

Supporting Biocontrol with Garden Plants

Our research

Biological control ("Biocontrol") is the use of living organisms to suppress pest populations. Insect predators and parasitoids are important biocontrol agents (also known as natural enemies) in garden systems. Studies have examined the relative attractiveness of garden plants to insect natural enemies in other areas of the United States, but no studies were available for plants native to the Pacific Northwest. We conducted a three-year study to identify PNW native plants that support robust communities of insect predators and parasitoids. We wanted to find plants that had a high abundance and diversity of natural enemies, as well as a relatively low abundance of herbivorous prey (that might be garden pests). We also included 4 non-native plants that are common in gardens in our study (lavender, oregano, pineapple sage, and catnip).

What we found

Hosted a high abundance of natural enemies



Douglas' Aster
Symphyotrichum subspicatum



Canada Goldenrod
Solidago canadensis



Yarrow
Achillea millefolium



Farewell to Spring
Clarkia amoena



Pearly Everlasting
Anaphalis margaritacea

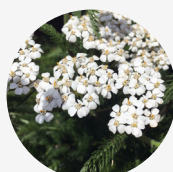
Hosted a high ratio of natural enemy to herbivore abundance



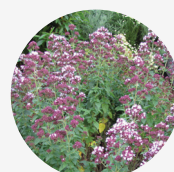
Douglas' Aster
Symphyotrichum subspicatum



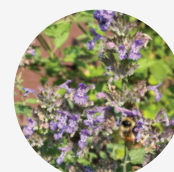
Pearly Everlasting
Anaphalis margaritacea



Yarrow
Achillea millefolium



Oregano
Origanum vulgare



Catnip
Nepeta cataria

Hosted a high diversity of parasitoids



Pearly Everlasting
Anaphalis margaritacea



Farewell to Spring
Clarkia amoena



Canada Goldenrod
Solidago canadensis



Douglas' Aster*
Symphyotrichum subspicatum



Yarrow*
Achillea millefolium

Hosted a high diversity of predators



Farewell to Spring
Clarkia amoena



Canada Goldenrod
Solidago canadensis



Douglas' Aster
Symphyotrichum subspicatum



Pearly Everlasting
Anaphalis margaritacea



Oregon Sunshine
Eriophyllum lanatum

Photos: Douglas' Aster - Jen Hayes; Canada Goldenrod - LeAnn Locher; Yarrow - Jen Hayes; Farewell to Spring - Jen Hayes; Pearly Everlasting - Jen Hayes; Oregano - Neil Bell; Catnip - Jen Hayes; Oregon Sunshine - Gail Langellotto



Here, we show five plants that hosted a high abundance of natural enemies (both predators and parasitoids), those with the highest ratio of natural enemy to herbivorous prey abundance (plants that were more attractive to natural enemies than herbivores), plants that hosted the highest diversity of parasitoids (in terms of number of families), and plants with the greatest diversity of predators (family richness). There was actually a six-way tie for the fourthmost diverse parasitoid community, however we included Douglas' aster and yarrow because they consistently had the greatest abundance of parasitoids over the three-year study, as compared to the other tied plants.

How does this relate to your garden?

Choosing plants that are attractive to predators and parasitoids can suppress pest outbreaks and reduce the need for insecticide applications in the garden. We in the Garden Ecology Lab recommend: Douglas' aster, goldenrod, yarrow, farewell-to-spring, pearly everlasting, oregano, and catnip to bring beneficial natural enemies into your garden. All of these plants, with the exception of oregano and catnip, are native to the Willamette Valley and/or Oregon. To maximize the biocontrol benefits provided by these plants, we recommend that you reduce or eliminate insecticide applications. This will promote predators and parasitoids populations your garden, and allow them to do the work of controlling pests, so you don't have to!

Additional Information

- Anderson, A. G., 2022. Evaluating the attractiveness of Pacific Northwest native plants to insects and gardeners. [Doctoral dissertation, Oregon State University] https://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/dv140206v.
- Natter, J. R., 2019. Entomology for gardeners. Oregon State University Extension Service. <https://extension.oregonstate.edu/gardening/techniques/entomology-gardeners>

Master Gardener™ Advice

- Contact your local extension office for Master Gardener advice, or look for Master Gardeners at local farmers' markets.
- For more 10-Minute University™ handouts, videos, and the class schedule, visit <https://cmastergardeners.org>.

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