Pollinator-Friendly BMPs for the Fish & Wildlife Program

Pollinators, mainly bees, butterflies and some birds, are vital components of our natural and agricultural environments. The main threats to pollinators include: habitat loss, pesticides, agricultural intensification and climate change. Changes in vegetation management can help mitigate these impacts to pollinators and enhance existing habitat. Implementing best management practices may also prevent species from ever being listed as threatened or endangered under the Endangered Species Act.

This guidance document provides best management practices (BMPs) that BPA's Environment, Fish and Wildlife program sponsors can incorporate into the design, maintenance, and implementation of projects funded by BPA. Careful design and implementation of projects can create, protect and enhance pollinator habitat, and benefit the entire ecosystem.[1]

Left to right: Pollinators on native wallflower; blue butterfly on wild onion; and beetles on native milkweed. Photos by Beth Belanger

Educate Field Staff (F&W Program Sponsors)

- Provide training on the importance of pollinators and their habitat.
- Build plant identification skills to recognize plants as beneficial or detrimental to pollinators.

Revegetate with Native Plants

- Use locally sourced native plants adapted to the local climate and ecosystem.
- Plant a mix of native shrubs and native flowering trees with a diversity of heights.
- Use native species already present in local plant communities to guide planting plans.
- Include nine or more flowering species to provide consecutive blooms throughout the growing season (three per blooming season: early-, mid- and late-season).
- Plant native species with various flower sizes, shapes, and colors to provide nectar and pollen for a diversity of pollinators.
- Plant species-specific host plants for butterflies in your area (e.g., milkweeds for monarchs)
- Include some native bunch grasses, rather than turf or sod-forming grasses, to provide habitat for pollinators and help resist weed invasions that out-compete native plants.
- Plant less than 50 percent cover of native bunch grasses to allow growth of forbs between grass clumps.
- Leave some areas with bare soil between plants and along unpaved roads so butterflies can access minerals, especially in wet areas.

[1] These BMPs were adapted for the BPA Fish and Wildlife Program using resources developed by the Xerces Society for Invertebrate Conservation.

DOE/BP-4974 • May 2020

Provide Overwintering and Nesting Habitat

- Provide nest-sites for ground-nesting bees by leaving small patches of exposed, well-drained bare soil (without mulch) in sunny locations.
- Plant native bunch grasses; some bees nest in vacant rodent burrows in grassy areas.
- Plant native shrubs and forbs with pithy or hollow stems, such as elderberry, and leave dead stems unpruned to provide nest sites for tunnel-nesting bees and wasps.
- Plant smooth-leaved shrubs, such as Nootka rose, to provide nesting material for leaf-cutter bees.

Manual and Mechanical Treatment of Invasive Plants[2]

- Use manual and mechanical treatments instead of herbicides where possible, as they are generally less harmful to pollinator species.
- Avoid mowing or removing floral resources when bees and butterflies are foraging.
- Mow as infrequently as possible, no more than twice during the growing season.
- Delay mowing until the fall, after the first frost, to avoid cutting native plant blooms.
- Leave unmown patches to serve as refugia for pollinators and other wildlife.
- Set mower height as high as possible, use a flushing bar, and mow from the center outward to allow pollinators and other wildlife to escape.
- Remove noxious shrubs using manual methods, such as with a weed wrench or lopper, before they flower and set seed.



Left to right: Bumblebee on native camas; bees on native golden rod; swallowtail on bare ground. Photos by Beth Belanger.

Chemical Treatment of Invasive Plants

- Ensure targeted use of herbicides at the appropriate time in order to reduce the amount and frequency of herbicide use and create safe habitat for pollinators.
- Do not treat highly specialized plants for pollinators which grow in hedgerows, ecotones, or transitions between habitat types, and ditch lines (e.g., milkweed for monarchs).
- Hand pull small infestations of invasive plants for selective and effective control.
- Cut or hand pull invasive plants before applying herbicides to increase efficacy, when possible.
- Choose selective herbicides and apply them in a targeted manner (e.g., spot-spraying, cut stump application).

[2] Invasive plants refers to noxious weeds and other undesirable vegetation that threatens regionally specific habitat targeted by management objectives

- Use the least hazardous herbicide formulation available: Granular formulations are generally the least hazardous to bees while dust, wettable powders, and microencapsulated formulations are the most hazardous to bees because they are similar to pollen and can stick to hairs on a bee's body.
- Avoid applying herbicides to invasive plants in bloom to avoid pollinator exposure; if application must occur when flowers are in bloom, mow or manually remove blooms before treatment.
- Avoid herbicide application during cool, damp periods or when dew is present because moist conditions can extend the period of toxicity.
- Treat or remove invasive plants before they set seed.

Prescribed Fire for Vegetation Management

- Use prescribed burns to increase flowering herbaceous vegetation.
- Build wood and slash piles outside areas of known pollinator activity and areas of high native plant diversity.
- Burn between October and February, when plants and pollinators are dormant; if not possible, burn in early morning or late evening when ground nesting pollinators are underground.
- Burn less than 1/3 of an area within each year to leave nearby refugia for pollinators.
- Burn a site once every 3 - 10 years or longer depending on the natural fire interval, burning small areas in a multi-year cycle.
- Avoid high-intensity fires by burning during periods of high humidity and limit burns in areas with high fuel loads.

Links to Additional Resources

- https://xerces.org/pollinator-resource-center
- https://plants.usda.gov/pollinators/NRCSdocuments.html
- https://www.fws.gov/pollinators/Index.html

Left to right: Blue butterfly on wetted ground; hummingbird on native red flowering currant; and common buckeye butterfly on green rabbitbrush. Photos by Beth Belanger and Israel Duran (middle)