

Pollinator Habitat

Establishment Recommendations



Pollinator Planting; source: US Fish & Wildlife Service

Pollinator plantings are a great way to improve pollinator habitat and biodiversity. Planting native herbaceous and woody species that are beneficial to pollinators throughout the landscape will prove to not only be attractive to pollinators, but also aesthetically pleasing to the eye and attractive to many other species of wildlife.

Establishment of pollinator plantings can be difficult and requires the **Three Ps**.

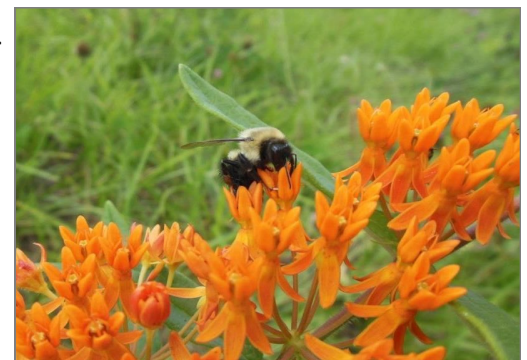
Planning: It is very important to plan ahead. Pollinator plantings require lots of thought on species and site selection, site preparation, planting, and maintenance.

Patience: Native plants are best for pollinator plantings, and most natives are not quick to establish and flower. It is important to be patient while native plants slowly emerge and set their deep roots to pull moisture and nutrients for the toughest growing conditions.

Persistence: Persistence will pay off. Weed control is one of the most challenging and important parts of establishing a successful pollinator planting. Be persistent with monitoring, weed (any undesirable plant) control, and care of your pollinator planting.

Pollinator planting establishment steps

No two pollinator projects are exactly the same. This is why detailed step-by-step planting instructions are hard to find. Pollinator plantings can range in size from a couple hundred square feet to a couple hundred acres. It is obvious that smaller projects will likely receive more care per unit of area, but the establishment steps are basically the same. Smaller projects (typically < 1 acre) are more conducive to more intense establishment methods, such as solarization, planting plugs, hand-pulling weeds, etc. These steps focus on planting native herbaceous plants, and it is important to consider planting native trees and shrubs attractive to pollinators nearby or in your planting for nest sites, pollen/nectar, and other needs.



Butterfly milkweed

These five pollinator planting establishment steps may not be specific to your project, but provide you with important details that will help you plan and implement your pollinator planting.



#1 Site selection: When selecting a site, it is best to consider all site conditions. Poor site selection can stack the deck against you before you plant the first seed. Be sure to consider the following conditions.

- Soil conditions: moisture , compaction, pH, fertility, slope (erosion potential), geographic location, previous pre-emergent herbicide applications
- Light/exposure: important for species selection
- Vegetative cover: current and historical vegetation on the site and adjacent to the site, invasive plant species present or nearby
- Surrounding land use: Avoid sites with adjacent land use (i.e. areas with heavy invasive weed populations) that may negatively impact your pollinator planting.

#2 Seed selection: Many mixes of native grasses and wildflowers are available from many different sources. Seed selection is not a step to be skimpy. Be sure to consider the following guidance when making your final selection.

- Select native species that are well adapted to the site conditions. Non-natives are more likely to out-compete native species. Natives are the best source of pollen and nectar and are better acclimated to local growing conditions.
- Grasses are an important part of the mix, but try not to exceed 25% grass. The higher the grass percentage, the quicker grasses will outcompete wildflowers. Native bunch-grass species (i.e. little bluestem & side oats grama) are well suited for pollinator plantings.
- Select native wildflower species that provide pollen and nectar-rich forage for pollinators. A minimum of 3 species for each bloom period (Spring, Summer, Fall) should be included. Important larval food plants for butterflies and moths should also be included (i.e. milkweed).
- Specify PLS (pure live seed) tested seed. Research PLS to further understand if needed.
- Budget enough for the seed. Get estimates and seed vendor references prior to making your final decision.
- A temporary nurse crop (i.e. oats, rye) may be beneficial to control weeds and appease public perception. Plantings in the first growing season are usually not very impressive to most because of slow top growth and weed pressure.



Monarch caterpillar foraging on C. milkweed

#3 Site Preparation: Site preparation is one of the most important and often inadequately addressed components for project success. Too often this step is rushed resulting in poor establishment along with weed control problems. It is very important to address this step with planning and patience. Site preparation steps depend on existing vegetation growing on the site. Sites with minimal weed pressure (i.e. cropland - soy bean stubble) usually requires less site prep (herbicide applications, mowing & time) than sites that are heavily vegetated with undesirable vegetation (i.e. old pasture with herbaceous and woody perennial plants).



Herbicide application with a boom sprayer



- ID & inventory weed species to be controlled. If site is mowed regularly, allow for 2-3 weeks of growth to ID & inventory.
- Control existing weeds via herbicide application. Tillage methods can be used but are not as effective as herbicide. Systemic contact herbicides (i.e. Round-up, active ingredient = glyphosate) are very effective at controlling most weeds. However, some weeds may be resistant to glyphosate and may require the use of specialty herbicides better suited for control. Sites with any undesirable woody vegetation require specialty herbicides and application to achieve control. When selecting herbicides for site prep, be sure to get professional advice and always follow the label.

The following steps are for sites primarily dominated with cool season grasses (i.e. lawn, pasture, hay land).

- Depending on when you start your project, the first herbicide application should take place in the fall (Sept./Oct.) or spring (April/May). Fall herbicide applications are usually most effective. If starting in the spring, monitor site 2-3 weeks after herbicide application to measure effectiveness of treatment. Monitor vegetation throughout the growing season, and apply herbicide again before weed species produce seed.
- Inventory vegetation late Sept./early Oct. to determine if a fall herbicide application is needed to control weeds. If so, apply herbicide in October prior to the first hard frost.
- Decide whether to plant pollinator mix in Nov./Dec. or following year. If it is likely that perennial weeds will be a problem in the spring, allow for 1 more herbicide application in April/May prior to planting.
- If applying herbicide April/May, determine whether to plant seed in the spring (2 weeks after herbicide application and before June 15th) or use the rest of the growing season to control weeds with herbicide application and plant in the fall. For small projects, you can utilize alternative methods to avoid the use of herbicides. A combination of tillage and solarization with UV-stabilized plastic may be used to kill weeds prior to planting in the fall.

#4 Planting: The most common seeding methods are broadcast or sowing seed with a drill. Pollinator seed mixes include seeds of many different sizes, shapes, and weight. The seed is commonly broken down into two groups, “fluffy” (mainly grasses) and “small” (mainly wildflowers) seed. This makes spreading the seed evenly across your project site very challenging if you don’t have the right equipment. Seed shall not be seeded any deeper than 1/4 inch.

Drill: Truax and Great Plains are two equipment manufacturers that make a no-till drill capable of sowing both fluffy and small seeds. This method requires minimal site prep and is very efficient and effective at seed placement and distribution. A tractor and operator is required, and it is best to calibrate the drill prior to planting.



Native grass drill

Broadcast: This method requires bare ground, which usually means tillage and leveling is needed to prep the site prior to planting. It is best to use a broadcaster that agitates the seed. However, most broadcast equipment does not mix or agitate the seed to achieve even seed distribution. So, care must be taken to broadcast fluffy seed separate from small seeds. A carrier (i.e. pelletized lime, gypsum, or other) may be added to help bulk up and spread the seed mix. It is best to press the seed into the soil with a cultipacker or roller to achieve good seed-to-soil contact. This step is not necessary if frost seeding (seeding onto frozen or snow covered soil). The freezing and thawing action will incorporate



UTV and broadcast seeder

the seed into the soil. If frost seeding, be sure there is a minimal amount of residue (< 30%) on top of the ground to allow good seed-to-soil contact.



#5 Maintenance: After the pollinator mix has been planted, it is critical to monitor and maintain the area frequently. The planting should be monitored at least 3 times (Spring, Summer, & Fall) during the growing season. Monitoring and maintenance is most critical the first 5 years. As the planting matures and the native plants dominate the area, maintenance needs will likely decrease. Identification and control of weeds is a critical component to success. Be sure to educate yourself by reading resource materials and attending pollinator habitat/native plant educational opportunities.

- First growing season: Keep weeds from maturing by mowing 8-10 inches before weed seed production starts (usually June/July). Another mowing will be necessary prior to Fall. Don't be concerned about mowing off some of the native plants the first year. If the mower is used on other sites, be sure to clean off the mower prior to mowing to avoid weed seed transfer to your project.
- Second growing season: Mow early in the Spring (March/April) to knock down growth from the previous year if needed. Spot mow and/or spray problem weeds.
- Third growing season and beyond: Spot mow and/or spray problem weeds.

Final Thoughts: Pollinator plantings are typically high cost and high maintenance for the first five years. If all the establishment recommendations are followed, maintenance need and expense should decrease as the native plants mature and dominate the stand. Be sure to practice the three P's and follow the steps to achieve success. Your hard work will pay off.



Monarch butterflies on swamp milkweed

Credits: This publication was produced by Ohio Pollinator Habitat Initiative (OPHI) partners referencing the following sources.

Information Sources: [Pollinator Meadow, Upper Midwest Installation Guide and Checklist](#); The Xerces Society, Center for Integrated Agricultural Systems, and The University of Wisconsin Madison; http://www.xerces.org/wp-content/uploads/2013/01/installGuideJobSheet_UpperMidwest_CnsrvCvr.pdf

Cardno—Cincinnati, Michael Adams; www.cardno.com



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