GARDEN ECOLOGY LAB BRIEFS
A joint effort of 10-Minute University™ and Oregon State University's Garden Ecology Lab

The Diets of Specialist Bees

Our research

Bees, like humans, have food preferences. While there may be a diversity of plants in bloom across the landscape, bees may preferentially visit specific flowering plants. Nectar and pollen are the primary resources bees collect from flowers. Bees might collect nectar from many different plants, but they can be picky about where they collect pollen. Bee diet breadth is characterized by pollen foraging habits of female bees (males don't collect pollen), and exists on a spectrum from specialization to generalization. Around 65% of Western U.S. bee species are thought to be generalists[1], collecting pollen from four or more plant families. The remaining species collect pollen from three or fewer plant families, or may be as specific as collecting from a single plant genus. These species are referred to as specialists. Over 3 years, we collected and identified bees visiting plants in our research garden at Oak Creek Center for Urban Horticulture in Corvallis. Here, we share the 6 known specialist species found in our garden and suggest Pacific Northwest native host plants to include for them in your garden.

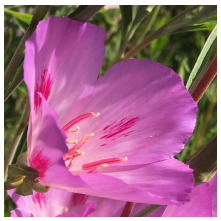
What we found

Specialist Bees	# Female	% Collected from Host	Pollen Host
Megachile fidelis	3	100%	Asteraceae
Melissodes lupinus	260	81%	Asteraceae
Melissodes microstictus	33	94%	Asteraceae
Melissodes clarkiae	176	94%	*Clarkia* (Onagraceae)
Megachile gravita	5	100%	*Clarkia* (Onagraceae)
Diadasia nigrifrons	2	100%	*Sidalcea* (Malvaceae)

Pacific Northwest Native Plant Hosts for Specialist Bees

Asteraceae

M. fidelis: *Helenium, Symphyotrichum*
M. lupinus: *Grindelia, Madia*
M. microstictus: *Ericameria, Solidago, Symphyotrichum*



Clarkia

C. amoena
C. gracilis
C. pulchella
C. purpurea
C. rhomboidea

Sidalcea

S. asprella
S. campestris
S. hendersonii
S. hirtipes
S. nelsoniana
S. oregana

Photographs by Jen Hayes

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Female *Melissodes clarkiae* on *Clarkia amoena*. Photo by Devon Johnson, identification by Lincoln R. Best.

How does this relate to your garden?

Planting host plants for specialists can increase the overall richness and diversity of pollinators that visit and benefit from your garden. Host plants for specialists may also benefit generalist pollinators. For example, in our research garden, we found two *Clarkia* specialists on *Clarkia amoena*. But this flower was also visited by two Asteraceae specialists (for nectar), in addition to 28 other species of pollinators.

While some bee species are considered specialists as adults, butterflies and moths are specialized at the larval stage (caterpillars). Because caterpillars feed on plant foliage, specialist host plants may look like they're being eaten- and they are! Ecologically beneficial gardens include plants whose flowers and leaves have bites taken out of them.

What should you plant to attract specialist bees? While there isn't as much information on host plants for specialist bees as there is for butterflies, plants in the Asteraceae, Malvaceae, and Onagraceae families are good choices. Refer to the suggestions on the first page of this brief for specific plant genera or species to consider.

Additional Information

· [1]Fowler, J. 2020. Pollen Specialist Bees of the Western United States. https://jarrodfowler.com/pollen_specialist.html

• The California Native Plant Society identifies potential wildlife supported by plants as part of the plant profiles available on calscape.org

• Waser, N. M., Ollerton, J., & Waser, N. M. (Eds.). 2007. Plant-Pollinator Interactions: From Specialization to Generalization. Univ. of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/P/bo72541193

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 cmastergardeners.org.

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