

SECTION 8

# The Importance of Native Plants and Communities in Sustaining Animal Pollinators



## SECTION 8

# THE IMPORTANCE OF NATIVE PLANTS AND COMMUNITIES IN SUSTAINING ANIMAL POLLINATORS

*STRATEGIC GOAL: To heighten awareness of how native plants sustain native pollinator populations, and the ways people can use native vegetation to promote communities and pollinators.*

The Earth provides a multitude of habitats for plants, which are sustained by the interdependence between flowering plants and animal pollinators. Relationships between plants and pollinators co-evolved more than 65 million years ago (Proctor et al. 1996). Today, nearly 88% of the world's 352,000 flowering plant species are pollinated with the help of animals (Ollerton et al. 2011). This symbiotic relationship has shaped the diversity of both plants and animals in our region, and across the globe. Yet, the attention given to this relationship often focuses more on the animals that pollinate, and less on the origin, traits, and species of the plants that sustain them.

This section, *The Importance of Native Plants and Communities in Sustaining Animal Pollinators*, hereafter *Native Plants and Pollinators*, does not provide a strategy to conserve pollinators. Rather, the *Native Plants and Pollinators* section touches on the important services Montana's native plants and plant communities provide to pollinators, the need to preserve and use them in restoration, and the effect pollinators have on rare and common native plants. Further, it highlights existing resources, relevant to Montana, that private landowners and public land managers can use to promote native plants, create communities, and in turn support animal pollinators.

### **Mutual Reliance Among Native Plants, Plant Communities, and Animal Pollinators**

The coexistence of native plants and native animal pollinators hinges on the persistence

of these species to live in functioning plant habitats. Such plant habitats could be found in one's backyard garden or in the wildest of places, and everywhere in between (Tallamy 2009). Native plants differ in their size, shape, habit, soil, water and nutrient requirements, and leaf chemistry, which means that where there is a diversity of plant species, there will be greater opportunities for animals to obtain their energy (food) without interfering with one another (Tallamy 2009). A greater array of native plant species also means more opportunities for native animal pollinators to find shelter, nesting, and resting sites, whether daily or seasonally, along with water, prey, and other components to carry out their life cycles. In Montana native animal pollinators include insects, bats, and birds. Of particular importance are the insect herbivores like caterpillars, which many of Montana's more charismatic birds and mammals rely upon (Tallamy 2009).

At least 1,890 flowering plant species native to Montana provide nutritious foods in the form of pollen and/or nectar to native animal pollinators (MTNHP 2023a). While foraging for this food, pollinators transfer pollen from the stamens of one flower to the pistil of another flower, thereby enabling fertilization and seed production for the plant. Hence, the reproductive success of most native plant species depends on their animal pollinators.

For both plants and animals, the biology of pollination has led to species being generalists or specialists. Generalists pollinate many flower types or are pollinized by many animal species. Specialists have unique anatomical

structures and pollinate specific flower species or are pollinized by certain animal types. Specialist pollinators and specialist pollinizers bring uniqueness to Montana's flora and fauna; specialists may or may not be rare species and may or may not rely on generalist species. Three examples, below and Box 8-1, illustrate some relationships between common and rare species for both native plants and animals:

- The corolla length, curvature, and volume of a nectar-producing flower corresponds well to a hummingbird's bill length, curvature, and body mass (Maglianesi et al. 2014). As a result, hummingbirds are attracted to odorless flowers that open during the day, are brightly colored, funnel-shaped with recurved petals, and typically have strong stems for perching.
- Spalding's Catchfly (*Silene spaldingii*), a federally-threatened plant that grows in the grasslands of northwestern Montana is primarily pollinated by the Golden Northern Bumblebee (*Bombus fervidus*) (Lesica and Heidel 1996; Hatten 2019) (Photo 8-1). The Golden Northern Bumblebee is a widespread, generalist insect that forages on numerous plant species that represent various floral types (Photo 8-1).

Native flowering plants are more than a food source, and when growing within a community of native plants, pollinators are provided with the resources needed to carry out their entire life cycle. Native plant communities provide essential water sources for pollinators by trapping precipitation and tempering moisture levels. For many birds and bats, native trees and tall shrubs provide nesting, roosting, and over-wintering habitats. For pollinating insects and birds, the native forb and grass components of these communities provide shelter, nesting, and over-wintering habitats. Native plants with hollow stems become sites for adult and larval insects to take shelter or

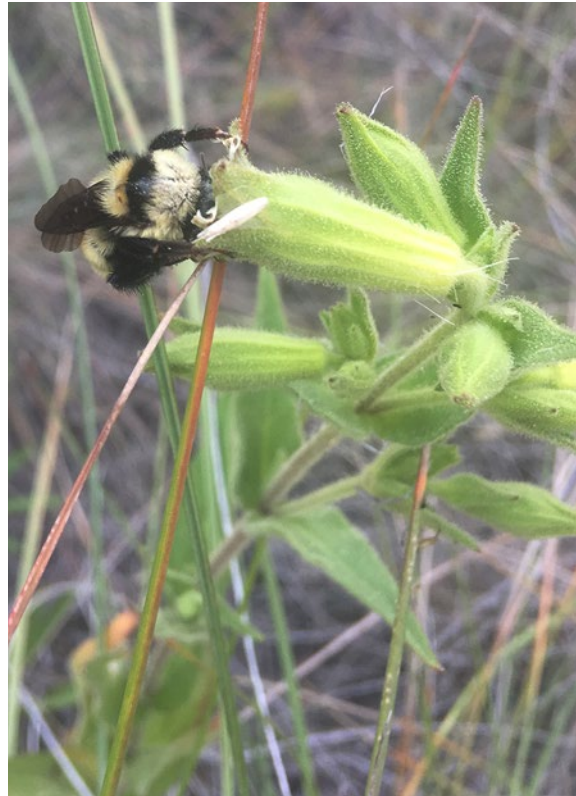


Photo Credit: Emma Heydenberk

Photo 8-1. A Spalding's Catchfly (*Silene spaldingii*) flower gets a visit from the Golden Northern Bumblebee (*Bombus fervidus*) pollinator on the Flathead Indian Reservation.

over-winter in. As examples, Joe-Pye Weed (*Eupatorium* spp.), Elderberry (*Sambucus* spp.), Wild Bergamot (*Monarda fistulosa*), and Swamp Milkweed (*Asclepias incarnata*), are a few of the plants that produce hollow or pithy stems suitable for nesting bees (Tufts Pollinator Initiative 2023). Undisturbed soils with leaf litter and some vegetative cover provide insulation and protection for caterpillars to complete their pupal stage of metamorphosis, to become a butterfly or moth pollinator (Tallamy 2009).

Native plant communities across the landscape naturally vary in the timing, density, nutritional value, and floral morphology of flowering, all of which influence native pollinator communities (Essenberg 2013, Bruckman and Campbell 2014, Palladini and Maron 2014, Scheper et al. 2015, Cariveau et al.

## Box 8-1. Lemhi Beardtongue & Large Pollen Wasp – A Reciprocal Connection.

### Reciprocal Relationships

Pollen wasps look similar to yellow jackets, but differ in having club-shaped antennae, vegetarian diets, and unique behaviors. All species of the pollen wasp genus, *Pseudomasaris*, specialize in rearing their young on nectar and pollen, as opposed to scavenging on meat or preying on other insects. Their eggs are laid in a ground nest composed of soil, nectar, and a pollen patty that is sealed with mud (Beyond Pesticides 2023). As specialists, pollen wasps forage on specific types of plants.

Montana's only representative is the Large Pollen Wasp (*Pseudomasaria vaspoides*), which is a pollinator of Lemhi Beardtongue (*Penstemon lemhiensis*), a rare plant found only in southwest Montana and adjacent Idaho (Stucki 2013; MTNHP 2023b). Although flowers of Lemhi Penstemon may be visited by several insect species, the Large Pollen Wasp is a particularly efficient pollinator. Behaving more like a bee, its body fits perfectly into the flower of Lemhi Beardtongue, and as it feeds on nectar, the wasp's body collects pollen. Their reciprocal connection allows Lemhi Beardtongue to produce more seeds and improve its genetic diversity while the Large Pollen Wasp gains pollen to feed its larvae (Starkey 2015).



[Watch the video](#) showcasing Lemhi Beardtongue and Large Pollen Wasp at the Big Hole National Battlefield in Montana<sup>1</sup>:

### Species Conservation

Lemhi Beardtongue plants and Large Pollen Wasp insects are unique members of our national heritage that deserve conservation. Ranked as being vulnerable to extirpation in Montana and Idaho, Lemhi Beardtongue faces threats from altered fire regimes, exotic plant invasions, herbicide applications, and drought (IDNHP 2023; MTNHP 2023b; Sagatlova et al. 2023; Stucki 2013). Found across the western United States and Canada, the status of the Large Pollen Wasp is unknown in Montana but ranked as imperiled in Canada (NatureServe 2023). Their reliance on each other requires conservation practices that encompass both species and habitat. A 2023 publication outlining a proactive collaborative conservation strategy to maintain wild Lemhi Beardtongue populations aims to advance conservation practices (Sagatlova et al 2023).

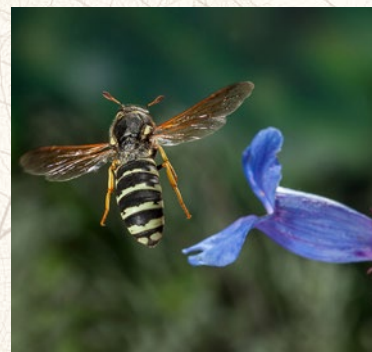


Photo credits:  
©Michael Durham | DurmPhoto.com

Photos 8-2 to 8-4. The Large Pollen Wasp pollinates a flower of Lemhi Beardtongue.

<sup>1</sup> National Park Service Inventory and Monitoring YouTube channel:  
<https://www.youtube.com/watch?v=EqppGx7Wv-s>

2020). Native pollinator populations are most successful when they have access to diverse types of native flowering plant species because they provide multiple resources throughout the growing season for mating, nesting, and food (Tepedino et al. 1997). When these resources become sparse or unavailable, common native plant species and plant communities also decline in size, function and/or health (Wei et al. 2021). Where conservation actions favor rare species, the ability to maintain diverse communities improves (Wei et al. 2021). This is because community-wide plant-pollinator interactions affect reproduction which is important for maintaining biodiversity (Wei et al. 2021).

### Select Ways in Which Exotic Plants & Pollinators Affect Native Plants & Pollinators

Native pollinators perform an essential role in the reproduction and persistence of native plants and their plant communities; however, Montana’s landscapes also include increasing numbers of exotic (or non-native) flowering plant and animal pollinator species. Although the presence of non-native plant species may increase floral resources and attract generalist pollinators, specialist pollinators that rely on specific native host plants can be outcompeted, at the loss of their preferred food (Valdovinos et al. 2016). Furthermore, invasive plants often alter the composition and structure of native plant communities, which in turn negatively impacts pollinator visitation to native plants, limiting plant reproduction and future generations of seedlings (Palladini and Maron 2014).

Similarly, non-native pollinators such as the European Honey Bee (*Apis mellifera*) impact native plant communities by preferentially foraging on and depleting the most abundant floral resources in an area (Hatfield et al.

2018). Honeybees also compete with native pollinators for floral resources (Thomson 2016, Hatfield et al. 2018) and can even exclude, suppress, and/or displace native bees from flowers (Thomson 2004, 2006; Hatfield et al. 2018). This causes native pollinators to shift to less abundant and less rewarding plant species, thereby reducing flower visitation, and pollination for many native plant species. When native pollinators are unavailable, honeybees may not provide sufficient pollination for certain native plant species, leaving those species with reduced reproduction (Hatfield et al. 2018). Thus, the persistence of pollinators must be considered in the long-term conservation of both native plant and pollinator communities (Wei et al. 2021).



Photo Credit: Aaron Clausen

Photo 8-5. Blue butterfly (family Lycaenidae) foraging on a buckwheat (*Eriogonum* sp.) plant near Babb, Montana.

## HOW TO PROMOTE NATIVE PLANTS, COMMUNITIES, AND ANIMAL POLLINATORS

In this subsection on *Native Plants and Pollinators*, we link to existing resources, relevant in Montana, to encourage the plantings of flowering plants native to our state. In turn, successful plantings with proper planning can support both native plant populations and native pollinator communities. With a little research and effort, creating and maintaining native plant communities can be done in small places, like one's backyard.

### Resources for Land Management Agencies and Other Landowners

Western Montana & Northern Idaho Region

#### Pollinator-friendly Seed Mixes

In Montana, U.S. Department of Agriculture, Forest Service land managers are assessing the resources that specific native plant species provide to bees and using this information to design seed mixes for restoring pollinator habitat. These land managers define “pollinator-friendly” native plants as “species that have high visitation rates by bees, attract the greatest number of bee species, support specialist bee species, and bloom for extended periods across the landscape”.

We encourage readers to read General Technical Report (Glenny et al. 2022). Below, we summarize some of their important findings that apply to western Montana and northern Idaho:

- To support the local pollinator community, seed mixes used for restoration projects should have a diverse suite of native species that exhibit a range of floral morphologies, with bloom times that collectively span the entire flowering season.
- Native seed mixes, plugs, and plantings perform best when they are from locally adapted species.
- The report provides a scorecard that rates the pollinator-friendliness of 24 native plant species and provides details on each species' growth form, flowering period, and use by pollinators.

- The report provides recipes for seed mixes designed for common habitat types and disturbance regimes.
- The report lists native plants with the potential to qualify as pollinator-friendly.

▶ **Find it!** <https://www.fs.usda.gov/research/treesearch/63732>

#### National Programs

National programs that incorporate pollinator-friendly and wind-pollinated native plants, and emphasize locally sourced plant materials, are being implemented in revegetation and rehabilitation projects conducted by the U.S. Department of Interior, Montana/Dakotas Bureau of Land Management and Region 1 of the Forest Service. These national programs include:

#### National Seed Strategy for Rehabilitation and Restoration

▶ **Find it!** [https://www.blm.gov/sites/default/files/docs/2020-12/NationalSeedStrategy\\_2015-2020.pdf](https://www.blm.gov/sites/default/files/docs/2020-12/NationalSeedStrategy_2015-2020.pdf)

#### Seeds of Success – Native Seed Collection

▶ **Find it!** <https://www.blm.gov/programs/natural-resources/native-plant-communities/native-plant-and-seed-material-development/collection>

#### Forest Service Native Plant Restoration Program

▶ **Find it!** [https://www.fs.usda.gov/wildflowers/Native\\_Plant\\_Materials/policy.shtml](https://www.fs.usda.gov/wildflowers/Native_Plant_Materials/policy.shtml)

## Resources for Private Landowners and Conservation Organizations

The following resources provide guidance to private landowners interested in finding and selecting native plants for each region of Montana. These resources may also address planting techniques and plant-pollinator relationships.

### Sources for Montana Native Plants

Montana Native Plant Source Guide - Montana Native Plant Society (MNPS) Landscaping and Revegetation Committee (with periodic updates)

- Montana's best source guide for finding native plant materials and learning how to grow select species by seed.
- The MNPS website provides additional information on growing and landscaping native plants.

▶ **Find it!** <https://mtnativeplants.org/wp-content/uploads/2024/04/Native-Plant-Sourceguide-April2024.pdf>

### Montana Conservation Seedling Nursery

The nursery is an agricultural facility located in Missoula dedicated to providing plants for conservation work across Montana. It is operated by the Montana Department of Natural Resources and Conservation as a state proprietary enterprise.

▶ **Find it!** <https://dnrc.mt.gov/Forestry/Conservation-Nursery>



Photo Credit: Unknown

Photo 8-6. Carpenter bee (*Xylocopa* sp.) nest occupied by pupa, and a singular larva (far right), after the pithy material was excavated from the stem of a native woody plant.

*Information on Pollinator-friendly Species and Ecoregional Planting Guides for Montana*

### Montana Native Plants for Pollinator-Friendly Plantings

- U.S. Department of Agriculture, Natural Resources and Conservation Service (2005)

Provides information on common shrubs and forbs native to Montana that benefit native animal pollinators.

▶ **Find It!** <https://www.nrcs.usda.gov/plantmaterials/mtpmcbr11694.pdf>

### Pollinator Partnership

A non-profit organization that promotes the health of pollinators through conservation, education, and research. The website provides ecoregional planting guides for the Great Plains Steppe, Middle Rocky Mountain, and Northern Rocky Mountain regions.

▶ **Find it!** <https://pollinator.org/guides>

### Homegrown National Park

A grassroots call-to-action movement that regenerates biodiversity and ecosystem functions. Their website lists keystone (most productive) tree, shrub, and forb species that promote biodiversity and are native to the Western Cordillera and West-Central Semi-Arid Prairies regions of Montana. The website invites you to participate as a partner in planting native plants in your backyard!

▶ **Find it!:** <https://homegrownnationalpark.org/about-us/>

## Resources for Private Landowners and Conservation Organizations

### Pollinator Conservation

#### Xerces Society

An international non-profit organization that focuses on the conservation of invertebrates. The website provides information for planning, establishing, restoring, and maintaining pollinator habitats for the Mountain and North Central regions found in Montana.

▶ **Find it!** <https://www.xerces.org/pollinator-resource-center>



Photo Credit: Aaron Clausen

Photo 8-7. A sweat bee (*Lasioglossum* sp.) forages on *Springbeauty* (*Claytonia lanceolata*) flowers near Bozeman, Montana.

### Federal Initiatives

#### U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service is engaged with projects and efforts (initiatives) to further the conservation of pollinators.

▶ **Find it!** <https://www.fws.gov/initiative/pollinators>

#### Forest Service

The Forest Service provides information on native plant conservation, restoration projects, pollinators, and wildflowers.

▶ **Find it!** Conservation and restoration: <https://www.fs.usda.gov/research/rmrs/centers/wcnp>

Pollinators and native wildflowers: <https://www.fs.usda.gov/wildflowers/pollinators/>

***The first law of intelligent tinkering is to save all the parts.***

~ Aldo Leopold

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