

Role of the Plant Materials Program in Creating and Improving Pollinator Habitat

USDA-Natural Resources Conservation Service
East Texas Plant Materials Center, Nacogdoches, Texas



Importance of Pollinators

Most pollinators (up to 200,000 species) are beneficial insects such as flies, beetles, wasps, ants, butterflies, moths, and bees.

- Worldwide, of the estimated 1,330 crop plants grown for food, beverages, fibers, condiments, spices, and medicines, approximately 1,000 (75%) are pollinated by animals.
- An estimated one-eighth to one-third of all foods and beverages is delivered by pollinators.
- More than half the world's diet of fats and oils comes from oilseed crops, of which cotton, oil palm, canola and sunflowers are pollinated by animals.
- In the U.S., pollination by insects produces nearly \$40 billion worth of products annually



“Insect and other animal pollinators that help American agriculture produce much of the food we eat are at risk due to habitat losses.....”

*Laurie Adams, Executive Director
CoEvolution Institute*



Pollinator Habitat Loss/Decline

- Urban Sprawl
- Invasive species
- Urban Sprawl
- Fragmented landscape
- Residential/commercial construction
- Pesticides/herbicides
- Agricultural practices
- Disease
- Others



Dalmatian toadflax



Kudzu

Pollinator Habitat Information

Pollinator Conservation Information Plants for Native Bees

Written by Matthew Shepherd, The Xerces Society

Native bees are a vital part of our environment. They ensure healthy wildflower communities and harvests of fruit and vegetables. Bees are suffering from the fragmentation and loss of their habitat and extensive use of pesticides.

Bees require two essential components in their habitat, somewhere to nest and flowers from which to gather nectar and pollen. Native plants are undoubtedly the best source of food for bees, because the plants and their pollinators have co-evolved. There are also some garden plants that are great for pollinators.

In many landscapes, flowers have been pushed to the margins, surviving on roadsides and field edges, as well as in wild areas and gardens. Providing patches of flowers is something that we all can do to improve our environment for these important insects. One of the great things about creating foraging habitat is that not only will it help bees (and other pollinators) but it also makes a beautiful place for people.



Flowers with areas provide good foraging for bees and other pollinators.

Choosing the Right Flowers

To help bees and other pollinators such as butterflies—yes, should provide a range of plants that will offer a succession of flowers, and thus pollen and nectar, through the whole growing season. Patches of foraging habitat can be created in many different locations. Some be known and school grounds in good covered city parks. Some a small area planted with good flowers will be beneficial for local bees, because each patch will add to the mosaic of habitat available to bees and other pollinators.

Native plants are usually best for native bees, and can be used in both wild areas and gardens. There are also many garden plants—particularly those of perennials and biennials—that are good sources of nectar or pollen. Together with native plants, these will make a garden attractive to both pollinators and people.

In such a short introduction, there is not possible to give detailed lists of suitable plants for all areas. On the back has a list of good bee plants, the list of native plants and the second of garden plants. These lists, combined

For complete information on bee-friendly plants, buy the *Pollinator Conservation Handbook* from the Xerces Society. The *Handbook* also has details of nesting sites and pupation and overwintering sites for bees, butterflies, flies, and beetles, and some education ideas. Contact us at the address on the back or visit our website www.xerces.org.

United States Department of Agriculture

Natural Resources Conservation Service

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Montana Native Plants for Pollinator-Friendly Plantings



Cover photo: Todd Anderson



Produced in cooperation with Missouri County Extension



U.S. Fish & Wildlife Service Pollinator Conservation and Education

Supporting pollinator conservation and education is important to the U.S. Fish and Wildlife Service (Service) because we are entrusted to protect certain pollinators and plants that rely on mutual pollination. Additionally, pollinator conservation and education are critical components of the Service's mission.

National Wildlife Refuge System: Conserving our lands and resources.
One of the mandates of the Refuge System Improvement Act is to ensure that the biological integrity, diversity, and environmental health of the system are maintained. Pollinators are vital to the ecological integrity of ecosystems and serve as indicators of environmental conditions. Therefore, fulfilling our statutory mandate requires that we recognize and incorporate the needs of pollinators into planning and management of refuges.

Threatened and Endangered Species: Achieving recovery and preventing extinctions.
At least 18 animals federally listed as endangered or threatened rely on a single pollinator. Currently, 123 species of flowering plants are federally listed as endangered or threatened. While we do not fully understand their pollinator relationships, more than 75 percent of all flowering plants are animal pollinated. Recovery may depend on ensuring the health of their pollinator partners because of the critical role these animals play in flowering plant reproduction. The Service is also responsible for wildlife trade control for several pollinators that are internationally traded, including certain bats, butterflies and hummingbirds.

Migratory Birds: Conservation and management.
Among the migratory birds that the Service is responsible for protecting, hummingbirds are wild-nature pollinators. Furthermore, many migratory birds feed on fruits, berries and seeds that come from animal-pollinated plants.

Connecting People with Nature: Ensuring the future of conservation.
Pollinators capture the interest of the public, especially children, because many are attractive and familiar, particularly those found in suburban backyards and urban gardens. They are vitally important to the human food supply with estimates that pollinators contribute to one in every three bites of food we eat. Providing an interest in pollinators helps connect people with nature. A greater understanding of pollinators, their plant partners, and the importance of healthy habitats to their survival increases the public's appreciation for the resources the Service is responsible for conserving.



Photo: Scott Brinkman

Landscape Conservation: Working with others.
Habitat loss is believed to be responsible for the decline of many pollinators. To address these and other threats to pollinators, the Service partners with the North American Pollinator Protection Campaign (NAPPC). NAPPC is an international collaboration of people from over 100 private, government, university and nonprofit organizations working together to encourage the health of resident and migratory pollinating animals in North America. The Service has a Memorandum of Understanding with the Conservation Institute, the nonprofit administrator of NAPPC. NAPPC tasks forum and partners prepare many tools (e.g., posters, fact sheets, brochures, activities) that the Service can use in education and outreach programs.

Who is the Service Pollinator Work Group?
The Service Pollinator Work Group is a cross-agency group of designated staff who work to integrate pollinator conservation into Service activities using existing authorities. Some examples include:

- Make education and outreach materials about pollinators available.
- Promote use of pollinator-friendly native plants in habitat restoration plantings.
- Work with others to protect migration corridors used by migratory pollinators, such as bats and hummingbirds.
- Provide expertise on power line and wind tower placements to minimize impacts to pollinators.
- Advocate for reduced pesticide use by using an integrated pest management approach.

For more information, please contact:
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<http://www.fws.gov/pollinator/>



Continued >

AGROFORESTRY NOTES August 2008

Agroforestry: Sustaining Native Bee Habitat For Crop Pollination

Over one hundred crop species in North America require a visit from at least one bee to be most productive. In the past, native bees and field honey bees could cover the pollination needs of most orchards, berries and pumpkins fields, and berry patches. Because these bees were typically reduced to areas of habitat that harbored important pollinators. Today, many farms are large and, at the same time, have less nearby habitat to support native pollinators. To ensure adequate pollination services, producers may rely on European honey bees. Research, however, shows that native bees can be superior pollinators in agricultural fields as long as enough habitat is available.

Whether growing a hedge or windbreak, arranging a riparian buffer, or fencing new forests, agroforestry practices can increase the overall diversity of plants and physical structure in a landscape and, as a result, provide habitat for native pollinators. This is especially true if consideration is given to the specific habitat needs of bees when designing an agroforestry project. For example, a wide variety of flowering trees and shrubs can be incorporated into a landscape, or a diverse understory of insect-pollinated plants can be used to acquire a species-rich flowering specific area for nectar can also provide habitat for pollinators, which honey and maple, for example, supply structural diversity and an excellent landscape that



Windbreaks reduce wind speed and provide more favorable conditions for bee activity, which can increase crop pollination and yield. USDA National Agroforestry Center file photo.



- Crops pollinated by native bees:
- Alfalfa
 - Apples
 - Arroz
 - Berries
 - Cattle
 - Cherries
 - Chickpeas
 - Corn
 - Cucumbers
 - Grapes
 - Melons
 - Peas
 - Peppers
 - Pumpkins
 - Soybeans
 - Sunflower seeds
 - Tomatoes
 - Vegetable seeds
 - Watermelons

Native plants are key to pollinator habitat development and enhancement

Why Native Plants?

- Involved in evolution of pollinators
- Food
- Shelter
- Reproduction
- Better adapted to growing conditions
- Less maintenance and care



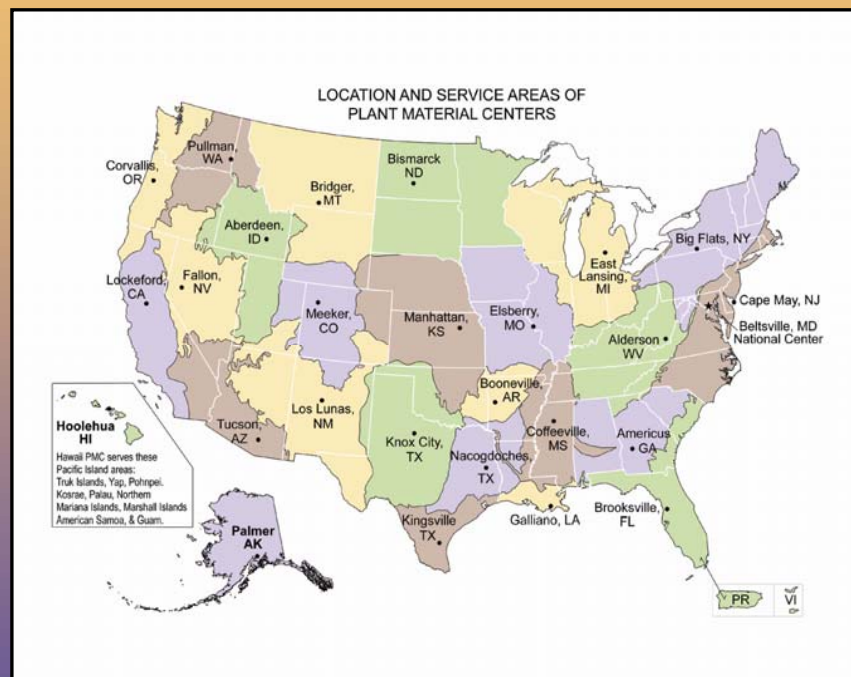
Native Plant Resource

USDA - Natural Resources Conservation Service, Plant Materials Program

Select plants and develops plant science technology for use in resource conservation and environmental programs

> 70 years experience in collecting, evaluating, selecting, producing and releasing native plants for conservation

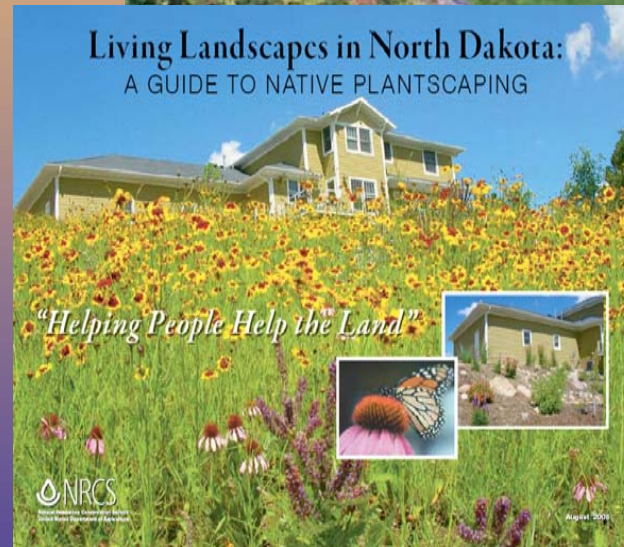
Emphasis is on selecting and promoting native plants as an environmentally safe, friendly, and healthy way to address resource conservation problems



27 Plant Materials Centers serving all 50 states and territories.

Plant Technology

- > 600 plant releases
- Plant guides
- "How to Guides" and technical references
- Technical specialists



117,000 document downloads per month

Plant Information

<http://plant-materials.nrcs.usda.gov/>

The screenshot shows the NRCS Plant Materials Program homepage. The header includes the NRCS logo and navigation links like 'Plant Materials Home', 'About Us', 'News', 'Centers', 'Plant Releases', 'Technical Resources', 'Publications', and 'Contact Us'. A search bar is located at the top left. The main content area features a 'Special Feature' titled 'Plants for Pollinators' with an image of butterflies and a text box explaining the importance of pollinators. Below this is a section titled 'Across America - See what other Plant Materials Centers are doing.' with a sub-section 'CONSERVATION... Our Purpose, Our Passion.' and an image of a field. A sidebar on the left contains 'Quick Access' links and 'Find a Service Center' options.

This screenshot displays the 'Plant Materials Centers and Service Areas' page. It features a map of the United States with colored regions representing different service areas. A red arrow points from the map to the 'East Texas Plant Materials Center' in the southeastern United States. The page includes a search bar, a list of centers with their locations, and a note about Hawaii PWC serving Pacific Basin Islands.

A collage of documents from the East Texas Plant Materials Center. It includes an 'Information Sheet' for May 2004, a 'Plant Fact Sheet' for 'EASTERN PURPLE CONEFLOWER', and a document titled 'Crockett hercaceous mimosa select germplasm'. The documents contain text, images of plants, and logos for NRCS and the USDA.

- About the Center
- Research
- Staff
- Plant Releases
- Publications
- Photo Gallery

The screenshot shows the website for the East Texas Plant Materials Center. The header includes the NRCS logo and navigation links. The main content area features a 'Special Features' section with a photo of a field and text describing the center's research and conservation efforts. A red arrow points from the 'About the Center' item in the list to this section. The page also includes contact information and a search bar.

Plants Database Center

<http://plants.usda.gov/>

- Profiles for 43,000 plants
- Images/Photos
- Distribution & Attributes
- Legal status-Noxious/T&E
- Conservation traits
- Plant guides & fact sheets
- Wetland indicator status

The screenshot shows the main interface of the Plants Database Center. At the top, it features the USDA logo and the text 'United States Department of Agriculture' and 'Natural Resources Conservation Service'. Below this is a navigation bar with links for 'Home', 'About PLANTS', 'Team', 'Partners', 'What's New', 'NPOC', 'Help', and 'Contact Us'. A search box is prominently displayed on the left, with options for 'Name Search', 'State Search', 'Advanced Search', and 'Search Help'. The main content area is divided into several sections: 'PLANTS Topics' with a list of categories like 'Alternative Crops' and 'Invasive and Noxious Weeds'; 'Plant of the Week' featuring 'Smooth cordgrass'; 'Spotlight' with a map of the United States; 'New Gymnosperm Key and Grass Keys for All 50 States'; 'Traditional Ecological Knowledge: new Technical Note'; 'Submit Your Digital Images'; and 'Web Site Modernization'. A sidebar on the right contains sections for 'I Want To...' and 'I Want Help...'. The footer includes the text 'Last Modified: 06/09/2006'.

This screenshot shows a detailed profile for a plant. It includes a title, a list of 'PLANTS Profile' details, a photograph of the plant in its natural habitat, and a list of 'Related Images' with small thumbnail photos. The layout is clean and organized, providing comprehensive information about the specific plant species.

This screenshot displays the 'National Plant Data Center Product Catalog'. It features a vertical column of colorful flower images on the left. To the right, the text reads 'National Plant Data Center Product Catalog' and 'http://plants.usda.gov'. The design is simple and visually appealing, highlighting the variety of plants available in the database.

18,000,000+ hits per month

Questions?



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