

Supporting pollinators is a matter of providing food, breeding areas and shelter from the elements. Pollinators vary from the well-known butterflies and honey bees, to the lesser known bumble bees, flies, wasps, hummingbirds and beetles. Most restoration sites can provide habitat for a wide variety of pollinators by keeping the following elements in mind.

## Forage

Plant a variety of native flowering trees, shrubs and wildflowers throughout the site. Use plants which are indigenous to the area. Strive for a diversity of plants with a focus on consecutive bloom times. Consecutive bloom times provide forage for pollinators throughout the growing season. Plant clumps of the same species together rather than spreading them evenly throughout the site. Clumped plantings allow for more efficient foraging by pollinators. Consider flowering trees, shrubs and forbs when focusing on nectar and pollen producing plants. Diversity is key, aim for 2 or 3 different species that bloom at the same time, and aim to have nectar and pollen available from spring through fall.

## Breeding habitat

Pollinators have a wide variety of breeding strategies and need several types of habitat.

### Nest Sites

**Bare Ground:** Some species nest individually in bare ground in holes they dig themselves or in existing small cavities such as abandoned small mammal holes, under thick grasses, in brush piles or stone walls. Bare ground areas should be in sunny locations, and consist of well drained soils, and soils which have not been compacted. These do not need to be extensive areas. Small mammal nests and holes are often located under shrubs or trees or along the edges of streams or wetlands. While bare ground can be hard to maintain on a site, it is important to recognize that to provide habitat variety, 100% of the ground should not be covered with mulch or planted. It is O.K. to have patches of soil that is so sun exposed and well drained that plants can't survive there. Bare soil areas provide necessary habitat for some species.

- Provide a few starter holes in some of the bare ground areas using a soil auger dig some 6-8 inch deep holes. Holes should be dug at a slant to avoid water collection.

**Dead Wood:** Provide dead wood in the form of logs, branches and brush piles. Dead branches on trees and shrubs should be left in place to provide insect habitat. Shrubs like elderberry frequently have both live and dead stems, with the dead stems providing useful nesting habitat.

- Use small drill bits (3/32 , 1/8 or 1/4 inch) to drill some starter holes – 1- 2 inches deep in some of the dead wood on the site. Bee nesting sites can be constructed out of blocks of wood or stem bundles but they do require regular maintenance to prevent disease. Do not concentrate the holes, spread them over the log and across the site on other logs. For more information on how to construct native bee nests see: <http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>

**Plants:** A wide variety of plants provide suitable host plants for larvae. Many of the plants used in native restoration are used by pollinators as larval host plants. However, if there is a specific pollinator species that is identified for restoration, the species specific host plants should be provided on site. Suitable larval host plants should be planted in large patches and the patches should spread out throughout the site. Examples of larval host plants include Ceanothus, red alder, cascara, ocean spray; willows for swallowtails; large leaf avens and strawberry are used by checkered skippers; docks, smartweeds and knotweeds are used by purplish coppers; and ocean spray, spirea and red osier dogwood are used by the spring azure butterfly. Thus many plants on restoration sites can serve as larval host plants.

## Sheltering Habitat

The trees and shrubs on the site should provide shelter from the elements for pollinators. Leaving brush piles and dead wood on the site provides additional cover for all life stages.

## Habitat Management

- Mowing of forbs and grasses should be conducted in late fall to avoid impacting flowering plants.
- Use of herbicides should be minimized and limited to spot spraying or spraying of individual targeted plants. Pesticides should be avoided.
- Site should be left natural or “messy”. Dead wood should not be pruned from trees and shrubs. Brush piles and rock piles can be created on the site. As brush piles break down over time additional material should be added.
- Restoration sites should provide habitat diversity, either within the site or within a landscape context.