shading madrones and Oregon maples to give them more sun.

Adding White Oaks

- Best experience with planting acorns.
- Mast years occur approximately every 3 years.
- Acorns typically produced in the fall.
- Test viability using the float test.
- Remove the caps.
- Viable acorns sink.

Adding White Oaks

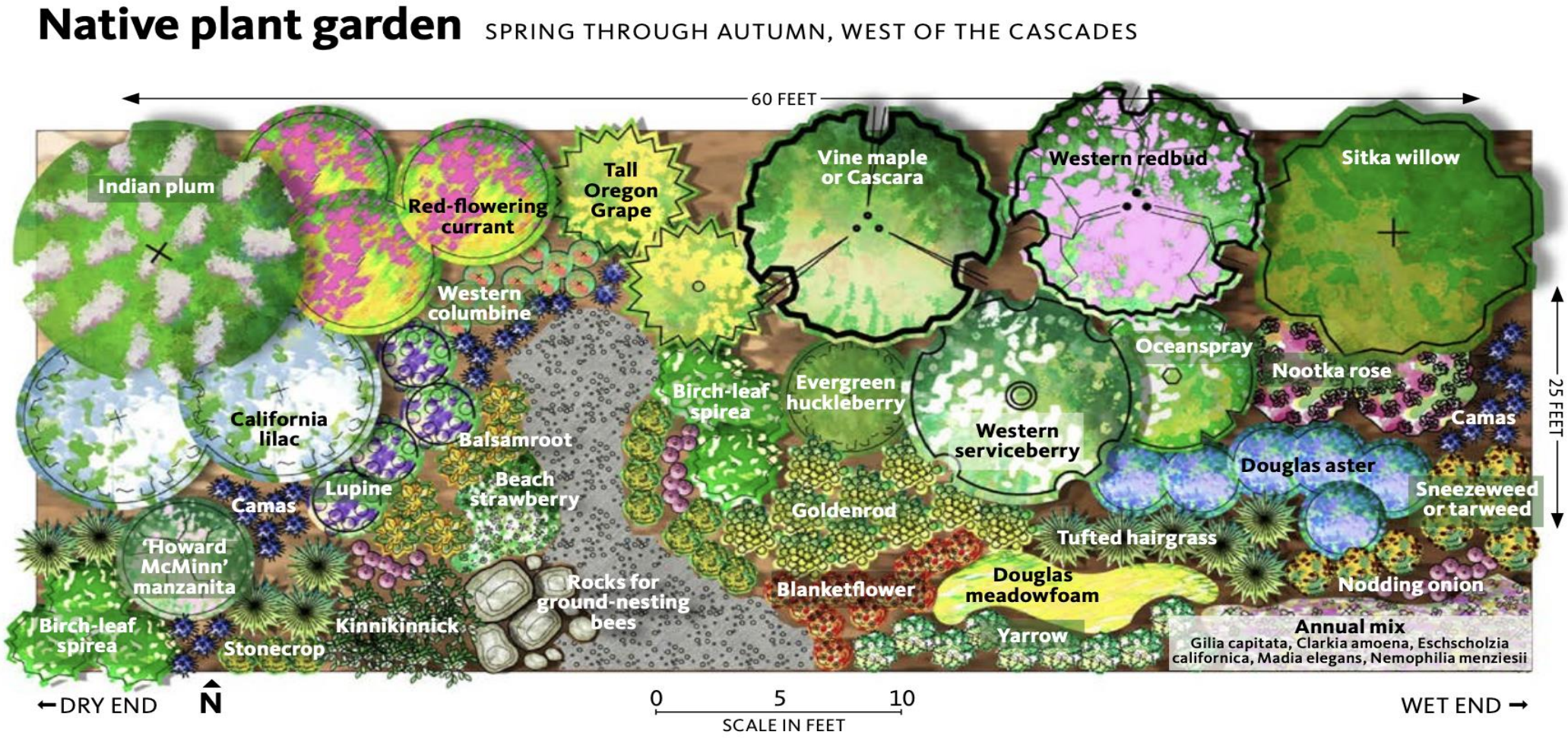
- Plant acorn on its side
- Water if not raining
- Oaks start with a deep tap root, top emerges in Spring
- Place wire cages around them as soon as the top emerges

Adding White Oaks

Adding White Oaks

- If you want to transplant include as much of the taproot as possible
- Dig deep for the taproot
- Transplant when 12”-18” tall
- Difficult to transplant when bigger as the tap root is often damaged.
- Transplant when the tree is dormant

Pollinator Garden Design



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What questions do you have?

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