OREGON STATE UNIVERSITY EXTENSION SERVICE

NATIVE PLANT PICKS FOR BEES

10 SPECIES You Can Grow to Support Wild Bees in Oregon

Sweat bee on California poppy. CREDIT: TJ Gehling, CC BY-NC-ND 2.0

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Pollinator gardeners grow more than flowers. Increasing numbers of gardeners are supporting struggling insect populations by growing plants attractive to bees and other pollinators. One of the best ways to attract bees native to your region is to select native plants. Here are 10 native plant species that can help attract a diverse and abundant community of bees to your garden.

How were native plant picks selected?

Native Plant Picks for Bees is based upon three years of research (2017–2019) monitoring bees on 23 wildflowers. The list includes 19 plants that are native to Oregon's Willamette Valley, and four common garden plants that are not native to our region (Table 1, page 2). From the 23 plants tested, we narrowed our picks to 10. These plants:

- Attracted an abundance of wild bees.
- Attracted many different kinds of native bees.
- Have unique associations with wild bee species, meaning that some bees were attracted to specific plant species.

All plants grow well in full sun. They require little (if any) supplemental irrigation in the summer, although low levels of supplemental irrigation can prolong bloom.

The research that underpins our recommendations was conducted at Oregon State University's North Willamette Research and Extension Center in Aurora, Oregon. See "References" for details on study plant selection, field study methods and statistical analyses.

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Table 1. Study plants

This three-year field study study on bee visitation included 27 plants. Study plants included many that are native to the Willamette Valley and have promise as garden ornamentals, as well as popular non-native garden plants that can be found on pollinator plant lists. Native Plant Picks for Bees bear a checkmark (✓). Plants that are marked with an asterisk (*) suffered from poor germination and growth, or didn't flower under the hot and dry conditions of our field site. These plants were not included in our statistical analyses, which we used to determine our list of 10 Native Plant Picks for Bees.

Common name	Scientific name	Life history	Bloom color	Native range
smallflower lotus	*Acmispon parviflorus*	annual	white/pink	Western U.S.
✓ **farewell-to-spring**	*Clarkia amoena*	annual	pink	Pacific Northwestern U.S.
giant blue-eyed Mary*	*Collinsia grandiflora*	annual	blue /white	Western U.S.
✓ **globe gilia**	*Gilia capitata*	annual	blue	Western U.S.
common sunflower*	*Helianthus annuus*	annual	yellow	U.S.
miniature lupine	*Lupinus micranthus*	annual	purple/blue	Western U.S.
✓ **common madia**	*Madia elegans*	annual	yellow	Western U.S.
baby blue eyes*	*Nemophila menziesii* var. *menziesii* ‡	annual	blue/white	Western U.S.
✓ **varileaf phacelia**	*Phacelia heterophylla*	annual/biennial	white	Western U.S.
✓ **California poppy**	*Eschscholzia californica*	annual/perennial	orange	Western U.S.
✓ **common yarrow**	*Achillea millefolium*	perennial	white	U.S.
pearly everlasting	*Anaphalis margaritacea*	perennial	white	U.S.
showy milkweed	*Asclepias speciosa*	perennial	pink/white	U.S.
western columbine	*Aquilegia formosa*	perennial	red	Western U.S.
great camas	*Camassia leichtlinii*	perennial	purple/white	Pacific Northwestern U.S.
✓ **Oregon sunshine**	*Eriophyllum lanatum*	perennial	yellow	Western U.S.
wild strawberry	*Fragaria vesca*	perennial	white	U.S.
Oregon iris	*Iris tenax*	perennial	purple	Pacific Northwestern U.S.
cream stonecrop*	*Sedum oregonense*	perennial	yellow	Pacific Northwestern U.S.
✓ **rose checkermallow**	*Sidalcea asprella* ssp. *virgata*	perennial	pink	Pacific Northwestern U.S.
Idaho-blue-eyed grass	*Sisyrinchium idahoense*	perennial	blue/purple	Pacific Northwestern U.S.
✓ **Canada goldenrod**	*Solidago canadensis*	perennial	yellow	U.S.
✓ **Douglas' aster**	*Symphyotrichum subspicatum*	perennial	purple	Western U.S.
Non-native plants included for reference				
'Grosso' lavender	*Lavandula* x *intermedia* 'Grosso'	perennial	purple/blue	Eurasia
catnip	*Nepeta cataria*	perennial	purple/white	Eurasia
oregano	*Origanum vulgare*	perennial	yellow/white	Eurasia
pineapple sage	*Salvia elegans*	perennial	red	Guatemala/Mexico

‡ The blue and white form of *Nemophila menziesii* was used in this study (*Nemophila menziesii* var. *menziesii*). This variety is native to California, not Oregon. However, as a species, *Nemophila menziesii* is broadly native to the Western U.S. When we conducted our study (2017–2019), the Oregon native *Nemophila menziesii* var. *atomaria* was not commercially available. At this time (2022), only limited quantities of seed are available. Those seeking to include *Nemophila menziesii* in their landscapes are more likely to come across the blue form (*Nemophila menziesii* var. *menziesii*) in horticultural markets.

What is the native range of the recommended plants?

The Native Plant Picks for Bees (Figures 1 and 2, pages 5–6) have distribution ranges that include Oregon's Willamette Valley; however, all have native ranges that extend beyond this region.

Some plants are widespread, with native ranges that include the entire United States, such as yarrow (*Achillea millefolium*) or Canada goldenrod (*Solidago canadensis*). Others are more narrowly distributed across the Western United States, such as globe gilia (*Gilia capitata*) or California poppy (*Eschscholzia californica*). Still others, such as farewell-to-spring (*Clarkia amoena*), are more restricted to the Pacific Northwest.

How was native range determined?

We consulted the USDA PLANTS database to determine broad ranges (listed in plant profiles) for native plant species. We consulted OregonFlora distribution maps to determine native range within Oregon.

How did we calculate bee abundance?

Bee abundance on plants was summarized as estimated marginal means (EM means), for each year of the field study. EM means were assigned a percent value that represented the relative abundance of bees on each flowering plant.

Table 2. Bee abundance estimated marginal means

Percent values assigned	EM mean/5 minutes
0%	Below 0.49 bees
25%	0.50 to 0.99 bees
50%	1 to 1.49 bees
75%	1.50 to 1.99 bees
100%	Above 2.0 bees

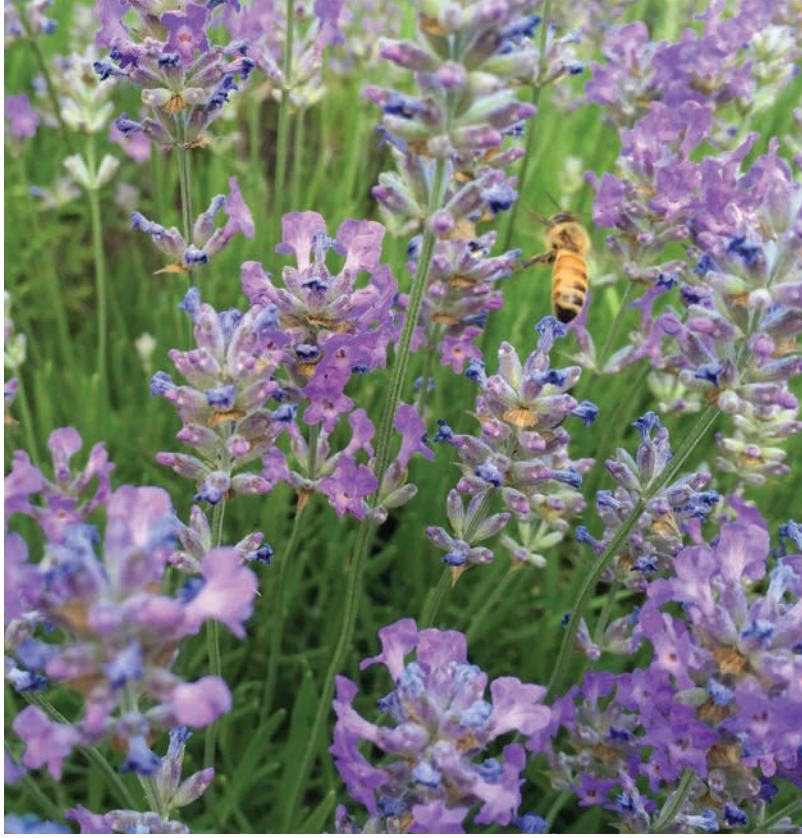
The percent values across all years were averaged to come up with relative estimates of bee abundance, which are represented by the outer circles on Figure 1.

How did we calculate bee diversity on plants?

What we refer to as bee diversity is technically bee species richness. Bee species richness is a count of the total number of unique species found, without consideration of the abundance of individuals for each unique species.

Bee diversity is a weighted measure of bee species richness, which considers both the total number of species and their relative abundance. We use the term "bee diversity" because it is more familiar to the general public.

We converted estimated bee diversity for each plant to a percent value that represented the relative richness of bee species on each flowering plant.



Most of the bees on lavender are non-native honey bees or common bumble bees. CREDIT: Jennifer Alexander, © Oregon State University

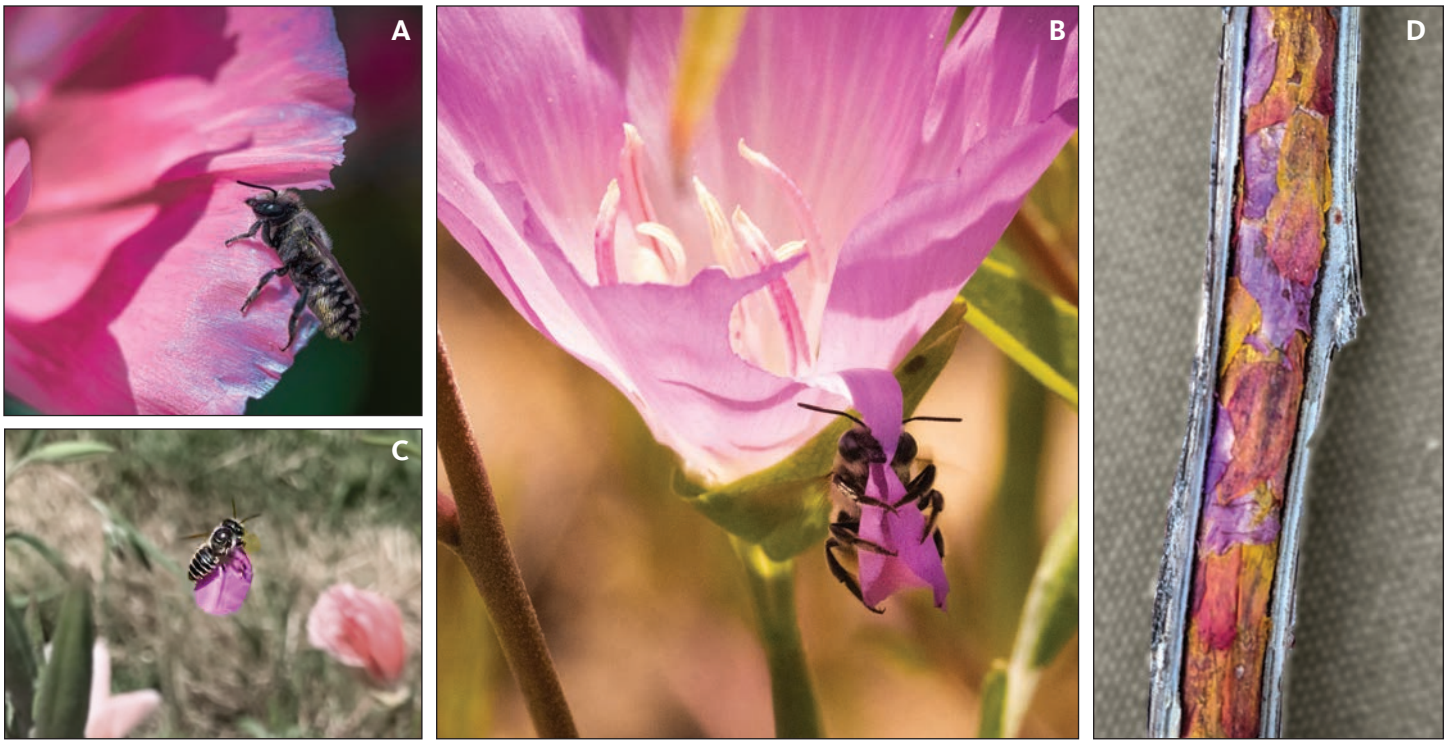
Table 3. Bee diversity

Percent values assigned	Number of bee species
0%	9 or fewer
25%	10–14
50%	15–19
75%	20–24
100%	25+

The percent values for relative bee diversity are represented by the inner circle on Figure 1 (page 5). In Figure 2 (page 6), the estimated number of bee species associated with each plant pick is represented by a bar chart, where the length of the bar corresponds to the number of estimated bee species supported by each plant.

Why do we include information on bees found on lavender, a non-native species?

Lavender is an extremely common garden plant, and gardeners generally recognize lavender as particularly attractive to bees. We wanted to provide a context that many gardeners could intuitively understand, when considering the bee-friendly nature of our native plant picks. We used the same methods described above to assess relative abundance and diversity of bees on lavender. We found that although many bees could be found foraging on lavender, the diversity of these bees was quite low. The high abundance of bees on lavender was



A and B: Leafcutter bees cut discs from petals of a *Clarkia amoena* cultivar. C: A leafcutter bee carries a petal disc to its nest. D: A leafcutter bee nest in a sunflower stalk, where petals are rolled into a cigar shape, forming several cells along the length of the talk. Each cell contains a provision of pollen and a single egg or developing bee larva. CREDITS: Svea Bruslind (A), Devon Johnson (B), Mallory Mead (C), Heidi Nordijk (D), © Oregon State University

attributed mainly to non-native honey bees (*Apis mellifera*) and a common species of native bumble bee (*Bombus vosnesenskii*).

How did we determine associations between native plants and bees?

Across the three years of this study, we collected 57 bee species from all study plants. To see which bee species were strongly attracted to particular native plant species, we performed what is known as an indicator species analysis. The outcomes of this analysis are listed as "significant bee species associations" in "Plant profiles." Note that many more bee species visit a plant beyond those that are listed in "significant bee species associations." For example, five bee species are strongly associated with varileaf phacelia, but we estimate that this native plant supports 16 `unique bee species. Six bee species are strongly associated with Douglas' aster, but we estimate that this native plant supports a diverse community of 74 bee species.

A word about native plants versus cultivars and hybrids of native plants

Gardeners who are interested in native plant gardening may want to ensure that they are purchasing a native plant, rather than a cultivar or hybrid. Cultivars are identified by a cultivar name in single quotes that follows the genus and species name of a plant (such as *Eschscholzia californica* 'Moonshine' or *Eschscholzia californica* 'Thai Silk Apricot'). Hybrids are identified by an x between the genus and species name (*Lavandula x intermedia*). A plant may be both a hybrid and a cultivar, and thus may have a name that includes both the hybrid x and the cultivar single quotes (*Lavandula x intermedia* 'Grosso').

For each of the 10 Plant Picks for Bees, we include detailed plant profiles. These profiles are focused on the characteristics of these 10 native plants, and not their cultivars, when grown in Western Oregon. However, for gardeners who are interested, we have listed cultivars that they might find in the retail marketplace.

Do not dig plants from the wild, and beware of plant trades and swaps

If you encounter any of the 10 Plant Picks for Bees in the wild, admire them in their natural setting. Preserve Oregon's natural heritage, and do not dig and collect plants from the wild. The Native Plant Society of Oregon has developed a list of ethical collection guidelines that provides allowances for small-scale collection of common species on public lands and roadsides. Note that sustainable and responsible collection of native plants from the wild requires a commitment to ethical standards and advanced knowledge of native plant taxonomy and biology.

If collecting native plants, focus on small-scale seed collection. Collecting plants by digging increases the risk that you may be moving soil-bound invasive species, such as the Japanese beetle (*Papilio japonica*) or jumping worm (*Amynthas agrestis*). Similarly, digging, dividing and trading native plants with other gardeners increases the risk of spreading invasive species.

Figure 1. Bee abundance and diversity on Native Plant Picks for Bees

Native Plant Picks for Bees

To support native bees in your garden, select plants that support high bee abundance and/or diversity (bee species richness).

Outer white circle represents relative bee abundance.

Inner white circle represents relative bee diversity.

Varileaf phacelia
Phacelia heterophylla
Abundance 83% | Diversity 50%

Globe gilia
Gilia capitata
Abundance 92% | Diversity 100%

Douglas' aster
Symphotrichum subspicatum
Abundance 100% | Diversity 100%

California poppy
Eschscholzia californica
Abundance 92% | Diversity 100%

Farewell-to-spring
Clarkia amoena
Abundance 58% | Diversity 100%

Rose checkermallow
Sidalcea asprella ssp. *virgata*
Abundance 42% | Diversity 100%

Common madia
Madia elegans
Abundance 75% | Diversity 75%

Canada goldenrod
Solidago canadensis
Abundance 58% | Diversity 75%

Oregon sunshine
Eriophyllum lanatum
Abundance 50% | Diversity 75%

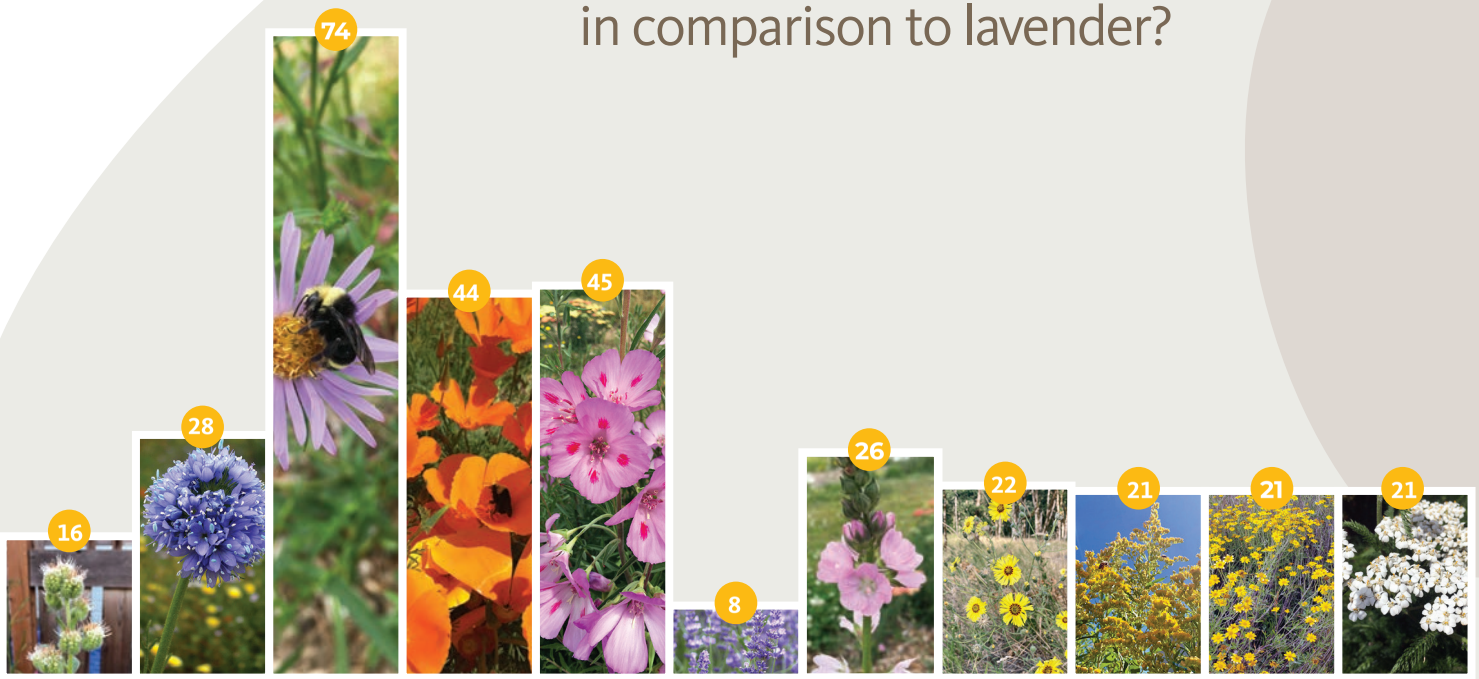
Yarrow
Achillea millefolium
Abundance 42% | Diversity 75%

OSU Garden Ecology Lab
Photos, left to right top line: Aaron Anderson; Creative Commons license, The Marmot; Jen Hayes; Svea Bruslind; Jen Hayes
left to right bottom line: Gail Langellotto; Izzy Messer; LeAnn Locher; Gail Langellotto; Jen Hayes

Figure 2. Bee species richness on Native Plant Picks for Bees vs. lavender

Native Plant Picks for Bees

How does species richness stack up in comparison to lavender?



Varileaf phacelia *Phacelia heterophylla*

Globe gilia *Gilia capitata*

Douglas' aster *Symphotrichum subspicatum*

California poppy *Escholzia californica*

Farewell-to-spring *Clarkia amoena*

Lavender *Lavandula x intermedia* 'Grosso'

Rose checkermallow *Sidalcea asprella* ssp. *virgata*

Common madia *Madia elegans*

Canada goldenrod *Solidago canadensis*

Oregon sunshine *Eriophyllum lanatum*

Yarrow *Achillea millefolium*

Lavender is a popular plant with gardeners, in part because of its attractiveness to bees. The *abundance* of bees on lavender is comparable to or exceeds bee abundance on our Top 10 Native Plant Picks for Bees. However, most of the bees that you see on lavender are non-native honey bees or common yellow-faced bumble bees. **To truly support Oregon's wild and native bee communities, look beyond lavender.**

\# Number of estimated bee species supported, based on three years of bee collections

OSU Garden Ecology Lab
Photos, left to right: Aaron Anderson; Creative Commons license, The Marmot; Jen Hayes; Svea Bruslind; Jen Hayes; Adobe Stock; Gail Langellotto; Izzy Messer; LeAnn Locher; Gail Langellotto; Jen Hayes

10 NATIVE PLANT PICKS FOR BEES

CREDIT: Aaron Anderson,
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SCIENTIFIC NAME: *Phacelia heterophylla* (Hydrophyllaceae)

COMMON NAMES: Varileaf phacelia, variable-leafed phacelia, virgate phacelia, wand phacelia, scorpion-weed

DESCRIPTION: Varileaf phacelia is an herbaceous biennial or weak perennial. In western Oregon, it most often grows as an annual. Mature plants are 1–3 feet in height. It has cream-colored flowers that grow in scorpioid cymes and bloom in late spring or early summer. Bloom time is relatively brief to moderate and can extend into mid- to late-summer. It is frequently visited by a variety of bumble bee species, and may be an important larval host for several species of moth.

NATIVE RANGE AND HABITAT: Native across the Western United States, as well as Massachusetts. Within Oregon, it can be found across the state, including the Willamette Valley, Columbia Gorge, southern Oregon, Central Oregon and eastern Oregon. It grows in dry, open, rocky habitats, including open slopes, flats and roadsides.

Varileaf phacelia

Significant bee species associations

- *Bombus caliginosus* (obscure bumble bee)
- *Eucera edwardsii* (Edwards' long-horned bee)
- *Bombus mixtus* (fuzzy horned bumble bee)
- *Panurginus atriceps* (confluent miner bee)
- *Bombus vosnesenskii* (yellow-faced bumble bee)

Cultural requirements

Soil: Grows in silty or sandy soils, with optimum pH between 5.2 and 7.

Moisture tolerance: Can be found in moist forest soils and dry rocky soils. Although it prefers moist soil, it tolerates dry conditions once established.

Sun/shade/preference: Prefers full sun but will grow in partial shade.

Transplanting: If seeded into flats, harden off starts before transplanting to the outdoors in early May.

Propagation: Seeds need 30 days cold-moist stratification, so should be sown outside in fall or early spring. Surface sow, as seeds need light to germinate.

Maintenance: If grown as an annual plant, gardeners should remove plants at the end of the growing season to avoid spread, unless self-seeding is desired. In some regions, varileaf phacelia can grow as a perennial.

Insect, disease or other problems: None of concern.

Landscape value

Use in the landscape: This native plant is often overlooked by gardeners. However, this plant's drought tolerance, ability to grow in nutrient-poor and rocky soils, and attractiveness to bees make it a great species for dryland pollinator gardens.

Weediness potential: Varileaf phacelia readily reseeds. Pull plants before they go to seed to prevent unwanted spread.

Foliage: All parts of the plant are hairy or glandular hairy. Leaves appear furry and deeply-veined. Green to gray-green lanceolate leaves have smooth margins, except for some lower leaves which are lobed. In fact, "heterophylla" loosely translates to "different leaves."

Flower: Small, creamy white or sometimes lavender. The flower heads start as tightly packed, green balls. As the blossoms begin to open, the inflorescence curves or coils, into what some say looks like a scorpion's tail. This feature is the source of another common name: scorpion weed. Like all phacelias, blossoms have stamens that protrude well past the tip of the petals.

Bloom timing: Late spring to late summer.

Fruit: Capsules, 0.8–1.2 inches long and boat-shaped. Like other parts of the plant, covered in short, fine hairs.

Form: The plant grows from a central erect stem, particularly when growing as a biennial. When growing as an annual, the plant will be surrounded by several lesser stems at the base.

Texture: Medium.

Mature plant size: Typically 1–3 feet in height, with taller plants more likely in rich soils.

Rate of growth: Grows quickly. Starting from seed in the fall or early spring, it grows to full size by early summer.

Suggested plant partners: Grows well with other drought-tolerant wildflower species and grasses. Specific suggestions include the bulbs narrow-leaved onion (*Allium amplectens*) and crown brodiaea (*Brodiaea coronaria*), as well as the perennial wildflower fork-toothed ookow (*Dichelostemma congestum*).

Availability: Seeds are available at some specialty native plant nurseries, although they are more often available as part of wildflower seed mixes. Starts might be available at native plant sales.

Cultivars: No known cultivars, but two subspecies that occur in the wild: *P. heterophylla* ssp. *virgata* and *P. heterophylla* ssp. *heterophylla*.

CREDIT: Signe Danler, © Oregon State University

SCIENTIFIC NAME: *Gilia capitata* (Polemoniaceae)

COMMON NAMES: Globe gilia, blue field gilia, bluehead gilia

DESCRIPTION: Globe gilia is a slight, fast-growing annual. These wildflowers can grow up to 28 inches tall in dense, pure stands. They have showy terminal inflorescences consisting of blue to purple flowers, clustered together in a globe shape. Flowers provide nectar and pollen to insect visitors, and can be an important food source for bumble bees and predaceous bugs. This plant is drought tolerant and grows best in sunny, well-drained soils. These attributes make it an excellent candidate for wildflower meadows, garden edges and other low-maintenance areas of the garden. Aesthetically pleasing, gardeners rated it as one of the native plant species they would most likely plant in their garden.

NATIVE RANGE AND HABITAT: Native to the western U.S., mainly from Washington south into California, and east into Idaho, Utah, New Mexico and Arizona. Also native to Illinois, Ohio, New York and Vermont. Within Oregon, globe gilia's native range includes broad regions of western Oregon (including the Willamette Valley, Columbia Gorge, southern Oregon, and the Oregon Coast), with small, isolated populations in Central and eastern Oregon. It grows in well-drained sandy to rocky sites and dry slopes at elevations ranging from 0 to 6,000 feet.

Significant bee species associations

- *Bombus vosnesenskii* (yellow-faced bumble bee)

Cultural requirements

Soil: Grows well in medium to coarse soil, especially in sandy and rocky soil. Well-drained soil with a neutral pH (6.0–7.0) is preferable.

Moisture tolerance: Moist to dry, well-drained soil. Mature plants tolerate drought conditions, particularly if they are occasionally provided with low amounts of supplemental water, which can also extend the bloom period.

Sun/shade preference: Grows well in full sun, but will also tolerate light shade.

Transplanting: If seeded into flats, it can be transplanted outdoors. However, since it is a cold-hardy annual species, seeding directly into the garden is preferable.

Propagation: Easily grown from seed. No stratification or scarification is required (though two weeks of cold stratification increases germination). Seeds should be sown into flats or directly into the garden, and can be planted in fall, winter or spring. Once established, it will continuously reseed itself.

Maintenance: Minimal maintenance is required. Soil should be moist when seeds are planted, but adult plants are drought tolerant. Deadhead flowers if reseeding is not desired, and remove dead stems from the garden in fall.

Insect, disease or other problems: Thrips can accumulate on plants, but cause little if any visible damage.

Landscape value

Use in the landscape: A colorful, hardy annual that is well suited to wildflower meadows, rock gardens and other areas that receive little irrigation. A good option for pollinator gardens.

Weediness potential: This wildflower is not likely to become weedy. Control unwanted spread by pulling volunteer plants in the spring and cutting flowers before they go to seed.

Foliage: Green, with finely dissected leaves that are composed of toothed leaflets. Leaves are attached directly to the main stem.

Flowers: Flowers are borne on the end of each stem, terminating in a sessile inflorescence consisting of a globe-shaped cluster of up to 100 small flowers. These are colored purple, pink or blue, with stamens noticeably emerging from the corolla.

Bloom timing: June–July.

Fruit: Produces capsules containing either three, two or no seeds.

Form: Erect and slender.

Texture: Moderately fine.

Mature plant size: Will grow up to 2.5 feet tall and 9 inches wide.

Rate of growth: This annual plant grows quickly from seed and flowers the year it is planted.

Suggested plant partners: Partners well with native, meadow wildflower species that can tolerate dry soils, including: sea thrift *(Armeria maritima)*, prostrate ceanothus (*Ceanothus prostratus)*, farewell-to-spring (*Clarkia amoena)*, western wallflower (*Erysimum capitatum*), California fuchsia (*Epilobium canum* ssp. *latifolium)*, Oregon sunshine (*Eriophyllum lanatum)*, California poppy (*Eschscholzia californica)*, common blanketflower (*Gaillardia aristata)*, Oregon cranesbill (*Geranium oreganum*), Oregon stonecrop (*Sedum oreganum*) and broadleaf stonecrop (*Sedum spathulifolium*).

Availability: Gardeners can buy seed from a variety of native plant seed suppliers.

Cultivars: No known cultivars, but subspecies *G. capitata* ssp. *capitata* and *G. capitata* ssp. *pacifica* can be found in the retail market.

CREDIT: Signe Danler, © Oregon State University

Douglas' aster

SCIENTIFIC NAME: *Symphyotrichum subspicatum* (Asteraceae)

COMMON NAMES: Douglas' aster, Doug aster

DESCRIPTION: Douglas' aster is a late-season and long-blooming perennial. Its ray flowers may be dark-, mid- or light-purple in color, or even slightly blue. Though its native range is primarily wetlands, this perennial is extremely drought tolerant and long flowering. Its blooms provide an important late-season source of pollen and nectar to insect visitors. Its abundant seeds provide late-season food for birds.

NATIVE RANGE AND HABITAT: Native from British Columbia to California and east to Alberta, Idaho and Montana. It is also native to parts of Alaska. Within Oregon, its native range includes the Oregon Coast, Columbia Gorge and the northern Willamette Valley. Isolated, small populations can be found in southern, Central and eastern Oregon. It's typically found in damp woods, wetlands and along stream banks and seashores. It is occasionally found in nonwetland disturbed areas as well.

Significant bee species associations

- *Agapostemon virescens* (bicolored sweat bee)
- *Agapostemon texanus/angelicus* (striped sweat bee)
- *Halictus ligatus* (ligated furrow bee)
- *Melissodes lupinus* (lupine long-horned bee)
- *Melissodes microstictus* (small long-horned bee)
- *Melissodes robustior* (robust long-horned bee)

Cultural requirements

Soil: Can tolerate heavy clay soils, sandy soils, saline soils and soils prone to flooding.

Moisture tolerance: Can thrive in wetlands and unirrigated garden beds. Water no more than once a month once established unless exposed to extreme heat.

Sun/shade preference: Full sun to partial shade.

Transplanting: Transplants readily as a plug, from divisions or from rhizomes.

Propagation: Sow seed directly into the soil in the fall or in trays for spring transplants. Plants can also be started from rhizomes directly in the soil or in pots.

Maintenance: Requires relatively minimal maintenance. Irrigate plants to establish, and then water less than once a month. In extreme heat, plants may benefit from additional irrigation. Prevent spread by cutting off flower heads before seeds develop and by digging up rhizomes around the edges of the plant.

Insect, disease or other problems: Douglas' aster is a host plant for butterfly and moth larvae, so you may notice caterpillars or their damage leaves. However, caterpillar damage rarely affects the overall beauty of this plant. If plants grow too thickly, they may be susceptible to powdery mildew. This can be avoided by thinning and being careful to water the base of the stems instead of leaves.

Landscape value

Use in the landscape: Douglas' aster is a powerhouse of a perennial; it can thrive across a range of environmental conditions (moisture, soil, sun) while producing abundant purple composite flowers. It provides a source of color and forage during the late summer and fall. It is an important nectar and pollen source for pollinators, when little else in the landscape is flowering in such abundance. The dried flower heads can be left to provide food for birds. Douglas' aster foliage is attractive, with purple-tinged new growth. These characteristics make it an ideal plant for a low-maintenance garden, or in plantings where more sensitive species may not flourish.

Weediness potential: This is a particularly vigorous perennial, spreading readily through underground rhizomes and propagating easily from seed, which may cause many to consider it weedy.

Foliage: Green stems with many hairy, smooth to toothed leaves. Lower leaves are lance-shaped. Leaves are 2–5 inches long and 0.5–1 inch wide.

Flower: Composite inflorescences produced on an open, leafy panicle. Ray flowers range from dark purple to light purple to slightly blue, with disc flowers yellow-orange, darkening over time. Flowers range from 0.5 inch to just under 1 inch wide.

Bloom timing: Peaks in July to September; may produce sparse blooms as late as November.

Fruit: Achene, sparsely hairy.

Form: Erect, spreading. May form a dense shrub or consist of a few leggy stems, depending on the environment.

Texture: Medium.

Mature plant size: 1–4 feet in height, with indefinite spread if rhizomes are not maintained.

Rate of growth: Fast-growing perennial. Typically flowers in the first year of growth.

Suggested plant partners: Partners well with other vigorous, native wildflower species, including yarrow *(Achillea millefolium)*, milkweeds (*Asclepias* spp.), camas (*Camassia* spp.) and Oregon sunshine (*Eriophyllum lanatum*).

California poppy

CREDIT: Jen Hayes, © Oregon State University

SCIENTIFIC NAME: *Eschscholzia californica* (Papaveraceae)

COMMON NAMES: California poppy, golden poppy

DESCRIPTION: California poppy is an easy-to-grow, herbaceous forb that can be a perennial or annual depending on which part of its range it is growing in. In its northern range, including Oregon, it grows as an annual. It is an iconic West Coast flower and the state flower of California. Its bright orange flowers highlight roadsides and meadowscapes for much of the growing season. The flowers are responsive to sunlight — they close at night and on cloudy days. The flowers do not have nectar, but still attract a variety of insect visitors that collect the abundance of pollen that California poppy produces. California poppy's first flush of flowers tend to be larger than flowers produced later in the season.

NATIVE RANGE AND HABITAT: Native range extends from southern Washington to Mexico and includes all western states with the exception of Montana. Within Oregon, its native range includes the Willamette Valley, southern Oregon and the Columbia Gorge, with small, isolated populations in some parts of the Oregon Coast and rare areas in eastern Oregon. California poppy is found in open, grassy or disturbed areas from sea level to 6,500 feet in altitude.

Significant bee species associations

- *Bombus vosnesenskii* (yellow-faced bumble bee)
- *Halictus farinosus* (wide-striped furrow bee)
- *Halictus tripartitus* (tripartite furrow bee)
- *Lasioglossum* sp. (sweat bee)
- *Lasioglossum olympiae* (Olympia sweat bee)

Cultural requirements

Soil: Preference for sandy, well-drained, poor (infertile) soils, pH 5–8. Can adapt to many soil textures and drainage rates.

Moisture tolerance: Low water requirement. Irrigate no more than twice a month once established.

Sun/shade preference: Thrives in full sun but will tolerate part shade.

Transplanting: Does not transplant well.

Propagation: For the earliest blooms, sow seeds directly into the soil in the fall or very early spring. Seeds can also be sown in later spring after the last chance of frost has passed, for later blooms. Once established, the plants will self-seed and spread vigorously.

Maintenance: Requires little, if any, maintenance after establishment. Fall and winter precipitation typically provides sufficient water for the seeds to germinate, although additional irrigation during early stages of germination may support growth. If desired, plants can be removed after flowering to prevent reseeding and spread.

Insect, disease or other problems: California poppy is a host plant for butterfly and moth larvae. Rabbits and other small mammals may consume it. However, the plant grows back quickly, and can usually recover from damage.

Landscape value

Use in the landscape: California poppy is often included in wildflower, pollinator, rock garden and meadowscape mixes. Its drought tolerance allows it to be used in areas that are not regularly irrigated, including pollinator strips, borders and meadows. Its waxy blue-green foliage can provide a nice contrast to other colors of foliage, and its brilliant orange-yellow blooms stand out in any landscape.

Weediness potential: California poppy is a prolific reseeder; some consider it weedy. Manage spread by removing plants before they go to seed.

Foliage: Leaves are dissected, almost lacy, with blue-green hues.

Flower: Individual flowers are composed of four silky-smooth petals that sit upon a long stem. The flowers are typically bright orange in color, but natural yellow, cream and dark orange-red variants do occur, especially in southern California.

Bloom timing: Peak bloom occurs around May and June, although you will see flowers along roadsides and in meadows any time between the end of March and early November. In gardens, supplemental irrigation can extend the bloom period.

Fruit: Unlike the ornate pods of some poppies, California poppy produces a slender capsular fruit, 1.2–3.5 inches in length. When ripe, the capsule splits, and small dark seeds burst from the interior.

Form: Upright, mounding, rounded. Spreading and erect when in bloom.

Texture: Fine

Mature plant size: 0.16–2 feet tall, 1–2 feet wide.

Rate of growth: Fast-growing annual, flowering in the first year of growth.

Suggested plant partners: Partners well with native, meadow wildflower species that can tolerate dry soils, including: sea thrift (*Armeria maritima*), prostrate ceanothus (*Ceanothus prostratus*), farewell-to- spring (*Clarkia amoena*), western wallflower (*Erysimum capitatum*), California fuchsia (*Epilobium canum* ssp. *latifolium*), Oregon sunshine (*Eriophyllum lanatum*), common blanketflower (*Gaillardia aristata*), Oregon cranesbill (*Geranium oreganum*), globe gilia (*Gilia capitata*), riverbank lupine (*Lupinus rivularis*), Oregon stonecrop (*Sedum oreganum*) and broadleaf stonecrop (*Sedum spathulifolium*).

Availability: Seeds can be purchased from native seed suppliers, native plant nurseries, and at retail nurseries and garden centers. Some big box stores may carry seed as well.

Subspecies and cultivars: Two subspecies exist: *Eschscholzia californica* ssp. *californica* (rare) and *E. californica* ssp. *mexicana*, which is commonly known as Mexican gold poppy. The subspecies appear similar, but you can tell them apart by the shape of the leaves as seedlings. Mexican gold poppy is considered the desert-inhabiting subspecies, whose native range includes western Texas. Numerous cultivars exist in various shades of yellow, red, orange, pink and creams. The Thai Silk cultivars are particularly loved by gardeners. These include 'Thai Silk Apricot' (a double-flowered cultivar with pink-orange-yellow hues), 'Thai Silk Rose' (a striped pink cultivar), and 'Thai Silk Fire Brush' (a brilliant red cultivar). If allowed to interbreed and self-sow, cultivars tend to revert back to the common orange flower within a few years.

CREDIT: Jen Hayes, © Oregon State University

Farewell-to-spring

SCIENTIFIC NAME: *Clarkia amoena* (Onagraceae)

COMMON NAMES: Farewell-to-spring, godetia

DESCRIPTION: Farewell-to-spring is an easy-to-grow, early-blooming annual. Growing from erect stems, it has thin, green leaves and bright pink flowers and is a colorful addition to gardens and wildflower meadows. Found primarily in coastal regions of the West, it grows quickly and is visited by a variety of pollinator species. It serves as more than just a pollen and nectar source. Leafcutter bees cut pieces of the flowers to use as nesting substrate.

NATIVE RANGE AND HABITAT: Its range spans the Bay Area of California, north through Oregon and Washington and into British Columbia. In Oregon, it grows west of the Cascades to the coast and is found in a variety of habitats including coastal prairie, grasslands and forested areas.

Significant bee species association

- *Megachile brevis* (short leafcutter bee)

Cultural requirements

Soil: Prefers well-drained soil. Grows in sandy to clay soils, with pH of 6.0–8.0. Will also tolerate alkaline soil and salt. Fertilizing the soil will cause plants to grow leggy and not produce abundant flowers.

Moisture tolerance: Drought tolerant; little to no irrigation required.

Sun/shade preference: Partial to full sun.

Transplanting: If grown indoors in flats, it can be planted in the field after the last frost date. Space plants 6–12 inches apart.

Propagation: Easily grown from seed. It can be established in the field via direct sowing or indoors in flats. To direct seed, simply spread seeds on soil surface in the fall or early spring, with no other stratification needed. If allowed, this flower will reseed itself readily.

Maintenance: Requires little, if any, maintenance after establishment. Little to no irrigation is required once plants are established. However, supplemental irrigation can extend bloom and can help plants establish during early stages of germination. Readily reseeds, which can be a desirable trait that helps fill garden space. To limit reseeding and spread, remove seed heads before they dry. Remove any unwanted volunteer plants in the spring.

Insect, disease or other problems: Can be impacted by pathogens like powdery mildew and verticillium wilt. Thrips, herbivorous bugs, aphids and leafhoppers will also visit. However, none of these are major issues. Leafcutter bees *(Megachile* spp.*)* will cut discs from *Clarkia amoena* flower petals for use in nests. However, these bees should not be considered pests. Instead, take comfort in knowing that these mother bees are using the discs to literally wrap their babies in flower petals.

Landscape value

Use in the landscape: Colorful, hardy annual wildflower. Grows well without supplemental irrigation and would work well in wildflower meadows and pollinator gardens. Can be used in beds, yard borders, cutting gardens or in pots.

Weediness potential: Readily self-seeds, which can be beneficial in the right locations. To reduce spread in subsequent years, gardeners can remove most seed heads before they dry, while allowing some to remain in place. Manually pull any unwanted volunteers in the spring.

Foliage: Alternate leaves. Simple, linear and thin, approximately 0.8–2.8 inches long and 0.08–0.24 inches across. The edge of the leaf is entire.

Flower: Flowers are single or in inflorescences. Four pink to pale purple petals. Some flowers have a darker spot in the center or base of each petal.

Bloom timing: Blooms in late spring to summer (hence the common name, farewell-to-spring). Does not like overly hot or humid weather.

Fruit: The fruit is a narrow 0.6–1.75-inch-long capsule. When dry, the capsule splits open to release many seeds.

Form: Individual plants grow upright, with slender, erect stems. Grown together, multiple plants have an upright, clumping appearance.

Texture: Moderately fine.

Mature plant size: Grows 1–3 feet tall.

Rate of growth: A fast-growing annual plant that flowers in the first year it is seeded.

Suggested plant partners: Partners well with other native, meadow, wildflower species, including: yarrow *(Achillea millefolium)*, nodding onion (*Allium cernuum)*, pearly everlasting (*Anaphalis margaritacea)*, crown brodiaea (*Brodiaea coronaria*), fork-toothed ookow (*Dichelostemma congestum)*, Oregon sunshine (*Eriophyllum lanatum)*, California poppy (*Eschscholzia californica)*, globe gilia (*Gilia capitata)*, riverbank lupine (*Lupinus rivularis*), baby blue eyes (*Nemophila menziesii*), Richardson's penstemon (*Penstemon richardsonii*), Oregon stonecrop (*Sedum oreganum*), broadleaf stonecrop (*S. spathulifolium*), meadow checkermallow (*Sidalcea campestris*) and rose checkermallow (*S. malviflora*).

Availability: You can buy seed from a variety of native plant nurseries in the region.

Subspecies and cultivars: Many cultivars exist, including 'Aurora' (dark pink blossoms with a cream center); 'Dwarf White' (white blossoms); 'Scarlet' (red blossoms with a light pink center); 'Double Azalea' (pink, purple, red, white flowers); 'Lilac' (pink petals with dark red center spots); 'Pink to Red' (red petals with light pink edges); 'White' (white flowers); 'Pink' (light pink flowers with no other markings); and 'Sugarplum' (semi-double flowers, light pink with rose-colored center markings, dwarf, somewhat bushy). Additionally, five subspecies are recognized as occurring in the wild: *Clarkia amoena* ssp. *amoena*, *C. amoena* ssp. *caurina*, *C. amoena* ssp. *huntiana*, *C. amoena* ssp. *lindleyi* and *C. amoena* ssp. *whitneyi*.

CREDIT: Jen Hayes, © Oregon State University

Rose checkermallow

SCIENTIFIC NAME: *Sidalcea asprella* ssp. *virgata* (Malvaceae). Sidalcea is a genus that has recently received taxonomic review. The species we used in our study was *Sidalcea asprella* ssp. *virgata*. However, due to recent taxonomic revisions, you may find this species in nurseries under the following synonyms: *Sidalcea malviflora* ssp. *virgata*, *Sidalcea malviflora* var. *virgata*, *Sidalcea virgata*.

COMMON NAMES: Rose checkermallow, virgate checkerbloom, dwarf checkerbloom

DESCRIPTION: Rose checkermallow is an herbaceous perennial that is listed as endangered in Washington state but is not a species of concern in Oregon. Plants grow 8–40 inches in height with stalks of few to many showy, light pink to magenta flowers. Propagation is via starts or seed. Works well in pollinator gardens and meadowscapes. The flowers bloom in late spring through late summer, with longer bloom duration at higher elevations. Rose checkermallow is visited by a variety of bees, butterflies and other beneficial insects. Notably, it is one of the main sources of nectar for the endangered Fender's blue butterfly (*Icaricia icarioides fenderi*) and an important host plant for skipper butterflies. The plant is also a host for the specialist native bee *Diadasia nigrifrons*.

NATIVE RANGE AND HABITAT: Native to Oregon and Washington. In Oregon, it can be found throughout the western valleys, from southern Oregon to the Portland metro region. Typically found in prairies, meadows, grass hillsides, along roadsides and low-elevation mountain areas.

Significant bee species associations

- *Nomada* sp. *(Cuckoo bee)*
- *Eucera edwardsii (Edwards' long-horned bee)*

Cultural requirements

Soil: Native to clay soils and sites that are seasonally wet.

Moisture tolerance: Prefers moist soils with regular summer water. It is drought tolerant, surviving with only natural rainfall, but the blooms will be shorter-lived compared to irrigated plants.

Sun/shade preference: Prefers full sun but will grow in partial shade.

Transplanting: If seeded into flats, harden off starts before transplanting to the outdoors in early May. Plugs are typically ready for planting after four to six months. You can plant rose checkermallow divisions in fall or spring.

Propagation: Plants are best established from starts, which can be transplanted into the soil in the fall or spring. Direct seed in fall, since the seeds benefit from cold stratification. Germination rate is relatively low (about 60%), with germination occurring within one to two weeks. Plants can also be propagated by division.

Maintenance: Regular summer water will enhance the floral displays of rose checkermallow and prolong their duration.

Insect, disease or other problems: None of concern. In fact, rose checkermallow is resistant to hollyhock rust (*Puccinia malvacearum*), a disease that commonly affects non-native cultivars.

Landscape value

Use in the landscape: An elegant addition to pollinator gardens with pink to magenta blossoms that attract butterflies and bees. It is used in meadow restoration projects and as a component for replacing lawns with meadowscapes. It makes a great selection for heavier soils that tend to stay moist, but is also drought tolerant and does well in average soils.

Weediness potential: Plants readily spread through trailing rhizomes. Keep the spread in check by removing or dividing plants every other year.

Foliage: Leaves are green, palmately arranged and may be deeply or shallowly lobed, depending on their position; basal blades are shallowly lobed and glossy with toothed or rounded lobes, with leaves becoming more deeply lobed higher on the stem. The leaves and leaf stems are covered with dense hairs.

Flower: Flowers are pink to magenta, though white variants have been found in Eugene, Oregon. The petals often have lighter colored striped veins on their surface. Stalks may have five to 30 flowers covered with fine hairs. Plants may have perfect flowers (containing the carpel and stamen) or may only have female flowers (without stamen).

Bloom timing: Late spring to midsummer.

Fruit: Carpels, 1–1.5 inches long and deeply pitted on the sides. Like other parts of the plant, the fruit is covered in small hairs.

Form: The plant grows from a basal rosette of mallow-like leaves, with erect floral stems that rise above the foliage.

Texture: Medium.

Mature plant size: Typically grows to 1–3 feet in height. As with other rhizomatous spreaders, width can grow beyond advertised size if growing conditions are conducive and plants are not weeded or contained.

Rate of growth: Plants grow quickly and can flower in their first year. Rhizomes spread slowly.

Suggested plant partners: Partners well with other native meadow wildflower species, including harvest brodiaea (*Brodiaea elegans*), onions (*Allium* spp.), prostrate ceanothus (*Ceanothus prostratus*), irises (*Iris* spp.), varileaf phacelia (*Phacelia heterophylla*) and Canada goldenrod (*Solidago canadensis*).

Availability: Seeds and plugs are available at some specialty native plant nurseries, and they are also often available as part of wildflower or prairie seed mixes. Starts might be available at native plant sales.

Subspecies and cultivars: There are no known cultivars of *S. asprella* ssp. *virgata*.

CREDIT: Izzy Messer, © Oregon State University

Common madia

SCIENTIFIC NAME: *Madia elegans*

COMMON NAMES: Common madia, showy tarweed

DESCRIPTION: Common madia is a long-blooming, herbaceous annual. It produces grand yellow blooms, often with a deep red base on the ray flowers encircling the disk flowers. It is an important late-season nectar and pollen source for pollinators. It can bloom as early as April if seedlings develop in fall, though it typically blooms from July through September. Common madia is deer resistant. Its seeds are valued by small mammals and birds, especially finches, once the lovely yellow blooms turn to seed in the fall. The seeds were also a diet staple for many western Indigenous groups.

NATIVE RANGE AND HABITAT: Native to the western United States, from southwestern Washington to Baja California. Can also be found in Nevada and Texas. In Oregon, it is native to western Oregon, including southern Oregon and the Willamette Valley. Small, isolated populations can be found in the Columbia Gorge. Common madia can be found growing in open, dry and grassy areas, often along roadsides, from sea level to 3,300 feet in elevation.

Significant bee species associations

- *Agapostemon virescens* (bicolored sweat bee)
- *Lasioglossum titusi* (Titus' sweat bee)

Cultural requirements

Soil: Can tolerate a soil pH of 5.5–7.8 and all levels of soil drainage, though it prefers well-drained soils. The tap root can navigate even the heaviest of clay soils.

Moisture tolerance: Low water requirement. Irrigate no more than once a month once established.

Sun/shade/preference: Prefers full sun but can grow in partial shade.

Transplanting: Seedlings and transplants can be planted after the last risk of frost in the spring.

Propagation: Can be sown directly outdoors in the fall or sown in containers or cold frames in the winter. Stratify seeds if sowing indoors. Self-sows freely after establishment, which can be beneficial in the right locations. To reduce spread in the subsequent year, gardeners can pull most flowers before the seed capsules dry, and allow some to remain for the following year. Manually pull unwanted volunteer plants in the spring.

Maintenance: Requires minimal maintenance and is considered easy to grow. Irrigate to establish transplanted plugs or seedlings. Deadhead flowers to extend bloom. Do not irrigate more than once a month following establishment. Plants will reseed in sunny, open areas with good drainage.

Insect, disease or other problems: As a butterfly and moth host plant, it may sustain some damage from caterpillars.

Landscape value

Use in the landscape: An ideal plant for pollinator gardens due to its long bloom duration and attractiveness to bees, caterpillars and butterflies. It is also a larval host to three species of moths. Erect in height, common madia can be paired with lower-growing annuals or perennials. It has a pleasant scent and can be attractive in cut flower bouquets. However, the foliage is sticky (hence, the common name showy tarweed), which can make it unpleasant to handle.

Weediness potential: Can become weedy in disturbed areas such as roadsides, due to its prolific seeding, but can be managed in garden landscapes.

Foliage: Covered with stiff hairs and stalked glands, green to gray-green foliage is sticky. Leaves are linear to lanceolate, with smooth margins. Lower leaves are 0.8–7 inches long and 0.5–7 inches wide. Middle and upper leaves are reduced in size.

Flower: Composite flowers sit on the tops of upper stems. Flower colors are variable, typically with yellow ray flowers, and sometimes having a reddish-burgundy base. Disc flowers can be yellow or darker. Ray flowers will curl and close in the hot afternoon and reopen at dusk.

Bloom timing: Summer into fall, July through September.

Fruit: Common madia produces flattened achenes, which are edible and used as an Indigenous food source.

Form: Erect, slender.

Texture: Fine.

Mature plant size: Will grow up to 1 foot tall and 0.2–0.3 foot wide. May grow much taller under optimal conditions.

Rate of growth: As an annual, common madia is a fast-growing herb and flowers the same year it is planted.

Suggested plant partners: Compatible with native grasses and many native plants, including yarrow *(Achillea millefolium)*, California poppy (*Eschscholzia californica)*, Canada goldenrod (*Solidago canadensis)* and sand-dune wallflower (*Erysimum capitatum*). Contrasts beautifully with farewell-to-spring (*Clarkia amoena)*.

Availability: Available as seed from some specialty native plant nurseries and at seasonal native plant sales. Common madia starts are not easy to find in many retail nurseries.

Subspecies and cultivars: 'Tropical Fruits' is a selection of common madia with burgundy-based ray flowers and a scent resembling a tropical fruit cocktail. Additionally, three subspecies are recognized: *Madia elegans* ssp. *densifolia*, *M. elegans* ssp. *elegans*, *M. elegans* ssp. *vernalis*.

CREDIT: Janet Donnelly, © Oregon State University

Canada goldenrod

SCIENTIFIC NAME: *Solidago canadensis* (Asteraceae). *Solidago canadensis* has recently been redefined as belonging to the two species *S. lepida* and *S. elongata*, names previously used to define subspecies of *S. canadensis*. In this publication both species will be referred to as *S. canadensis*, to be consistent with labelling that gardeners are most likely to encounter in nurseries and garden centers.

COMMON NAMES: Canada goldenrod, western goldenrod

DESCRIPTION: Canada goldenrod is a vigorous, herbaceous, perennial shrub. With hardy, erect stems bearing lanceolate, finely toothed leaves, branches with cone-shaped inflorescences extend up to 6 feet tall. Blooms consist of showy clusters of tiny, yellow flowers that are an important source of nectar and pollen for late-season insects. This low-maintenance, drought-tolerant shrub can help control erosion and makes an excellent addition to hedgerows and pollinator gardens.

NATIVE RANGE AND HABITAT: Canada goldenrod is native across Canada and the United States (except Hawaii). It grows at low to medium elevations in meadows, plains, prairies and riparian areas in clay to sandy soils.

Significant bee species association

- *Melissodes microstictus*

Cultural requirements

Soil: Grows well in sandy to gravelly, coarse-textured, soil. Will grow in soils with slightly acidic (less than 6.0) to neutral (6.0–8.0) pH.

Moisture tolerance: Low moisture requirements. Moist to dry, well-drained soil. Mature plants are drought-tolerant.

Sun/shade preference: Canada goldenrod produces the most flowers in full sun but tolerates some shade.

Transplanting: Canada goldenrod is easily transplanted by digging up and replanting rhizomes.

Propagation: Can be grown from seeds. Seeds are viable for up to five years and are nondormant. No preplanting treatments are necessary. When planting, lightly cover seeds with soil. Seeds planted too deep will not germinate. Canada goldenrod can also be propagated from cuttings or planted from starts in spring.

Maintenance: Goldenrod is generally low maintenance, but preventing the plant from spreading involves some work. Cut off flower heads before seeds develop and dig up rhizomes around the edges of the plant. Water new plants moderately; mature plants are relatively drought tolerant.

Insect, disease or other problems: Goldenrod may be infected by rust, powdery mildew and leafspot, but disease is rarely a problem. Root rot can occur in saturated soils. Aphids, beetles and gall-forming insects feed on goldenrod.

Landscape value

Use in the landscape: Great for erosion control, hedgerows and pollinator gardens. Canada goldenrod will fill space with full foliage and a showy, golden display in late summer.

Weediness potential: Self-seeding. Spreads by rhizomes and can be somewhat weedy. Spreads aggressively in optimal conditions.

Foliage: Foliage is smooth and green with serrated, lance-shaped leaves that extend in an alternate arrangement from the stem. Fine hairs cover the upper portion of stems. Leaves are 3–6 inches long and 1–3 inches wide.

Flower: Tiny yellow flowers form cone-shaped panicles, recurving with flowers blooming from one side. Flowers do not produce copious pollen as they are not wind pollinated; this species is often confused with ragweed and blamed for allergies.

Bloom timing: Blooms can commence as early as late June and continue through late September to early October.

Fruit: Each flower produces an achene fruit. Each seed is brown and oblong with white pappus that allow for wind dispersal.

Form: Arching, erect.

Texture: Medium.

Mature plant size: Can grow 2–4 feet tall, and can spread extensively if not weeded or contained.

Rate of growth: Goldenrod has a moderate growth rate. In optimal conditions it can spread quickly.

Suggested plant partners: Partners well with other vigorous-growing native wildflower species, including yarrow *(Achillea millefolium)*, milkweeds (*Asclepias* spp.*)*, Camas (*Camassia* spp.*)*, Oregon sunshine (*Eriophyllum lanatum*), California poppy (*Eschscholzia californica)*, lupine (*Lupinus* spp.*)*, common madia (*Madia elegans)*, checkermallows (*Sidalcea* spp.*)* and Douglas' aster (Symphyotrichum subspicatum).

Availability: Starts are available at some specialty native plant nurseries and at native plant sales. Seed can be purchased from commercial native seed suppliers.

Subspecies and cultivars: Over 100 cultivars ranging from gold to yellow blossoms including 'Baby Gold' (large racemes), 'Fireworks' (branches arch downward) and 'Golden Fleece' (forms dense groundcover). Subspecies of *Solidago lepida* include *S. lepida* ssp. *salebrosa* and *S. lepida* ssp. *lepida*.

CREDIT: Janet Donnelly, © Oregon State University

Oregon sunshine

SCIENTIFIC NAME: *Eriophyllum lanatum* (Asteraceae)

COMMON NAMES: Oregon sunshine, woolly sunflower

DESCRIPTION: Oregon sunshine is an herbaceous, perennial plant. Mounds of attractive, gray-green leaves are covered with a profusion of cheery yellow daisy-like flowers in late spring or early summer. This is a widespread, complex species with numerous recognized varieties that can range in height from a few inches to 2 feet. Tough and adaptable.

NATIVE RANGE AND HABITAT: Native range extends from British Columbia south into California and east to Montana, Idaho and Utah. In Oregon, this plant is native across broad regions of the state, including southern, Central and eastern Oregon, the Willamette Valley, Columbia Gorge and Oregon Coast. In the Intermountain West, Oregon sunshine occurs from low-elevation sagebrush flats to forests and exposed ridges above timberline.

Significant bee species association

- *Panurginus atriceps* (black-tipped miner bee)

Cultural requirements

Soil: Well-drained, nutrient-poor or ordinary garden soil. Grows best in a pH of 6.0–8.0.

Moisture tolerance: Very drought tolerant; requires little to no irrigation. However, some summer irrigation can make it more aesthetically pleasing.

Sun/shade preference: Full sun.

Transplanting: Easy.

Propagation: Seed.

Maintenance: For best appearance, deadhead in summer after blooming and enjoy the attractive foliage. Needs little or no fertilization.

Insect, disease or other problems: Aphids and thrips may build up in abundance, but they generally cause little to no meaningful damage.

Landscape value

Use in the landscape: Provides a spectacular burst of color in late spring or early summer lasting two to three weeks, depending on weather. Mounds of gray-green foliage are attractive when the plant is not in bloom. Works well in perennial borders and in rock gardens as long as winter drainage is good.

Weediness potential: Spreads prolifically on open ground via seed. To manage the spread, deadhead blossoms prior to seed ripening.

Foliage: Longish, narrow leaves are covered with tiny hairs, giving them a gray-green appearance. Leaves can be entire or pinnate.

Flower: Flower heads 1–1.5 inches in diameter, each with eight to 13 rays. Petals are shallowly toothed at the tip. Both ray and disk flowers are yellow.

Bloom timing: May–June.

Fruit: Many small, narrow, smooth seeds. Seeds have four edges and a cluster of scales at the top.

Form: Mound.

Texture: Medium. Dense, woolly mound.

Mature plant size: Highly variable. Available garden varieties grow to 1–2 feet tall and 1–2 feet wide.

Rate of growth: Relatively rapid growth, especially with modest supplemental irrigation.

Suggested plant partners: Partners well with native, meadow wildflower species that can tolerate dry soils, including: sea thrift *(Armeria maritima)*, prostrate ceanothus (*Ceanothus prostratus)*, farewell-to-spring (*Clarkia amoena)*, western wallflower (Erysimum capitatum), California fuchsia (*Epilobium canum* ssp. *latifolium)*, California poppy (*Eschscholzia californica)*, common blanketflower (*Gaillardia aristata)*, Oregon cranesbill (*Geranium oreganum)*, globe gilia (*Gilia capitata*), riverbank lupine (*Lupinus rivularis*), Oregon stonecrop (*Sedum oreganum*) and broadleaf stonecrop (*Sedum spathulifolium*).

Availability: Starts can be readily purchased from a variety of native plant growers in the region.

Subspecies and cultivars: No known subspecies. Several cultivars are available. These include 'Takilma Gold' (a higher elevation form more easily grown in garden conditions, and more tolerant of moisture), and 'Siskiyou' (especially vigorous; flowers and spreads quickly; grey-green leaves and almost white stems).

CREDIT: Jen Hayes, © Oregon State University

Common yarrow

SCIENTIFIC NAME: *Achillea millefolium* (Asteraceae)

COMMON NAMES: Common yarrow, milfoil

DESCRIPTION: Common yarrow is a perennial wildflower that can grow to 1–3 feet tall and 1.5 feet wide at maturity. Small, white flowers cluster at the terminal ends of stems. Propagation is via creeping rhizomes and seed. Works well in pollinator gardens, meadowscapes and rock gardens. Common yarrow is visited by a variety of bees, butterflies and other beneficial insects, including parasitoid wasps in the family Eulophidae and predatory bugs in the family Anthocoridae, especially minute pirate bugs (*Orius insidiousus*).

NATIVE RANGE AND HABITAT: Common yarrow is distributed throughout the continental United States, plus Alaska. Found in a wide variety of habitats, from sea level to high-elevation mountain locations. Can grow in forests, though prefers full sun of open grasslands. Grows well in disturbed areas.

Significant bee species associations

- *Andrena cerasifolii* (cherry plum miner bee)
- *Andrena candida* (bright miner bee)

Cultural requirements

Soil: Grows well in almost any soil type, though does not do well in wet locations. Can grow in neutral, acidic and alkaline soils (pH: 4–8).

Moisture tolerance: Very drought tolerant, requires little to no irrigation. However, some summer irrigation can make it more aesthetically pleasing.

Sun/shade preference: Prefers full sun, but grows in partial sun or shade.

Transplanting: Transplants well into the garden, from starts purchased at a nursery or native plant sale. Transplanted plants should be watered to ensure establishment.

Propagation: Common yarrow can be direct seeded or planted as starts. Establishment via direct seeding is somewhat difficult, and seed should be planted early in the spring ¼ to ½ inch deep, 12 inches apart. No seed treatment is necessary.

Maintenance: To avoid unwanted spread, divide plants every other year. Cut down plants after initial flowering to remove unwanted vegetation and encourage subsequent flowering.

Insect, disease or other problems: Can exhibit stem rot, powdery mildew and rust on occasion.

Landscape value

Use in the landscape: Works well in native plant gardens and meadows. Because yarrow spreads via rhizomes and bolts tall when it flowers, it can function as a featured flower or a groundcover in a garden setting. For use as a ground cover or lawn, occasionally mow plants to keep them low. It may be too aggressive to be used as a border plant in many gardens.

Weediness potential: Grows by rhizomes and can spread fairly aggressively in the garden. This can be kept in check by division every other year. Deadheading flowers can eliminate seeding.

Foliage: Leaves are pinnate or tripinnate and are finely dissected into leaflets, giving an almost fern-like appearance. 4–8 inches long and alternate arrangement.

Flower: White flowers are clustered at the end of stems.

Bloom timing: Blooms as early as March and into September.

Fruit: Produces small achenes, 0.1 inch in length. These seeds are narrow, oblong and flat.

Form: Individual plants grow upright with erect stems. Basal foliage can spread, and since it reproduces by creeping rhizomes it can form a dense, low-growing mat.

Texture: Fine.

Mature plant size: Grows 1–3 feet tall. As with other rhizomatous spreaders, plant width can increase well beyond advertised size. Spread can be extensive if not regularly weeded or contained.

Rate of growth: Grows quickly.

Suggested plant partners: Partners well with other vigorous-growing native wildflower species, including milkweeds *(Asclepias spp.)*, camas (*Camassia spp.)*, farewell-to-spring (*Clarkia amoena)*, Oregon sunshine (*Eriophyllum lanatum*), California poppy (*Eschscholzia californica)*, lupines (*Lupinus spp.)*, common madia (*Madia elegans)*, checkermallows (*Sidalcea spp.)* and Douglas' aster (*Symphyotrichum subspicatum*).

Availability: Starts can be readily purchased from a variety of native plant growers and nurseries in the region.

Subspecies and cultivars: One subspecies occurs in Oregon: *Achillea millefolium* spp. *lanulosa*. Many cultivars are available, and in fact the wild-type yarrow is rarely purchased in comparison. These include 'Cerise Queen' with magenta-colored flowers; 'Lavender Lady' with lavender-colored flowers; 'Moonshine' with bright yellow flowers; and 'Orange Queen' with orange-peach flowers. 'Moonshine' is a particularly noteworthy form, with unusually large, flat umbels that age beautifully, staying attractive into winter.

Glossary

ACHENE: a dry fruit containing a single seed. The seed is not released when the fruit is ripe.

ALTERNATE (LEAF ARRANGEMENT): One leaf arises from each node. Leaves may alternate on either side of the stem at each node, arise on only one side, or arise in a spiral.

BRACTS: a specialized leaf that surrounds a reproductive structure such as a flower, with the flower situated at the axil of the bract.

COLD STRATIFICATION: involves chilling seeds in a moist, aerated environment for a specific duration of time. See stratification.

COMPOSITE FLOWER: an inflorescence made up of central disc flowers surrounded by a ring of ray flowers. Composite flowers are characteristic of the Asteraceae family.

CYMES: an inflorescence in which the central flower of the main stem develops prior to flowers developing from lateral buds below.

DAMPING OFF: a plant disease caused by pathogens that occur in excessively wet soil conditions, especially affecting young seedlings. Symptoms include thin, shriveled stems, stunted root growth, wilted leaves and the death of young seedlings.

DEADHEADING: removing dead flower heads from a plant to stimulate new flower production. Deadheading can also be used to prevent or limit self-sowing and spread of plants.

DISC FLOWER: a small, tubular flower that makes up the central portion of composite flowers. Disc flowers lack petals.

DIVISION: a simple means of vegetative propagation for plants that produce by bulbs or rhizomes. To propagate via division, dig up plants and carefully divide by breaking into two or more parts, where the root and stem part of each plant are kept intact.

FORB: an herbaceous, broadleaved, flowering plant distinguished from grasses.

INFLORESCENCE: the cluster of flowers that form a flower head of a plant including all stems, peduncles and bracts.

LANCEOLATE (LEAVES): a leaf form consisting of a base wider than the midpoint which tapers to a point and is at least three times as long as it is wide.

LEAF MARGIN: the perimeter of the leaf. Characteristics of leaf margins are important for plant identification.

PANICLES: an indeterminate, branching inflorescence where each branch has several flowers, each with their own stem.

PAPPUS: a tuft of hair on individual seeds that helps them be better dispersed by wind.

PEDICEL: a stem that attaches a single flower to an inflorescence, as in *Clarkia amoena* (farewell-to-spring).

PINNATE (LEAVES): leaflets arranged in pairs on either side of the stem.

RAY FLOWERS: marginal flowers on the head of a composite plant that are small and tubular with a strap-shaped petal. See composite flower.

RHIZOMES: a horizontal-growing, subterranean stem that gives rise to lateral shoots and adventitious roots.

SCARIFICATION: weakening the coat of a seed to enhance or allow germination. Methods of scarification include using heat, an acidic solution or mechanical methods to break down the seed coat.

SCORPIOID: a flower cluster that resembles a scorpion in that the inflorescence tends to curl up under itself into a spiral and uncurls as it flowers, as in *Phacelia heteropylla*.

SESSILE (INFLORESCENCE): lacking a pedicel or stalk. See pedicel.

STAMEN: the male reproductive structure of a flower that produces pollen.

STARTS (PLANT): a plant start is a seedling that has been grown for several weeks to months. They are more expensive than seed. Transplanting starts into the soil can increase your success compared to direct sowing seeds, particularly for some perennial plants.

STOLON: modified plant stems that creep horizontally near the soil surface and give rise to new roots and shoots at its nodes or tips.

STRATIFY/STRATIFICATION: a process of warming or chilling seeds that releases them from certain kinds of dormancy. Stratification, when necessary, will increase germination uniformity and rate as it simulates the winter conditions of the seed's native region.

TERMINAL INFLORESCENCE: a flower head that ends the growth of that branch. There will not be vegetative or further flowering growth above a terminal inflorescence.

TEXTURE: refers to the visual effect of a plant, including leaves, flowers and form, and the way that light and shadow interact with the plant. Fine-textured plants such as baby's breath, lavender and dill usually have small leaves and flowers. They are often used to fill space. Coarse-textured plants such as hostas and rhododendrons usually have large leaves and flowers. They are used to grab attention.

TRIPINNATE (LEAVES): bipinnate leaves arranged pinnately on a stem. For example, the leaves of a carrot are tripinnate.

VIGOROUS (PLANT, PLANT SPREAD): a term used to describe a plant that is robust and grows well. Often used to describe a plant that grows or spreads quickly, and is a challenge to contain to particular areas of the garden.

VOLUNTEER (PLANT): a plant that grows on its own, rather than being deliberately planted. Volunteers often grow from seeds that drop from flower heads, but may also be transported by birds. Unlike weeds, which are unwanted, volunteers may be encouraged to grow and fill garden space.

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