BOARD OF WATER AND SOIL RESOURCES

Pollinator Plan

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Minnesota Board of Water and Soil Resources
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Why Pollinator Populations and Habitat Restoration Matter

Each year native and domesticated bees pollinate around 30 percent of crops in the United States with a value of approximately $23 billion. They also pollinate around 70-80 percent of flowering plants in the Midwest, playing a key role in their seed production and the sustained ability of natural landscapes and conservation plantings to perform important environmental functions such as filtering stormwater, improving soil quality and providing wildlife habitat. Native bee populations that include more than 4,000 species in North America have declined in recent years due to habitat loss and pesticides use among other factors. At the same time, managed colonies of European honey bees have suffered colony losses in recent decades.

Lakeshore restoration in Carver County

The Minnesota Board of Water and Soil Resources (BWSR) is focused on targeted conservation of private lands that make up approximately 75% of Minnesota's landscape. Pollinators require clean water sources, pollen, nectar and nesting sites. These key habitat features are being protected and restored through BWSR programs and the efforts of BWSR partners that provide **wetland protection**, **conservation easements** (retirement of marginal agricultural lands), and **soil and water conservation grants**. The following information is a summary of primary BWSR program areas with pollinator benefits.

Restored wetland in Wright County

Wetland Protection

The primary goal of the Minnesota Wetland Conservation Act is to achieve no net loss in the quantity, quality, and biological diversity of Minnesota's 10.6 million acres of existing wetlands. This is accomplished through avoiding direct or indirect impacts from activities that destroy or diminish wetlands and replacing wetland values through restoring wetlands where avoidance of such activity is not feasible and prudent. These wetlands and their buffers provide important water, food and nesting sites for pollinators in addition to supporting a wide range of other insects.

Conservation Easements

BWSR's RIM program is focused on the acquisition and enhancement of critical habitat in the predominantly agricultural areas of the state. This program includes restoring wetlands, establishing riparian buffers, protecting sensitive ground water areas, planting critical winter cover for wildlife, preserving habitat for rare plant and animal species, protecting and restoring native prairie and grasslands, increasing pollinator habitat, and preserving spawning and reproduction areas for fish.

Soil and Water Conservation Grants

BWSR's soil and water conservation grant programs provide funding to local government units for the implementation of targeted conservation projects and practices. A wide variety of conservation practices provide important benefits to pollinators including tree planting, grass planting, prairie and wetland restoration, windbreaks/shelterbelts, grassed waterways, contour buffer strips, filter strips, riparian buffers, critical area planting and cover crops. These projects often provide important food and nesting sites for pollinators in agricultural areas. They also play a key role in supplying clean water sources for pollinators.

Soil and water conservation projects involve the planting of a wide range of woody and herbaceous plants that benefit pollinators

BWSR's Work to Date

Since its origin in 1987 the Minnesota Board of Water and Soil Resources has played a significant role in preserving and restoring pollinator habitat by protecting and restoring wetlands, retiring and restoring marginal agricultural land to native vegetation and through soil and water conservation grants and the planting of native vegetation to provide multiple landscape benefits. Nearly 300,000 acres have been protected/restored over the last twenty-six years.

Efforts to Restore and Protect Pollinator Habitat

- The Minnesota Wetland Conservation Act has been in place since 1991 and has significantly reduced the loss of wetland acres, protecting important pollen and nectar sources, clean water and nesting sites. Many of these wetlands are in important habitat corridors that provide a refuge from pollutants and landscape stressors. As part of wetland protection efforts, approximately 16,000 acres of mitigation wetlands have also been restored.
- The BWSR's RIM program has protected approximately 20,000 acres of high quality natural landscapes including native prairies, shallow lakes and diverse wetlands.
- BWSR's RIM program has restored approximately 230,000 acres of marginal farm land (or prevented CRP conversion to agriculture) over the last 28 years with a focus on key habitat complexes and corridors.
- Approximately 24,000 acres of grassland and 6,500 acres of trees and shrubs have been planted through soil and water conservation grants providing important pollinator habitat in agricultural areas.

Wetland complex in Washington County providing important pollinator habitat

RIM project planted with native wildflowers

Program Guidance

BWSR has policies in place requiring the use of diverse native vegetation for projects to benefit pollinators and provide a variety of landscape functions (carbon sequestration, soil microbial health, stormwater infiltration, etc.). The BWSR Native Vegetation Establishment and Enhancement Guidelines were developed to assist resource professionals and landowners in making informed decisions about the planting and maintenance of state funded restoration and conservation projects. The guidelines assist with plant selection and source considerations for seed and plant material across the state of Minnesota. Goals of the guidelines are to create consistency among state programs; to avoid the use of invasive species; protect remnant plant communities, and to ensure that plantings function at a high level and meet project goals. The guidelines will be updated periodically as new research and field experience becomes available.

Outreach

BWSR uses a variety of outreach strategies to reach a broad audience with different learning styles to promote and guide the establishment of pollinator habitat and other associated landscape functions.

BWSR has developed a pollinator Initiative and pollinator toolbox that is focused on: Increasing awareness about declining pollinator populations, supporting local government partners in enhancing pollinator habitat, and focusing outreach on how to incorporate pollinator habitat into all BWSR programs.

The BWSR "pollinator toolbox" and BWSR Native Vegetation Establishment and Enhancement Guidelines contain several pollinator resource that can also act as "stand alone" documents including a pollinator habitat fact sheet, and habitat assessment forms for urban and rural landscapes as well as for solar projects (see appendix B) developed to set criteria for solar developers to claim "pollinator habitat benefits for projects" (Minnesota DNR also has specific guidance for solar projects to guide solar developers). Other BWSR resources focus on project installation and maintenance guidance, seed mix recommendations, and a summary of state and federal programs that can be used for establishing pollinator habitat. The Minnesota Wetland Restoration Guide developed by BWSR also provides detailed information about methods to restore and maintain wetlands and uplands. Inter-seeding guidelines have also been developed to guide efforts to increase project floral diversity in plantings currently dominated with grasses. BWSR's "What's Working" webpage also summarized effective methods of restoring diverse plantings. New fact sheets have also been developed focused on maintaining roadside plant diversity and protecting conservation plantings from pesticides.

BWSR publishes featured plant articles each month to showcase species important for Conservation and has been focused on species important to pollinators since April of 2013.

Five to ten native vegetation/Plant ID workshops are presented each year covering the topics of functional benefits of native vegetation (including pollinator habitat), vegetation management, and plant identification, and the BWSR Academy is held each year and includes topics about native vegetation establishment and management.

Native Seed Mixes

In partnership with Mn/DOT and DNR, BWSR has developed twenty-seven state native seed mixes and around forty other "pilot" mixes have been developed that focus on accomplishing a variety of ecological functions while also providing pollinator habitat. In the original twenty-seven state seed mixes partners focused on including a high percentage of forb species for pollinators. These mixes are used by federal, state and local agencies as well as consultants, non-profits and private landowners. The mixes are purchased from private seed vendors around the state. The BWSR Native Vegetation Establishment and Enhancement Guidelines provide new guidance about the use of existing state seed mixes for pollinator projects.

Inter-agency Coordination

BWSR is working with other agencies through the Interagency Pollinator Protection Team to coordinate efforts between agencies and attain goals defined in the Governor's Executive Order, "Directing Steps to Reverse Pollinator Decline and Restore Pollinator Health in Minnesota". BWSR is also collaborating with the Governor's Committee on Pollinator Protection as well as several partners on grants focused on restoring pollinator habitat in Minnesota and studying how to be most effective with site selection and project design.

Grant/Information Links

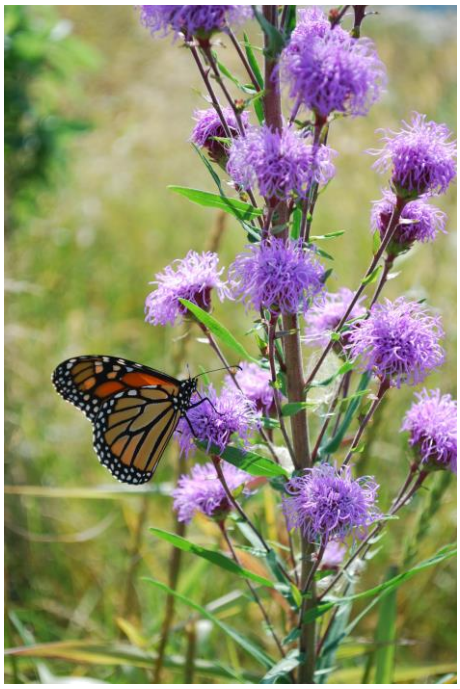
Wetland Protection (Administration of the Minnesota Wetland Conservation Act)
http://www.bwsr.state.mn.us/cs/index.html
Conservation Easements (Reinvest in Minnesota): http://www.bwsr.state.mn.us/easements/index.html; http://www.bwsr.state.mn.us/grants/RIM_services.html
Soil and Water Conservation Grants: http://www.bwsr.state.mn.us/cleanwaterfund/index.html; http://www.bwsr.state.mn.us/cs/index.html; http://www.bwsr.state.mn.us/cs/index.html; http://www.bwsr.state.mn.us/cs/index.html
Disaster Recovery Assistance: http://www.bwsr.state.mn.us/grants/DRAP.html

BWSR Action Steps for Pollinator Habitat Protection and Restoration

1) Incorporate pollinator habitat into BWSR programs.

- Continue Implementing BWSR's *Pollinator Initiative*, focused on
  - Increasing awareness about declining pollinator populations,
  - Supporting local government unit partners in enhancing pollinator habitat, and
  - Focusing on how to better incorporate pollinator habitat into BWSR programs.
- Increase outreach on the role of beneficial insects in pollinating 70-80 percent of flowering plants in the Midwest, leading to seed production and sustaining the ability of natural landscapes and conservation plantings to perform important environmental functions such as filtering stormwater, improving soil quality and providing wildlife habitat.

2) Update and maintain vegetation policies and guidance for local seed and plant source selection for conservation, as well as guidance for restoration planning and design.



- Update the BWSR *Native Vegetation Establishment and Enhancement Guidelines* in 2019 to assist resource professionals and landowners in making informed decisions about the planting and maintenance of state funded restoration and water quality projects. Goals of the guidelines are to create consistency among state programs; to avoid the use of invasive species; and to ensure that plantings function at a high level and meet project goals. Add updated information about palmer amaranth/noxious weed prevention methods.

3) Protect pollinator habitat through wetland protection and restoration.

- Work to achieve no net loss in the quantity, quality, and biological diversity of Minnesota's 10.6 million acres of existing wetlands that provide important pollinator habitat. This is accomplished by avoiding direct or indirect impacts from activities that destroy or diminish wetlands, and replacing wetland values through restoring wetlands where avoidance of such activity is not feasible and prudent. Wetlands, such as the 16,000 acres of mitigation wetlands currently restored, provide a refuge from pesticides and landscape stressors, as well as important water, food and nesting sites for pollinators.
- Guidance is provided in the *Minnesota Wetland Restoration Guide* about ways to enhance pollinator habitat as part of wetland restoration projects.
- State wetland seed mixes are under revision to further enhance pollinator benefits.

4) Incorporate pollinator habitat protection and restoration planning into conservation easement projects.

- Restore pollinator habitat through the Reinvest in Minnesota (RIM) program that is focused on the acquisition, restoration and enhancement of sensitive land and critical habitat that currently includes about 280,000 acres of easements. Through the CREP program partnership, an additional 60,000 acres will be restored through 2021, with a focus on restoring prairie and wetland on marginal agricultural lands. Diverse seed mixes are being used following BWSR's vegetation policy and there is an emphasis on including a high percentage of milkweeds for pollinators. Many of the projects also have native seedbanks that provide additional native flowers that benefit pollinators, such as mints, vervains and milkweeds. A new RIM program practice has been developed for establishing floral rich "pollinator plots" up to five acres in size.
- Increase the use of milkweed species in seed mixes and promote the new RIM program practice developed to establish floral rich "pollinator plots" up to five acres in size and allow for the strategic placement of pollinator habitat where it is protected from impacts.
- Further explore and implement innovative methods to enhance and manage easements to increase pollinator habitat using recent research from the Minnesota Bee Lab.
- Target habitat protection and restoration efforts on habitat complexes and corridors such as the Prairie Core Areas identified in the *Minnesota Prairie Conservation Plan* that can act as pollinator reserves or refuges to provide long-term pollinator protection and maximize plant community benefits.
- Promote a new fact sheet recently developed by BWSR and Xerces Society focusing on "Protecting Conservation Lands from Pesticides". Both organizations will be conducting additional outreach on this topic.
- Use diverse seed mixes following the BWSR *Native Vegetation Establishment and Enhancement Guidelines* and promote native seedbanks and natural colonization that provide additional native flowers to benefit pollinators.

5) Incorporate pollinator habitat into working lands agricultural conservation practices and farmsteads.

- Incorporate more pollinator habitat into agricultural conservation practices, such as prairie and wetland restoration, windbreaks/shelterbelts, contour buffer strips, filter strips, riparian buffers, critical area planting and cover crops. The approximately 24,000 acres of grassland and 6,500 acres of trees and shrubs that have been planted via soil and water conservation grants through 2016 provide important pollinator habitat in agricultural areas and also play a key role in supplying clean water sources for pollinators.
- Provide guidance in BWSR's *Buffer Establishment and Management Toolbox* on ways to incorporate pollinator habitat into buffer plantings, while protecting pollinators from pesticides.
- Promote no-till farming, perennial vegetation and cover crops (with a focus on flowering species) in agricultural areas to preserve nesting sites for pollinators and provide pollen and nectar sources, as well as to improve soil and water quality. BWSR's Working Lands Watershed Restoration Feasibility Study and Program Plan summarizes a variety of alternative planting options and BWSR's vegetation guidance for projects is being adjusted to be complementary to this report.
- Collaborate with partners to seek funding for pollinator habitat and management on rural lands, beyond what is provided by existing pollinator habitat programs. This focus was identified as a priority by the Governor's Committee on Pollinator Protection.

6) Incorporate pollinator habitat into existing turf areas and urban water quality projects.

- Continue refining and providing outreach on ways to incorporate pollinator habitat into urban water quality projects, such as raingardens, bioretention areas, stormwater ponds and impoundments. Conduct outreach through program policies and guidance, publications, and sharing information at workshops, and BWSR's ~~s~~ What's Working website.
- A new fact sheet will be completed at the beginning of 2019 about how to incorporate pollinator habitat into urban sites, while considering aesthetic needs.
- Collaborate with partners to seek funding for turf conversion and enhancement projects focused on replacing or enhancing turf with flowering habitat in urban, suburban, and rural non-agricultural lands, as identified as a priority by the Governors Committee on Pollinator Protection.
- Develop a brochure summarizing cost benefits of native plantings and pollinator lawns compared to traditional turf practices. This project will be a collaboration with the Metropolitan Council and Great River Greening.

7) Refine outreach and technical resources for pollinator habitat.

- Continue refining outreach documents, including BWSR's *Pollinator Toolbox*, *Native Vegetation Establishment and Enhancement Guidelines*, *Minnesota Wetland Restoration Guide*, *Guidelines for Inter-seeding to Restore or Enhance Native Species Diversity*, *What's Working* webpage, and pollinator habitat assessment forms for urban landscapes, rural landscapes and solar projects.
- Through collaboration with conservation partners, test BWSR's new pilot state seed mixes developed to incorporate pollinator habitat into a wide range of project types (buffers, impoundments, wetlands, stormwater ponds, bioenergy plantings, landfills, mine reclamation, etc.). These mixes have been developed in addition to the existing set of twenty-seven state seed mixes that were developed by BWSR, MnDOT and DNR for prairie, wetland and woodland restoration. These mixes are used by federal, state and local agencies as well as consultants, non-profits and private landowners.

- Conduct outreach on Guiding Principles to Maintain Plant Diversity Along Roadways using a new fact sheet developed by BWSR and Xerces Society.
- Provide more information about how to incorporate additional spring blooming species into projects and how to manage weeds in floral diverse plantings, as this can often be challenging and cause projects to fail or lose diversity.
- Further Promote BWSR public focused outreach documents including BWSR's brochure on "Protecting Minnesota's Pollinators", Fact Sheet on "How you Can Help Pollinators", and Featured Plant Articles that currently include seventy species for benefitting pollinators.
- Provide more detailed recommendations and updated seed mixes for benefit honeybees as we learn more about what plant species are most important to support populations. Also promote honey bee habitat as part of pollinator lawns and solar habitat projects.

8) Provide technical assistance and coordinate with partner agencies and researchers.

- Continue leading efforts to conduct mapping of "pollinator zones" in Minnesota that include refuge areas and priority areas for planting. Mapping has been completed for Washington Counties and Minneapolis, in partnership with Metro Blooms, the University of Minnesota Bee Lab, and many local partners.
- Following the Governor's Executive Order (16-07) on Pollinator protection, collaborate with the Interagency Pollinator Protection Team and the Governor's Pollinator Protection Committee to finalize the second statewide

report on pollinator goals and metrics and implement recommendations. Also, coordinate with other agencies to maximize statewide effectiveness of pollinator habitat protection and restoration efforts.

- As a member of the Monarch Joint Venture, collaborate with a wide range of partners about how to most effectively restore habitat for Monarch butterflies.
- Continue providing guidance to the Minnesota Pollution Control Agency and Dept. of Corrections about planning and implementing pollinator habitat on state-owned landfill and corrections sites. Monitor the success of recent plantings.
- Continue assisting the Minnesota Department of Administration with incorporating pollinator habitat on the State Capital grounds.
- Collaborate with a wide range of partners on grants to restore pollinator habitat in Minnesota and study how to be most effective with site selection, project design, and management to sustain diversity.
- Through BWSR's Habitat Friendly Solar Program, continue working with a wide range of partners to implement pollinator habitat on solar projects. Refine BWSR assessment forms (now being used as models in other states), as needed, and provide assistance to solar developers. Also pursue funding to have SWCDs or other conservation staff inspect the quality of solar sites to ensure that they continue meeting state standards.

9) Strive for program and project improvement to maximize pollinator benefits

- Partner on the state's Restoration Evaluation Program to assess the success of restoration efforts and identify trends and opportunities for improvements for program planning and project implementation.
- Update BWSR's *What's Working* webpage yearly to document successful conservation practices and restoration strategies involving pollinators.

Appendix A - Pollinator Fact Sheet

Restoring Pollinator Habitat

Guidance for State Funded Projects

Each year native and domesticated bees pollinate around 30% of crops in the United States with a value of approximately $23 billion. They also pollinate around 70-80 percent of flowering plants in the Midwest, playing a key role in their seed production. Native bee populations that include more than 4,000 species in North America have declined in recent years due to habitat loss and pesticides use among other factors. At the same time, managed colonies of European honey bees have suffered declines in recent decades.

Habitat complexes and corridors are important nesting and food sources for pollinators

While Honey Bees and Bumble Bees are the most commonly known pollinators, they only make up about 2% of bee species in Minnesota. The remaining species are solitary bees that do not live in colony systems like Honey or Bumble bees (with division of labor and cooperative rearing of young). Supporting native solitary bee habitat is important, as like honey bees, their populations are also in decline. Pay attention to the various pollinators and their habitat needs in the landscape to help protect and enhance their existing habitat.

Other pollinators of concern include Butterflies, moths, beetles, and native flies. Many of these pollinators have their own unique habits and needs, for example, many moths tend to pollinate white or dull colored blossoms that flower at night. Some plant species are dependent on others for the completion of their lifecycle, such as the Monarch butterflies dependence on milkweed, and the endangered Karner Blue butterflies need for Wild Lupine. By establishing native vegetation, one can support the intricate relationships foraged between native pollinators and native vegetation that keep both populations healthy.

Site Selection

Adequate food, shelter, and nesting sites are all needed to support healthy pollinator populations. The following are key considerations for site selection:

1) Look for areas away from pesticide and fungicide use, as well as areas that lack widespread disturbances that may impact pollinators.

2) Habitat complexes and corridors provide “safe zones” and natural passageways for pollinators, as well as nesting and forage sites, and sources of water.

3) Some bees have a relatively small flight distance and benefit from having water and food sources within 200 feet of nesting sites.

4) Ground nesting bees benefit from planting clump forming native grasses. Bees that nest in tree and stem cavities benefit from farm hedgerows, windbreaks and tree lines, as well as man-made nest structures.

Even smaller projects such as raingardens can provide important habitat

Achieving High Function

Seed mixes for pollinators should include at least fifteen species and have a high percentage of forbs (40-70% by seed count). Grasses are also important for community structure, nesting sites and to provide fuel for prescribed burning. Shorter grasses can benefit forb growth and pollinator use. It is recommended to include at least three flowering species in each bloom period so there is a continuous food source throughout the season (few early blooming species are typically included in mixes). It is also helpful to plant forbs in masses to make them easier for pollinators to find and to increase foraging efficiency. Including a wide range of flower colors and shapes will benefit a variety of pollinator species. In addition to herbaceous plants, flowering trees and shrubs can be an important source of pollen and nectar for pollinators, particularly early in the spring. Avoid clearing fallen or dead trees, as they help create nesting sites for a wide range of pollinators.

Key Plant Species

Plant species can be selected for projects to support specific insects, such as planting milkweed species for monarchs (and a variety of pollinators), lupine for Karner Blue Butterfly, or basswood for a variety of bee species. The following are key pollen and nectar sources for pollinators in the spring, summer and fall. Species should be selected that are native to the area and well adapted to site conditions.

Some widely-distributed native species beneficial for pollinators	
Spring Blooming	Downy yellow violet, golden Alexanders, long-bracted spiderwort, red columbine, Virginia waterleaf, wild geranium, large beardtongue, slender beardtongue, wild lupine*, Jacobs ladder*, Willows, Dogwoods, Viburnums, Juneberries, Plums, Cherries
Summer Blooming	Black-eyed Susan, blue giant hyssop*, blue lobelia, butterfly milkweed, Canada milkvetch, common milkweed, common yarrow, Culver's root, cup plant, hoary vervain, Joe-Pye weed, meadow blazing star, mountain mint, prairie coreopsis, purple prairie clover, rough blazing star, spotted Joe-Pye weed, stiff sunflower, swamp milkweed, wild bergamot
Fall Blooming	Bottle gentian, common boneset, common sunflower, heath aster, New England aster, panicled aster, showy goldenrod, silky aster, smooth aster, sneezeweed, stiff goldenrod
Grasse	Canada wild rye, Junegrass, little bluestem, plains oval sedge*, prairie dropseed*, side-oats grama

Source Recommendations

Local seed and plant sources are recommended for pollinator habitat projects to protect nearby native prairie populations and to provide plant species that are compatible with local insect populations. It is important that plants are purchased from nurseries that do not use insecticides as part of their production process.

Wild Bergamot is used by a wide range of native pollinators

Establishment

Thorough weed control is essential prior to establishing pollinator habitat. In many cases, projects are seeded into fields that were previously in soybeans or corn, as agricultural production can help ensure that weeds are sufficiently controlled. It is important that pesticides (such as neonicotinoids) that persist in the soil were not used prior to planting, as they can be taken up into plant tissues and affect pollinators. Individual pesticides should be investigated to determine their persistence in the soil. In residential yards it is recommended to cut away the sod prior to planting to remove weed roots and seed.

Cover crops such as oats or winter wheat can be used to stabilize sites if additional time is needed for pesticides to break down in the soil or to stabilize soils prior to the planned seeding date. Drill or broadcast seeding is often conducted in the fall to allow forbs to naturally stratify over winter and compete with grasses in the spring. Some forbs that are important for pollinators such as sneezeweed, Dutchman's breeches, bugleweed, wild bergamot, evening primrose, smooth blue aster, mountain mint and aromatic aster do not require pre-stratification and can be successful seeded in the spring. If broadcasting seed, rolling can be used afterward to help ensure good seed to soil contact and prevent the loss of seed from wind and birds.

Beyond bees, many other insects are useful pollinators like this sand wasp.

Maintenance

The maintenance of pollinator plantings can be challenging due to the high forb diversity and difficulty of removing weeds without harming native plants or pollinators. Key steps to the maintenance of pollinator plantings involve:

- Mowing annual and biennial weeds to 4-6 inches as needed during the first one to two years of establishment to provide sunlight and to decrease competition for seedlings.
- Hand pulling of weeds. This is often most effective after rainfall when weeds are easier to pull and is most practical for small areas.
- Prescribed burning to maintain diversity and to control woody species after establishment. Burning should only be conducted on 1/4-1/2 of large sites each year to minimize impact on insects and patchy burns are ideal to provide areas of refuge. Burns are often conducted in the fall or early spring to promote floral diversity and minimize impact to pollinators.

Early spring prescribed burn.

- Conservation grazing following grazing plans can be used to reduce the percent of cool-season grasses in conservation plantings and promote floral diversity.
- Biocontrol of invasive species may also be a long-term maintenance strategies to minimize herbicide use and control weeds. Biocontrols are available for leafy spurge, spotted knapweed, purple loosestrife and Canada thistle.
- When herbicides will be used for management it is important that target species (such as Canada thistle or wild parsnip) are not in bloom when they are sprayed and that spot herbicide application is conducted rather than broadcast spraying.

Information Sources

BWSR Pollinator Toolbox
Minnesota NRCS Pollinator Conservation Planning Documents
Pollinator Habitat Assessment Form and Guide
Upper Midwest Plants for Native Bees
Pollinators and Roadsides, Roadside Management for Bees and Butterflies
Pollinator Conservation in Minnesota and Wisconsin
Pollinators in Natural Areas
Protecting Bees from Neonicotinoids in Your Garden
Using Farm Bill Programs for Pollinator Conservation
Monarch Habitat Guidebook
Conserving Bumblebees

Appendix B – Solar Site Pollinator Habitat Assessment Form (website link)

BWSR

Solar Site Pollinator Habitat Assessment Form for Project Planning

For solar companies and local governments to meet pollinator/wildlife habitat certification

1. PERCENT OF PROPOSED SITE VEGETATION COVER TO BE DOMINATED BY WILDFLOWERS

- ☐ 31-45 % +5 points
- ☐ 46-60 % +10 points
- ☐ 61+ % +15 points

Total points ☐

Note: Projects may have "array" mixes and diverse border mixes; forb dominance should be averaged across the entire site. The dominance should be calculated from total numbers of forb seeds vs. grass seeds (from all seed mixes) to be planted.

2. PLANNED % OF SITE DOMINATED BY NATIVE SPECIES COVER

- ☐ 26-50% +5 points
- ☐ 51-75%. +10 points
- ☐ 76-100% +15 points

Total points ☐

3. PLANNED COVER DIVERSITY (# of species in seed mixes; numbers from upland and wetland mixes can be combined)

- ☐ 10-19 species +5 points
- ☐ 20-25 species +10 points
- ☐ 26 or more species +15 points

Total points ☐

Exclude invasives from species totals.

4. PLANNED SEASONS WITH AT LEAST 3 BLOOMING SPECIES PRESENT (check/add all that apply)

- ☐ Spring (April-May) +5 points
- ☐ Summer (June-August) +5 points
- ☐ Fall (September-October) +5 points

Total points ☐

See BWSR Pollinator Toolbox about bloom seasons

5. AVAILABLE HABITAT COMPONENTS WITHIN .25 MILES (check/add all that apply)

- ☐ Native bunch grasses for nesting +2 points
- ☐ Native trees/shrubs for nesting +2 points
- ☐ Clean, perennial water sources +2 points
- ☐ Created nesting feature/s (bee blocks, etc.) +2 points

Total points ☐

6. SITE PLANNING AND MANAGEMENT

- ☐ Detailed establishment and management plan developed (see example plan) with funding/ contract to implement +15 points
- ☐ Signage legible at forty or more feet stating pollinator friendly solar habitat (at least 1 every 20ac.) +5 points

Total points ☐

7. SEED MIXES

- ☐ Mixes are composed of at least 40 seeds per square foot +5 points
- ☐ All seed genetic origin within 175 miles of site (pg.7-8 of Guidance) +5 points
- ☐ At least 2% milkweed cover to be established from seed/plants +10 points

Total points ☐

8. INSECTICIDE RISK

- ☐ Planned on-site insecticide use or pre-planting seed/plant treatment (excluding buildings/ electrical boxes, etc.) -40 points
- ☐ Communication/registration with local chemical applicators about need to prevent drift from adjacent areas. +10 points

Total points ☐

Grand Total ☐

Provides Exceptional Habitat >85
Meets Pollinator Standards 70-84

Project Name: _____
Vegetation Consultant: _____
Project County: _____
Project Size: _____
Projected Seeding Date: _____

Send completed forms, project plans, seed mixes and any communication with pesticide applicators to dan.shaw@state.mn.us

Note: Measurements of percent "cover" should be based on "absolute cover" defined as the percent of the ground surface that is covered by a vertical projection of foliage as viewed from above. To measure cover diversity it is recommended to use plots, and/or transects in addition to meander searches for accurate measurements. Wildflowers in question 1 refer to "forbs" which are flowering plants that are not woody, and are not graminoids (grasses, sedges, etc) and can include introduced clovers and other non-native species beneficial to pollinators.

Appendix C – Fact Sheet, How You Can Help Pollinators (website link)

How You Can Help Pollinators

Guidance for using pollinator seed in Minnesota home landscapes

Each year, wild and domesticated bees pollinate around 30 percent of crops in the United States. These pollination services are worth approximately $23 billion. Bees also pollinate around 70 to 80 percent of native flowering plants in the Midwest, allowing the plants to produce seed and survive. More than 4,000 native bee species call North America home, but many of their numbers are declining, along with many types of butterflies and other insects. At the same time, colonies of European honey bees have also suffered significant annual losses. Habitat loss, pesticide use, and a variety of other factors contribute to the declines of these insects.

(Liatris ligulistylis)

You can establish plants for pollinators from seed or by planting bare-root or container-grown plants. Using seed mixes can be an economical and effective choice, but it is important to select species that will support native pollinator species and protect native plant communities. Only plant the contents of seed packets **in home gardens and not in public natural areas**. Here are some tips to help you choose a seed mix and plant your project successfully.

Native seed mixes play an important role in providing pollinator habitat in home landscapes

What should be in pollinator seed mixes?

- 40 to 60 percent wildflowers (by seed count) is recommended.
- Although native grasses are not a source of nectar, they provide pollinators with shelter and nesting habitat, serve as a food source for some butterfly larvae, and play an important role in supporting flowers and reducing weed competition.
- A mix of species that flower at different times in spring, summer, and fall provides pollinators with a continuous food source throughout the seasons.
- A wide range of bloom times and flower colors and shapes ensures that your garden benefits a variety of pollinator species.
- Finally, choose species native to the region where they will be planted and do not include invasive or noxious species

Native sneezeweed (Helenium autumnale) may have an unattractive name, but bumble bees love it!

Key pollinator plant species

You can select plant species to support specific insects. For example, if you want to help monarch butterflies, you will need to include milkweeds and high quality nectar plants like blazing stars. To support bumble bees, include plants like wild bergamot, blue giant hyssop, and goldenrods.

Some widely-distributed native herbaceous species for establishment in home gardens	
Spring Blooming	Downy yellow violet, golden Alexanders, long-bracted spiderwort, red columbine, Virginia waterleaf, wild geranium, large beardtongue, slender beardtongue, wild lupine*, Jacobs ladder*
Summer Blooming	Black-eyed Susan, blue giant hyssop*, blue lobelia, butterfly milkweed, Canada milkvetch, common milkweed, common yarrow, Culver's root, cup plant, hoary vervain, Joe-Pye weed, meadow blazing star, mountain mint, prairie coreopsis, purple prairie clover, rough blazing star, spotted Joe-Pye weed, stiff sunflower, swamp milkweed, wild bergamot
Fall Blooming	Bottle gentian, common boneset, common sunflower, heath aster, New England aster, panicled aster, showy goldenrod, silky aster, smooth aster, sneezeweed, stiff goldenrod
Grasses	Canada wild rye, Junegrass, little bluestem, plains oval sedge*, prairie dropseed*, side-oats grama
Some non-native annual species that are not invasive and are attractive to pollinators:	
basil, borage, coleus, crocus, daffodil, dahlia, dill, fuchsia, garden pansy, hyacinth, lavender, nasturtium, phacelia, pot marigold, salvia, sunflower, sweet pea, wild pansy, zinnia	

Note: Go to the Minnesota Wildflowers website: https://www.minnesotawildflowers.info/ to find scientific names of native species in this table. Some species have links in this document. Species with a * have a limited range in Minnesota.

Should I buy local seeds and plants?

We recommend locally produced native seeds and plants for pollinator habitat projects. Buying local helps protect nearby native plant communities and provides plant species that are sure to be compatible with local insect populations. The Xerces Society has resources, including Pollinator Friendly Plant lists for the Great Lakes Region, to guide your species selection. Another important consideration is finding a local native seed supplier whose production process avoids the use of pollinator-toxic pesticides.

What should be on a seed tag?

A complete seed tag should include the species in the seed mix (including scientific name), seed origin, species percentages by seed count, lot number, pack date, net weight, and the address of the company supplying the seed. Other useful information includes area of coverage and planting directions.

Seed Tag Example:

Planting instructions: Plant in spring or fall. Choose a sunny spot, remove existing growth, prepare a good seedbed, and scatter the seed evenly. Then compress the seed lightly into the soil, but do not cover. Water as needed throughout the first growing season. Covers 5 square feet.

This Pollinator Mix includes the following species:

Name	**Source**
10% Silky Aster(*Symphyotrichum sericeum*)	Martin Co. MN
15% Swamp Milkweed (*Asclepias incarnata*)	Chisago Co. MN
5% Black-Eyed Susan(*Rudbeckia hirta*)	Anoka Co. MN
15% Wild Bergamot (*Monarda fistulosa*)	Winona Co. MN
15% Golden Alexanders (*Zizia aurea*)	Winona Co. MN
20% Sideoats Grama(*Bouteloua curtipendula*)	Anoka Co. MN
20% Little Bluestem(*Schizachyrium scoparium*)	Stearns Co. MN

Lot No: MNLMDA1601
Packed for 2016, Net Wt. 400mg

Packet creation and seed provided by MN Wildflowers, Inc., 119 Loon Lake, MN 55155. Minnesota native plant species.

Seed establishment

Pollinator habitat can be planted in unused portions of yards, traditional perennial or annual beds, and even planters. Avoid pesticide use in areas where pollinator seeds are planted. Here are some keys to successful native plant establishment: For more details, see Xerces' Upper Midwest Pollinator Habitat Installation Guidelines:

- Control weeds before establishing pollinator habitat; this is especially important for perennial weeds.
- Pollinator seed mixes are often planted in **late fall** as many wildflower seeds benefit from exposure to winter conditions to help break seed dormancy. You can also plant seeds in April through June.
- Spread seeds on top of the soil surface and lightly rake them into the soil to achieve good soil contact. Be careful not to bury the tiny seeds very deep.
- Lightly pack the soil surface after you have spread the seed.

Pollinator Plant Resources: *Great Lakes Plants for Native Bees, Protecting Bees from Neonicotinoids in Your Garden, Great Lakes Monarch Nectar Plants, Conserving Bumblebees; BWSR Featured Plants, Attracting Native Pollinators: Protecting North America's Bees and Butterflies, Pollinator Friendly Gardening: Gardening for Bees, Butterflies, and Other Pollinators; Pollinators of Native Plants; Bees: An Identification and Native Plant Forage Guide; Garden Plants for Honey Bees;*