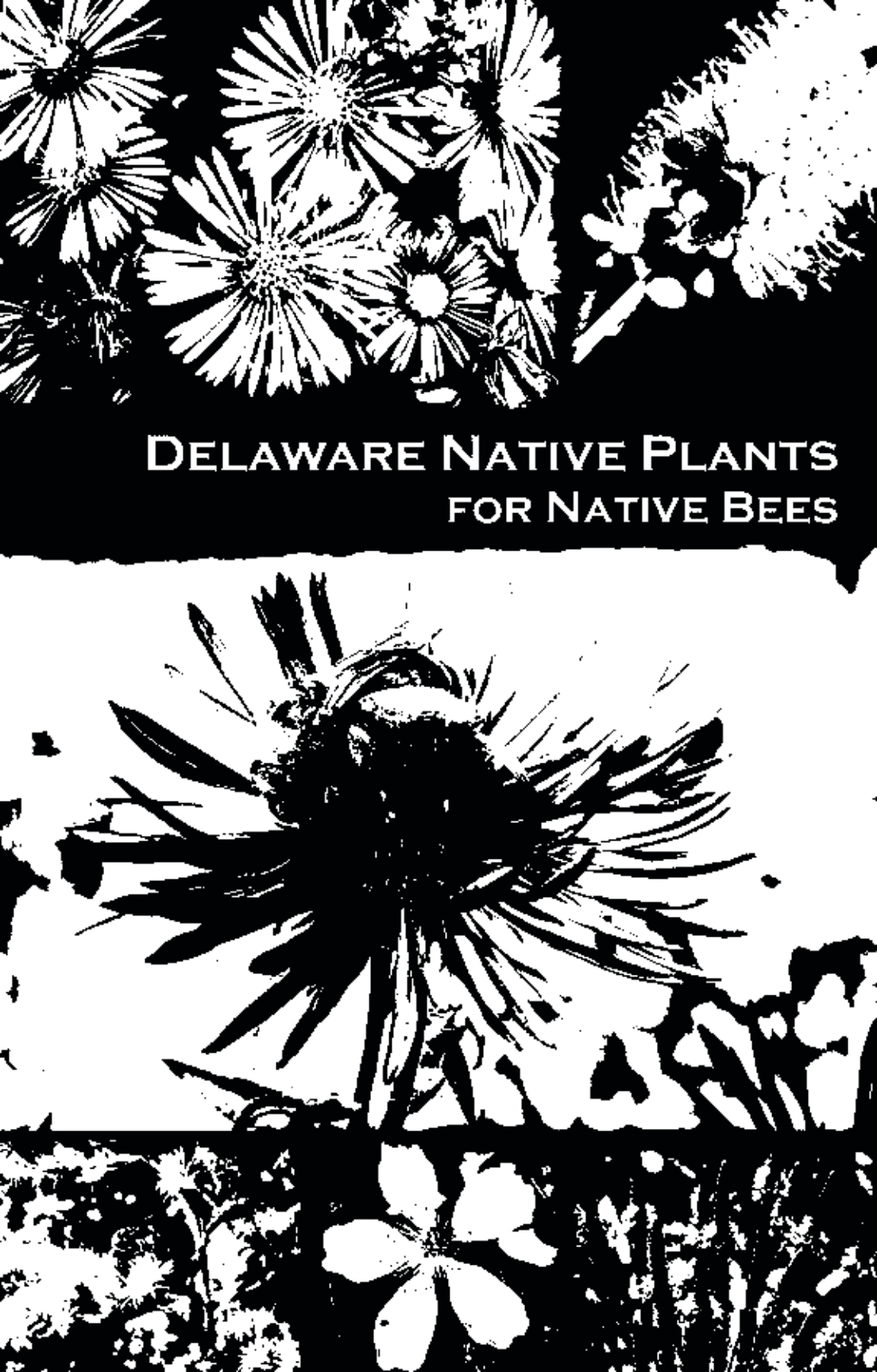
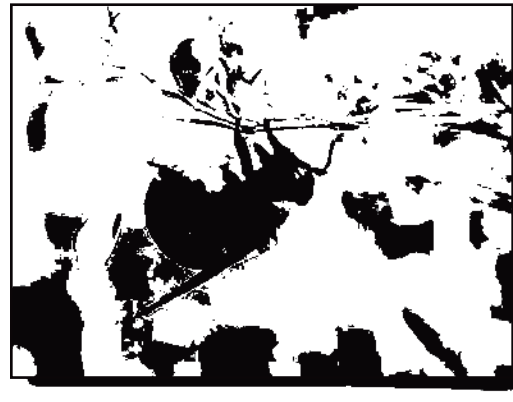


Delaware Native Plants
for Native Bees

Why Plant for Native Bees?

The term “native bee” refers to any of a large and diverse group of wild bees that are indigenous to North America. There are some 4,000 species of native bees north of Mexico, around 200 of which have been found in Delaware. Native bees are a vital component of natural ecosystems, providing pollination services to countless species of wild trees, shrubs and flowers.



In addition to wild plants, bees pollinate over 100 crop species in North America. Populations of managed European honey bees have declined in recent years due to mites and diseases. While honey bees are still very important pollinators, native bees can provide “pollination insurance” during times when honey bees are not available. Recent studies in New Jersey and Pennsylvania have shown that native bees alone provide sufficient pollination for most watermelon farms. Native bees are extremely efficient pollinators of pumpkins, tomatoes, apples, berries, and many other crops.

Bees benefit from patches of native flowering plants on farms, in home gardens, and in public spaces. Adult bees drink nectar and gather pollen to provide food for their young. A supply of pollen- and nectar-rich plants available throughout the growing season will help maintain large, healthy native bee populations. Farmers, gardeners and land managers can help by establishing plantings of native herbaceous or woody vegetation.

In addition to supporting native bee populations, these plantings can also provide food for natural enemies of crop pests (such as predatory bugs and beetles, parasitic wasps, etc.). Many perennial herbaceous and woody plants also provide valuable cover and food for other types of wildlife, including game birds, song birds, and mammals. Permanent native plantings stabilize soil and help prevent erosion. Woody plantings can serve as windbreaks, reducing the effects of high wind on soils and crops, or they may be planted as shelterbelts to protect farmsteads.

How to Plant for Native Bees

Choosing Plants



Flowers of different shapes attract bees with different tongue lengths. This sweat bee has a relatively short tongue, and can reach nectar more easily in open flowers than in tubular flowers.

The purpose of this guide is to help you choose plants that are attractive to native bees. There are several important factors to consider when selecting plants.

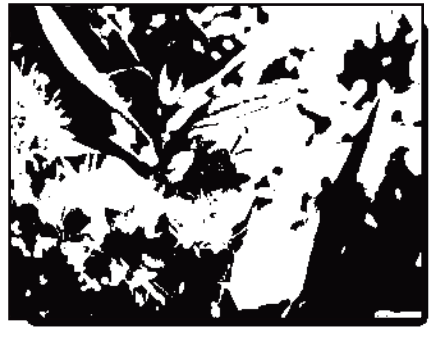
1. **Timing:** Choose a variety of plants that bloom at different times of the year, so that pollinators have access to a source of food from early in the spring to late in the fall (see the chart on pages 14-15).
2. **Diversity:** Choose plants with a variety of floral shapes and colors to appeal to different species of both short-tongued and long-tongued bees.
3. **Origin:** Select native plants whenever possible, and definitely avoid invasive alien species.
4. **Ecotype:** Whenever possible, buy seed or plants from a nursery that sells local ecotypes (plants propagated from seed or stock originally collected in the area you plan to plant, rather than in another region of the country). This helps ensure that the plants you use are adapted to the local climate and growing conditions.
5. **Annual vs. Perennial:** Native perennials are less likely than annuals to become weedy, and they are easier to maintain, since they don't need to be reseeded.
6. **Hybrids:** Avoid planting hybrid flower varieties or those that have been bred for showy or "double" blossoms, as these often lack the pollen and nectar rewards of the parent species.

Many native herbaceous plants are available as seed. A commercial seed mix containing desirable species may be used, or better yet, a custom seed mix can be designed to include any number of species. Herbaceous plants can also be grown from rooted plugs, and these will flower more quickly (within 1-2 years versus 3-5 years from seeds). Woody plants grown from containerized seedlings will have much better success than those started from seed or bare root seedlings.

While it is useful to read about native plants, there is no substitute for getting out into the fields and woods to study them in person. As you learn more about each plant, its habitats, and its pollinators and other insect associates, you will be able to apply that knowledge to your own native plantings.

Designing a Planting

Bee forage plantings should ideally be located near nesting habitat provided by woodlots, thickets, areas of well-drained untilled ground, or fallow fields. If the site is on a farm, locate plantings within flight distance (several hundred feet) of crops requiring insect pollination. While small plantings are beneficial, larger areas of forage habitat will support larger populations of native bees. However, larger plantings require more work to maintain, so plan the size of your planting based on the time and equipment available.



Long-horned bee, *Melissodes druriella*, gathering goldenrod pollen.

It is important to know your soil characteristics. Have the soil in your planting site tested for organic

content and pH, and be sure you are familiar with the type of soil and degree of soil moisture. Analyze the planting site, taking into account the degree of sun exposure, and any tendency for the site to flood or become excessively dry. Measure your planting area and draw a plan to aid in calculating the right amount of seed. If you will be planting containerized woody seedlings or rooted plugs of herbaceous species, calculate plant spacing and estimate the number of plants needed.

An easy way to establish a native meadow is to plant a mix of native warm-season grasses and bee-friendly wildflowers. Consult references and speak with your seed supplier to determine your desired ratio of wildflower to grass seed in the mix.

Establishing a Planting

If you are establishing a new wildflower planting on fallow ground, you should begin by eliminating all competing vegetation in the area you wish to plant. This can be done by mowing or burning, followed by one or more applications of glyphosate herbicide prior to planting. Make sure litter and thatch is cleanly removed before spraying so that the herbicide reaches the vegetation. Cultivating is an alternative approach, particularly if a crop has been growing on the site. After cultivating, the soil should be firmed by cultipacking to create good seed to soil contact. Fertilizers are not needed and tend to favor rapid growth of non-native weeds, rather than successful establishment of the native planting.

Seeding should take place either in late fall or in the spring. A no-till drill can be used to plant native grass and wildflower seed, and can often be rented or borrowed from local conservation districts or local chapters of Quail Unlimited or Pheasants Forever. Broadcast seeding may be used, but larger amounts of seed are typically needed to achieve the same results.

If you already have a number of desirable native species present that you don't wish to eliminate, it might be possible to add additional wildflower species into the existing vegetation by either 1) strategically planting rooted plugs or 2) burning or mowing the area, overseeding with the desired species, then mowing periodically during the first season to promote germination of the new seed.

To establish a hedgerow or clump of woody shrubs or trees, complete vegetation control is not necessary, but competing vegetation immediately surrounding the planting site of each tree should be mowed or sprayed prior to planting. Tree tube shelters secured to stakes should be used to protect seedlings from herbicides and mowing, rodent damage, and deer browse. Weed suppression mats may be installed around each plant, or periodic mowing or spraying of competing vegetation may be substituted.

For establishment of native species in wetlands and wetland edges, special care is required. To avoid toxicity to aquatic life and contamination of ground water, be sure to use only those herbicides specifically approved for wetland use. To minimize soil compaction, avoid driving equipment through areas that are too wet. These sites may be better suited for broadcast seeding or hand planting of plugs, bareroot, or containerized stock. Control of invasive species such as Common Reed (*Phragmites australis*) should be completed before planting.

Maintaining a Planting

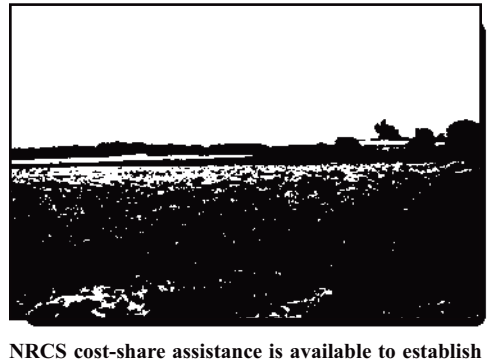
If plantings are properly established in the fall, watering should not be necessary during the subsequent growing season. Spring plantings can be susceptible to drought however, and may need to be watered regularly (every 1-2 weeks) during the first year until the plants are well established. It is necessary to mow herbaceous plantings to a height of 6-8" several times during the first growing season with the blades set high, to remove the tops of the weeds that will inevitably grow faster than the desired perennials. If weeds continue to present problems, they may be controlled by mowing or spot-spraying with herbicides during the first 2 to 3 years of establishment. Long-term maintenance of herbaceous native plant communities can be accomplished by periodic disturbance such as discing, burning, or dormant season mowing.

In some areas, deer can cause significant problems. Many of the plants listed in this guide are unpalatable to deer, but depending on local conditions, even these species may be browsed. While it is expensive, fencing may be the best control method in areas with high deer populations. Treating newly planted shrubs and trees with deer repellents may help protect them while they are becoming established. For woody plantings, tree tubes should be checked and maintained on a regular basis to prevent deer and rodent damage. Replace broken or loose stakes and ties and check tubes for contact with the soil, since gaps can result from winter frost heave and allow access to rodents.

Financial Assistance

There are many federal, state, and private programs available that can provide financial assistance to landowners for planting native plant species as part of conservation practices. Most of these practices can be adapted to benefit bees and other pollinators by choosing plant species such as those listed in this booklet. NRCS conservation cost-share programs such as the Environmental Quality Incentives Program (EQIP) and the Wildlife Habitat Incentives Program (WHIP) can help agricultural producers with the establishment of native species plantings. Some of the NRCS cost-share practices that can be adapted for bees include:

Field border planting
Filter strip planting
Hedgerow planting
Shallow-water wetland creation
Wetland restoration
Critical area planting
Riparian herbaceous cover development
Early successional habitat development
Riparian forest buffer planting
Upland wildlife habitat management
Wetland wildlife habitat management



NRCS cost-share assistance is available to establish plantings for bees.

Contacts for NRCS are listed at the end of this booklet. Ask about how you can incorporate plantings for native bees into NRCS projects. The Delaware DNREC private lands biologist can assist you with finding public and private cost-share assistance for conservation projects. Delaware Department of Agriculture staff members are available to help you design bee habitat enhancements on your farm.

About the Plant List

The following list includes 39 species of Delaware native plants that provide pollen, nectar, and in some cases, nesting sites, to native bees. The plants included in this list were selected based on the following criteria:

1. Native to the state of Delaware

2. Known to be visited by a variety of native bees

3. Commercially available or, if availability is limited, then a good bee plant that is likely to be present in fallow areas of many farms

4. Historical or current occurrence on the Delaware coastal plain, or if limited to the piedmont, then the plant is thought to be an especially good bee plant and is widely available commercially

Many excellent native bee plants are not listed here, because they either do not meet the criteria above, or because they are represented in the list by other members of the same genus. Groups such as Asters, Goldenrods, Joe-pye Weeds, Sunflowers, Willows, and Hawthorns include many more species than can be listed here. While this list is a good starting point, it is worth experimenting with other native species as well, especially those that may already grow on your farm. Keep in mind that the insect visitors to many native plant species are only poorly known, and often what is known is drawn from very old publications and from different parts of the country. The flower preferences of bees and other flower-visiting insects may vary from region to region. Further research is needed to determine what specific combinations of native plants are best suited for augmenting populations of crop pollinating bees and natural enemies of crop pests on farms in our area.

Attractiveness: The relative attractiveness of a plant to **Bees**, and the list of bee **Types Attracted** to each plant are based on a variety of published and unpublished records, and includes only non-parasitic bees (those that collect their own pollen from crops and wild plants). These lists are not exhaustive, but are meant to summarize the available information. In addition, the relative attractiveness of a plant to **Natural Enemies** of crop pests is given when available. This information is based on published records of floral visitation by natural enemies, notably the work of Doug Landis and colleagues in Michigan (see More Information on page 23). Specific natural enemy groups known to use each plant are mentioned in the **Notes** section. For the scientific names of the insect groups listed, see the table on page 22.

Plant **Growth** requirements are compiled from several sources, including the NRCS Plants Database. **Bloom** times are typically those given by Robert Tatnall in his 1946 *Flora of Delaware and the Eastern Shore*. **Natural habitat** descriptions are from the 2001 *Flora of Delaware: an annotated checklist*, by McAvoy and Bennett. The letter codes after the habitat description indicate where the plant is found in the wild (**P** = Piedmont, **C** = Coastal Plain). **Commercial availability** is based primarily on the plant lists of the regional nurseries listed on page 25.



Swamp Milkweed
Asclepias incarnata
Perennial Forb
Bloom: Pink, Jun - Aug
Height: 4 - 6 ft.

Attractiveness
Bees: Good
Natural Enemies: Good
Types attracted: Bumble bees, large carpenter bees, long-horned bees, plasterer bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam
Soil pH: 5.0 – 8.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Marshes, wet meadows (P, C)

Notes
Grows well in low meadows, pond and marsh edges. Like most milkweeds, it is not preferred by deer. Natural enemies attracted include: lacewings; lady and soldier beetles; dance, long-legged, and tachinid flies, parasitic and predatory wasps, and minute pirate bugs.

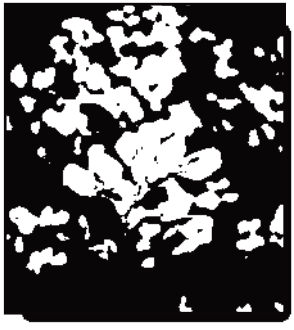


Common Milkweed
Asclepias syriaca
Perennial Forb
Bloom: Pale Purple, Jun - Jul
Height: 3.5 - 6 ft.

Attractiveness
Bees: Good
Natural Enemies: Limited data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, plasterer bees, sweat bees

Growth
Light: Full Sun
Moisture: Dry
Soil Type: Loam, Sand
Soil pH: 5.1 – 7.5
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Old fields, thickets, roadsides (P, C)

Notes
While sometimes considered an agricultural weed, this deer-resistant plant is nevertheless a valuable pollinator plant, visited primarily by bumble bees and large wasps. It provides a good mid-summer nectar source, and also hosts hover flies and tachinid flies. Milkweeds are the caterpillar host plants for the Monarch butterfly, *Danaus plexippus*.



Yellow Wild Indigo
Baptisia tinctoria
Perennial Legume
Bloom: Yellow, Jun - Jul
Height: 1 - 3 ft.

Attractiveness
Bees: Good
Natural Enemies: No data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry
Soil Type: Loam, Sand
Soil pH: 5.8 – 7.0
Propagation: Seed, Plug
Availability: Moderate
Natural habitat:
Dry sandy soils (P, C)

Notes
This legume is drought-tolerant and does well even in poor, dry soils. It is visited by a variety of mostly long-tongued bees, and is a host-plant for caterpillars of the Wild Indigo Duskywing, the Io Moth, and the rare Frosted Elfin.



Partridge Pea
Chamaecrista fasciculata
Annual Legume
Bloom: Yellow, Jul - Sep
Height: 0.5 - 3 ft.

Attractiveness
Bees: Moderate
Natural Enemies: Good
Types attracted:
Bumble bees, large carpenter bees, leaf-cutter bees, long-horned bees, sweat bees

Growth
Light: Full Sun
Moisture: Dry
Soil Type: Sandy
Soil pH: 5.5 – 7.5
Propagation: Seed
Availability: Moderate
Natural habitat:
Roadsides, old fields (P, C)

Notes
An excellent soil builder that establishes rapidly and provides erosion control and nitrogen fixation for slower-growing perennial forbs. The showy flowers are pollinated primarily by bumblebees, while short-tongued bees, predatory wasps, hover flies, and tachinid flies suck nectar from glands on the leaf petioles.



Three-nerved Joe-Pye Weed
Eupatorium dubium
Perennial Forb
Bloom: Whitish Purple, Aug - Sep
Height: 2 - 5 ft.

Attractiveness
Bees: No data
Natural Enemies: No data
Types attracted: No data

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Sand
Soil pH: 4.5 – 6.5
Propagation: Plug
Availability: Moderate
Natural habitat:
Swamps, stream banks, wet meadows (P, C)

Notes
An attractive species that does well in coastal plain sites, and provides a good source of late summer nectar and pollen. There are few published records of floral visitors to the plant, but other purple *Eupatorium* species are visited by bumble bees, large carpenter bees, leaf-cutter bees, long-horned bees, and small carpenter bees.



Common Boneset
Eupatorium perfoliatum
Perennial Forb
Bloom: White, Aug - Sep
Height: 3 - 5 ft.

Attractiveness
Bees: Good
Natural Enemies: Excellent
Types attracted: Bumble bees, digger bees, leaf-cutter bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 6.5 – 7.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Swales, wet meadows, marshes (P, C)

Notes
Attracts good numbers of bees and large numbers of natural enemies, including minute pirate bugs, predatory plant bugs, hover flies, tachinid flies, lady and soldier beetles, and predatory and parasitic wasps. This is an excellent choice for ditches, pond edges and other wet areas.

Herbaceous Plants



Wild Strawberry

Fragaria virginiana
Perennial Forb
Bloom: White, Apr - May
Height: 3 - 8 in.

Attractiveness
Bees: Good
Natural Enemies: Good
Types attracted: Mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Loam, Sand
Soil pH: 5.1 – 7.8
Propagation: Plug, Containerized Stock
Availability: Limited
Natural habitat:
Moist woods, meadows, fields, roadsides (P, C)

Notes
A good early season bee plant, especially attractive to mining bees of the genus *Andrena*, a wide variety of sweat bees, and hover flies. Despite its small, edible berries, which are also consumed by at least 25 species of eastern birds, this plant is not widely available commercially.



Giant Sunflower

Helianthus giganteus
Perennial Forb
Bloom: Yellow, Aug - Sep
Height: 3 - 10 ft.

Attractiveness
Bees: Moderate
Natural Enemies: No data
Types attracted: Bumble bees, large carpenter bees, leaf-cutter bees, long-horned bees, mining bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 5.5 – 7.5
Propagation: Seed
Availability: Moderate
Natural habitat:
Wet meadows, tidal marshes (P, C)

Notes
The flowers are visited primarily by long-tongued bees, but the data is sparse. A related Midwestern species attracts parasitic wasps, minute pirate bugs, and other natural enemies. The seeds of sunflowers are one of the most favored wild bird foods and are widely consumed by dozens of species.



Ox-eye Sunflower

Heliopsis helianthoides
Perennial Forb
Bloom: Yellow, Jul - Sep
Height: 3 - 6 ft

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, mining bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Loam, Sand
Soil pH: : 6.0 – 7.5
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Thickets and meadows (P, C)

Notes
The flowers bloom for a lengthy period during midsummer, attracting a variety of bees, as well as hover flies, soldier beetles, and predatory plant bugs. The species is easy to grow in a wide range of well-drained soils.



Round-head Bush-clover
Lespedeza capitata
Perennial Legume
Bloom: White, Aug – Sep
Height: 2 - 4 ft.

Attractiveness
Bees: Moderate
Natural Enemies: No data
Types attracted: Bumble bees, leaf-cutter bees, mining bees, sweat bees

Growth
Light: Full Sun
Moisture: Dry
Soil Type: Loam, Sand
Soil pH: : 6 .0 – 8.0
Propagation: Seed
Availability: Moderate
Natural habitat:
Dry sandy soils (P, C)

Notes
This drought-tolerant legume is relatively easy to grow, though it can be susceptible to damage from mammal browsing. The seeds provide food for upland game birds and songbirds. It is a hostplant for the Eastern Tailed-Blue and Gray Hairstreak butterflies.



Dense Blazing-star
Liatris spicata
Perennial Forb
Bloom: Purple, Aug - Sep
Height: 2 - 5 ft.

Attractiveness
Bees: Limited data
Natural Enemies:
Limited data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 5.6 – 7.5
Propagation: Seed, Plug
Availability: Moderate
Natural habitat:
Fields and roadsides (P, C)

Notes
The stock sold by many nurseries is of Midwestern, rather than eastern, origin. This plant is visited primarily by long-tongued bees, but species records are few. Natural enemies attracted include hover flies and soldier beetles. *L. graminifolia* is more common in the wild in Delaware but is seldom available commercially.



Great Blue Lobelia
Lobelia siphilitica
Perennial Forb
Bloom: Blue, Aug - Sep
Height: 2 - 3 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Excellent
Types attracted: Bumble bees, digger bees, long-horned bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: : 6.5 – 7.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Wet meadows, stream banks, swamps (P)

Notes
This deer-resistant perennial is found naturally along streams in the piedmont, but may be difficult to grow on the coastal plain without soil amendments. It attracts numerous bees, as well as minute pirate bugs, predatory plant bugs, parasitic and predatory wasps, lady beetles, and soldier beetles.



Wild Blue Lupine

Lupinus perennis
Perennial Legume
Bloom: Purple, May - Jun
Height: 1 - 2 ft.

Attractiveness
Bees: Excellent
Natural Enemies:
Limited data
Types attracted: Bumble bees, digger bees, large carpenter bees, leaf-cutter bees, long-horned bees, mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry
Soil Type: Sand
Soil pH: : 6.1 – 7.5
Propagation: Seed, Plug
Availability: Moderate
Natural habitat:
Dry, sandy soils (C)

Notes
While this showy, deer-resistant species is available from native plant suppliers, it is difficult to find stock of a true eastern ecotype. It is a superb bee plant for dry, sandy soils, also visited by hover flies and predatory wasps.



Wild Bergamot

Monarda fistulosa
Perennial Forb
Bloom: Pale Pink, Aug - Sep
Height: 2 - 5 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, digger bees, large carpenter bees, leaf-cutter bees, long-horned bees, mason bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam
Soil pH: 6.0 – 8.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Dry open soils (P)

Notes
While only long-tongued bees can reach the nectar at the bottom of the flower tubes, some short-tongued bees also drink at holes made in the flower by nectar-stealing wasps. Predatory and parasitic wasps, hover flies, and soldier beetles also visit the flowers. This deer-resistant species is rare in Delaware in the piedmont, and may need soil amendments if grown on the coastal plain.



Spotted Horsemint

Monarda punctata
Perennial Forb
Bloom: Yellow/Pink,
Jul - Aug
Height: 2 - 3.5 ft.

Attractiveness
Bees: Good
Natural Enemies: Excellent
Types attracted: Bumble bees, digger bees, large carpenter bees, leaf-cutter bees, long-horned bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun
Moisture: Dry
Soil Type: Sand
Soil pH: : 5.0 – 7.5
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Sandy soils, old fields, roadsides (C)

Notes
Highly attractive to bees as well as to natural enemies, such as minute pirate bugs, predatory plant bugs, soldier beetles, and parasitic wasps. Adapted to dry, sandy habitats, the species is extremely drought tolerant.

Herbaceous Plants



Tall White Beard-tongue
Penstemon digitalis
Perennial Forb
Bloom: White, Jun
Height: 2 - 4 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, digger bees, large carpenter bees, leaf-cutter bees, long-horned bees, mason bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 5.5 – 7.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Meadows, roadsides (P, C)

Notes
A relatively easy-to-grow, deer-resistant plant. Penstemons are especially important pollen sources for some species of mason bees. Hover flies are also known to visit this species.



Black-eyed Susan
Rudbeckia hirta
Perennial Forb
Bloom: Yellow, Jun - Jul
Height: 1 - 3 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Good
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, mining bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam
Soil pH: : 5.0 – 7.5
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Old fields, roadsides, edges (P, C)

Notes
A widely available, deer-resistant wildflower with showy yellow blossoms, it is easy to grow from seed in a wide range of soils. Attracts natural enemies, including predatory plant bugs, lady beetles, hover flies, tachinid flies, and predatory and parasitic wasps.



Canada Goldenrod
Solidago canadensis
Perennial Forb
Bloom: Yellow, Sep - Oct
Height: 3 - 6 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Excellent
Types attracted: Bumble bees, large carpenter bees, leaf-cutter bees, long-horned bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 4.8 – 7.5
Propagation: Seed
Availability: Moderate
Natural habitat:
Old fields, roadsides, edges (P, C)

Notes
A deer-resistant, widely distributed goldenrod that attracts a tremendous diversity of bees. Natural enemies attracted include predatory plant bugs, hover flies, tachinid flies, lady and soldier beetles, and predatory and parasitic wasps.



Early Goldenrod

Solidago juncea
Perennial Forb
Bloom: Yellow, Jul - Sep
Height: 3 - 4 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Good
Types attracted: Bumble-bees, leaf-cutter bees, long-horned bees, mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Sand
Soil pH: 5.0 – 7.5
Propagation: Seed
Availability: Moderate
Natural habitat:
Thin woods and edges, old fields (P, C)

Notes
The first goldenrod to bloom in late summer, this deer-resistant species is highly attractive to bees. Also attracted are hover flies, tachinid flies, lady beetles, and predatory and parasitic wasps.



New England Aster

Symphyotrichum novae-angliae
Perennial Forb
Bloom: Purple, Aug - Sep
Height: 2 - 6 ft.

Attractiveness
Bees: Good
Natural Enemies: Excellent
Types attracted: Bumble bees, large carpenter bees, leaf-cutter bees, long-horned bees, mining bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist
Soil Type: Loam
Soil pH: 5.5 – 7.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Marshes, wet meadows (P, C)

Notes
Like many other asters, attracts good numbers of bees and high numbers of natural enemies, including minute pirate bugs, dance flies, hover flies, lady beetles and parasitic wasps. It grows well in areas that are moist, but not too wet, and is resistant to deer browse.



Hairy Heath Aster

Symphyotrichum pilosum
Perennial Forb
Bloom: White, Sep - Oct
Height: 2 - 5 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Excellent
Types attracted: Bumble-bees, leaf-cutter bees, long-horned bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 5.4 – 7.0
Propagation: Seed
Availability: Limited
Natural habitat:
Fields, open woods, roadsides (P, C)

Notes
Establishes rapidly on disturbed sites and fallow fields. The numerous small white flowers are visited by a multitude of bee and hover fly species. This species is not widely available commercially (seed is sometimes available), but two varieties (var. *pilosum* and var. *demotus*) are common in Delaware. Also attracts tachinid flies, soldier beetles, and predatory and parasitic wasps.



Blue Vervain

Verbena hastata
Perennial Forb
Bloom: Purple, Jun - Aug
Height: 2 - 5 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, mining bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 6.0 – 7.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Wet meadows, ditches (P, C)

Notes
This deer-resistant plant grows best in moist soils that are not too acidic. Natural enemies attracted include tachinid flies. The small seeds are eaten by songbirds, including cardinals and several species of sparrow.



New York Ironweed

Vernonia noveboracensis
Perennial Forb
Bloom: Purple, Aug – Sep
Height: 3 - 7 ft.

Attractiveness
Bees: Good
Natural Enemies: No data
Types attracted: Bumble bees, long-horned bees, and others

Growth
Light: Full Sun
Moisture: Wet to Moist
Soil Type: Loam
Soil pH: 4.5 – 8.0
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Wet meadows, marshes, swales (P, C)

Notes
While there is limited information available on the bees that visit this species, related species of *Vernonia* in the Midwest are visited by a variety of long-tongued bees, including bumble bees, leaf-cutter bees, long-horned bees, and small carpenter bees.



Golden Alexanders

Zizia aurea
Perennial Forb
Bloom: Yellow, Apr - Jun
Height: 1 - 3 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Excellent
Types attracted: Bumble bees, long-horned bees, mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 4.0 – 6.5
Propagation: Seed, Plug
Availability: Good
Natural habitat:
Moist rich woods and floodplains (P)

Notes
One of the best early season herbaceous bee plants. It occurs naturally in Delaware in moist, rich soils on the piedmont, but may be difficult to grow on the coastal plain without soil amendments. Also attracts minute pirate bugs, predatory plant bugs; dance, tachinid and hover flies; lady and soldier beetles; and predatory and parasitic wasps.

Flowering Periods of Delaware Native Bee Plants

Common Name	Scientifc Name	Mar	Apr
Black Willow	*Salix nigra*		
Red Maple	*Acer rubrum*		
Canadian Serviceberry	*Amelanchier canadensis*		
Highbush Blueberry	*Vaccinium corymbosum*		
Wild Strawberry	*Fragaria virginiana*		
American Wild Plum	*Prunus americana*		
Golden Alexanders	*Zizia aurea*		
Black Raspberry	*Rubus occidentalis*		
Blackhaw	*Viburnum prunifolium*		
Wild Blue Lupine	*Lupinus perennis*		
Cockspur Hawthorn	*Crataegus crus-galli*		
Blackgum	*Nyssa sylvatica*		
Black Cherry	*Prunus serotina*		
Northern Dewberry	*Rubus flagellaris*		
Tall White Beard-tongue	*Penstemon digitalis*		
Silky Dogwood	*Cornus amomum*		
Common Milkweed	*Asclepias syriaca*		
Yellow Wild Indigo	*Baptisia tinctoria*		
Swamp Milkweed	*Asclepias incarnata*		
Black-eyed Susan	*Rudbeckia hirta*		
Blue Vervain	*Verbena hastata*		
Buttonbush	*Cephalanthus occidentalis*		
Wild Bergamot	*Monarda fistulosa*		
Winged Sumac	*Rhus copallinum*		
Ox-eye Sunflower	*Heliopsis helianthoides*		
Partridge Pea	*Chamaecrista fasciculata*		
Sweet Pepperbush	*Clethra alnifolia*		
Early Goldenrod	*Solidago juncea*		
New York Ironweed	*Vernonia noveboracensis*		
Spotted Horsemint	*Monarda punctata*		
Great Blue Lobelia	*Lobelia siphilitica*		
Three-nerved Joe-pye Weed	*Eupatorium dubium*		
Giant Sunflower	*Helianthus giganteus*		
Dense Blazing-star	*Liatris spicata*		
Common Boneset	*Eupatorium perfoliatum*		
Round-head Bush-clover	*Lespedeza capitata*		
Canada Goldenrod	*Solidago canadensis*		
New England Aster	*Symphyotrichum novae-angliae*		
Hairy Heath Aster	*Symphyotrichum pilosum*		

May	Jun	Jul	Aug	Sep	Oct

Note:

Tree and shrub flowering times are shown in green.

Wildflower flowering times are shown in yellow.



Red Maple
Acer rubrum
Bloom: Red, Mar - Apr
Height: 60 - 100 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted:
Mason bees, mining bees, plasterer bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 5.4 – 7.1
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Forests and low ground (P, C)

Notes
This fast-growing tree is known for its brilliant red fall foliage. Although it is wind-pollinated, the profuse early season flowers present nectar for bees at a time when few other plants are blooming. Hover flies are also known to visit the flowers.



Canadian Serviceberry
Amelanchier canadensis
Shrub
Bloom: White, Apr - May
Height: 15 - 25 ft.

Attractiveness
Bees: Excellent
Natural Enemies:
Limited data
Types attracted: Mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 5.6 – 7.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Moist woods, fields, edges (C)

Notes
Also called shadbush, this deer-resistant shrub is a highly attractive pollen source for early spring mining bees and sweat bees. Natural enemies attracted include hover flies and tachinid flies. The fruits of *Amelanchier* species provide food for at least 25 species of eastern birds and numerous mammals.



Buttonbush
Cephalanthus occidentalis
Shrub
Bloom: White, Jul - Aug
Height: 6 - 12 ft.

Attractiveness
Bees: Moderate
Natural Enemies: Good
Types attracted: Bumble bees, digger bees, leaf-cutter bees, long-horned bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 6.1 – 8.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Coastal plain ponds, marshes, wet meadows (P, C)

Notes
The unusual spherical flower heads are visited most frequently by bumble bees and leaf-cutter bees that can reach the abundant nectar deep inside the tubular flower. Minute pirate bugs, dance flies, hover flies and parasitic wasps are also attracted. The plant needs plenty of moisture to thrive, and can tolerate complete flooding, often forming thickets at the edge of ponds and wetlands.



Sweet Pepperbush
Clethra alnifolia
Shrub
Bloom: White, Jul - Sep
Height: 6 - 10 ft.

Attractiveness
Bees: Excellent
Natural Enemies: No data
Types attracted: Bumble bees, large carpenter bees, leaf-cutter bees, sweat bees

Growth
Light: Part Shade to Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 4.5 – 7.0
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Swamps (C)

Notes
This deer-resistant shrub attracts large numbers of insects. Published records of bee species are few, but the plant produces ample nectar. Grows well in wet places and has attractive yellow fall foliage. The fruits are attractive to birds.



Silky Dogwood
Cornus amomum
Shrub
Bloom: White, Jun – Jul
Height: 6 - 10 ft.

Attractiveness
Bees: Excellent
Natural Enemies:
Limited data
Types attracted: Bumble bees, large carpenter bees, leaf-cutter bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 5.0 – 7.0
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Swamps, wet meadows, marshes (P, C)

Notes
The best available bee records for this species are from *Cornus obliqua,* formerly considered a subspecies of C. *amomum*. As many as 20 species of bees have been collected on C. *obliqua* in a single day, and it is probable that C. *amomum* is similarly attractive. Hover flies, tachinid flies, and predatory wasps are also visitors.



Cockspur Hawthorn
Crataegus crus-galli
Shrub
Bloom: White, May - Jun
Height: 20 - 30 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, mining bees, plasterer bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: : 4.5 – 7.2
Propagation: Containerized Seedling
Availability: Moderate
Natural habitat:
Thickets, old fields, low ground, floodplains (P, C)

Notes
Hawthorns attract a number of spring-flying mining bees and sweat bees, as well as dance flies, hover flies, and predatory wasps. The thorny tree is not preferred by deer, and will grow in a wide range of soil types. Hawthorn thickets provide excellent nesting cover for a variety of songbirds.



Blackgum
Nyssa sylvatica
Tree
Bloom: Green, May - Jun
Height: 60 - 80 ft.

Attractiveness
Bees: Moderate
Natural Enemies: No data
Types attracted: Bumble bees, leaf-cutter bees, mining bees, plasterer bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 4.5 – 6.0
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Woods (P, C)

Notes
A survey of the insects visiting blackgum blossoms in Maryland found 46 bee species. The tree is moderately palatable to deer and is favored as an ornamental for its brilliant orange-red autumn color.



American Wild Plum
Prunus americana
Shrub
Bloom: White, Apr - May
Height: 10 - 30 ft.

Attractiveness
Bees: Excellent
Natural Enemies:
Limited data
Types attracted: Bumble bees, long-horned bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Loam, Sand
Soil pH: 5.0 – 7.0
Propagation: Containerized Seedling
Availability: Moderate
Natural habitat:
Thickets, meadows, open woods (P, C)

Notes
Attractive to spring mining bees and sweat bees, as well as dance flies, hover flies, tachinid flies, and predatory and parasitic wasps. The fruits are eaten by many birds, including quail, pheasant, robins, and woodpeckers.



Black Cherry
Prunus serotina
Tree
Bloom: White, May – Jun
Height: 50 - 80 ft.

Attractiveness
Bees: Good
Natural Enemies:
Limited data
Types attracted: Bumble bees, long-horned bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun
Moisture: Dry to Moist
Soil Type: Loam
Soil pH: 5.0 – 7.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Woods, edges, old fields (P, C)

Notes
A valuable timber tree, and one of the foremost wildlife trees in the eastern U.S. It attracts a number of bee species, as well as dance flies, hover flies, and predatory wasps. The fruits are eaten by numerous birds and mammals; and while the palatability of the foliage to deer is low to moderate, some 200 species of butterflies and moths feed on the tree.



Winged Sumac
Rhus copallinum
Shrub
Bloom: Yellow, Jul – Aug
Height: 10 - 25 ft.

Attractiveness
Bees: Moderate
Natural Enemies:
Limited data
Types attracted: Leaf-cutter bees, long-horned bees, plasterer bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry
Soil Type: Clay, Loam, Sand
Soil pH: 5.3 – 7.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Thickets, old fields, edges (P, C)

Notes
One of the most common shrubs along field margins on the coastal plain, this species is often abundant enough to provide significant bee forage for sweat bees, the primary visitors. All sumacs are extremely good nesting sites for stem-nesting bees. Also attracts hover flies, tachinid flies, and predatory wasps.



Northern Dewberry
Rubus flagellaris
Woody vine
Bloom: White, May - Jun
Height: 2 - 3 ft.

Attractiveness
Bees: Good
Natural Enemies: No data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Dry to Moist
Soil Type: Clay, Loam, Sand
Soil pH: 5.0 – 7.0
Propagation: Bareroot, Containerized Seedling, Root Cuttings
Availability: Limited
Natural habitat:
Dry open soils (P, C)

Notes
The berries, though small, are edible, and are also eaten by a wide variety of game birds, song birds, and mammals. The species is difficult to find commercially, but is common in the wild. All wild blackberries, dewberries, and raspberries (genus *Rubus*) are valuable bee plants and should be encouraged on the farm.



Black Raspberry
Rubus occidentalis
Shrub
Bloom: White, May
Height: 5 - 6 ft

Attractiveness
Bees: Moderate
Natural Enemies:
No data
Types attracted: Bumble bees, leaf-cutter bees, long-horned bees, mason bees, mining bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist
Soil Type: Loam
Soil pH: 5.2 – 7.5
Propagation: Containerized Seedling, Bareroot
Availability: Moderate
Natural habitat:
Thickets, old fields, edges (P, C)

Notes
Many stem-nesting bee species build nests in the canes of this and other *Rubus* species. They hollow out the soft pith and build chambers in which to lay their eggs. Black Raspberry is one of many eastern brambles that are excellent insect and wildlife plants.



Black Willow
Salix nigra
Tree
Bloom: Yellow-green, Mar - Apr
Height: 40 - 60 ft.

Attractiveness
Bees: Excellent
Natural Enemies: No data
Types attracted: Bumble bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 4.8 – 8.0
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Marshes, wet meadows, ditches (P, C)

Notes
Early season mining bees and sweat bees depend on willow pollen as a major food source. The tree is also very attractive to dance, hover, and tachinid flies, and hosts a surprising diversity of butterfly and moth caterpillars. Other species of willows are also valuable, but Black Willow is readily available and does well in most any wet site. Deer palatability is low to moderate.



Highbush Blueberry
Vaccinum corymbosum
Shrub
Bloom: White, Apr - May
Height: 6 - 12 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Limited data
Types attracted: Bumble bees, mason bees, mining bees, plasterer bees, small carpenter bees

Growth
Light: Full Sun to Part Shade
Moisture: Moist to Wet
Soil Type: Clay, Loam, Sand
Soil pH: 4.7 – 7.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Swamps and wet woods (P, C)

Notes
Blueberries are pollinated primarily by buzz-pollinating bumble bees. This species is a good choice for plantings in Delaware, but all *Vaccinum* species are valuable for early season bees. Hover flies also visit the flowers, and the fruits are eaten by at least 30 species of birds.



Blackhaw
Viburnum prunifolium
Shrub
Bloom: White, Apr - May
Height: 12 - 20 ft.

Attractiveness
Bees: Excellent
Natural Enemies: Limited data
Types attracted: Long-horned bees, mason bees, mining bees, plasterer bees, small carpenter bees, sweat bees

Growth
Light: Full Sun to Shade
Moisture: Dry to Wet
Soil Type: Clay, Loam
Soil pH: 4.8 – 7.5
Propagation: Containerized Seedling
Availability: Good
Natural habitat:
Rich woods, thickets, edges (P, C)

Notes
This species is highly attractive to short-tongued bees, especially mining bees, and also attracts good numbers of predatory hover flies, dance flies and tachinid flies. It grows well in a broad range of soils, and like other *Viburnum* species, is at least moderately deer resistant.

Plants for Wet and Dry Sites

Bee Plants for Wet Areas (Ditches, swamp edges, wet meadows)	
Swamp Milkweed	*Asclepias incarnata*
Three-nerved Joe-pye Weed	*Eupatorium dubium*
Common Boneset	*Eupatorium perfoliatum*
Giant Sunflower	*Helianthus giganteus*
Great Blue Lobelia (piedmont)	*Lobelia siphilitica*
New England Aster	*Symphyotrichum novae-angliae*
Blue Vervain	*Verbena hastata*
New York Ironweed	*Vernonia noveboracensis*
Red Maple	*Acer rubrum*
Canada Serviceberry	*Amelanchier canadensis*
Buttonbush	*Cephalanthus occidentalis*
Sweet Pepperbush (coastal plain)	*Clethra alnifolia*
Silky Dogwood	*Cornus amomum*
Black Willow	*Salix nigra*

Bee Plants for Dry Areas (Sandy soils and drought prone areas)	
Common Milkweed	*Asclepias syriaca*
Yellow Wild Indigo	*Baptisia tinctoria*
Partridge Pea	*Chamaecrista fasciculata*
Round-head Bush Clover	*Lespedeza capitata*
Wild Blue Lupine (coastal plain)	*Lupinus perennis*
Wild Bergamot	*Monarda fistulosa*
Spotted Horsemint (coastal plain)	*Monarda punctata*
Winged Sumac	*Rhus copallinum*
Northern Dewberry	*Rubus flagellaris*

Scientific Names

Scientific Names of the Bees and Other Insects Listed in this Booklet			
Common Name	**Family**	**Tribe**	**Genera**
Bees:			
Bumble bees	**Apidae**	**Bombini**	*Bombus*
Digger bees	**Apidae**	**Anthophorini**	*Anthophora, Habropoda, Svastra*
Large carpenter bees	**Apidae**		*Xylocopa*
Leaf-cutter bees	**Megachilidae**		*Megachile, Anthidium, Anthidiellum, and others*
Long-horned bees	**Apidae**	**Eucerini**	*Melissodes, Synhalonia, Eucera*
Mason bees	**Megachilidae**	**Osmiini**	*Osmia, Hoplitis*
Mining bees	**Andrenidae**		*Andrena, Calliopsis, Perdita and others*
Plasterer bees	**Colletidae**		*Colletes, Hylaeus*
Small carpenter bees	**Apidae**		*Ceratina*
Sweat bees	**Halictidae**	**All**	*Halictus, Agapostemon, Lasioglossum, and others*
Natural Enemies:			
Lacewings	**Chrysopidae**		
Parasitic wasps	**Braconidae, Chalcididae, Cynipidae, Ichneumonidae, and many others**		
Predatory wasps	**Vespidae, Sphecidae**		
Dance flies	**Empididae**		
Hover flies	**Syrphidae**		
Long-legged flies	**Dolichopodidae**		
Tachinid flies	**Tachinidae**		
Minute pirate bugs	**Anthocoridae**		*Orius and others*

More Information

A companion booklet, ***Farm Management for Native Bees: a Guide for Delaware***, is available from the Delaware Department of Agriculture. Contact them at the address listed on page 26 to obtain a copy, or visit the website: http://dda.delaware.gov/plantind/pollinator.shtml

Bee Use of Native Plants:

Brooklyn Botanic Garden's New York Metropolitan Flora Project, Metropolitan Plant Encyclopedia www.bbg.org/sci/nymf/encyclopedia/index.html

Enhancing Beneficial Insects with Native Plants (MI). http://nativeplants.msu.edu

Insect Visitors of Illinois Wildflowers www.shout.net/~jhilty/

Loose, J.L., F.A. Drummond, C. Stubbs, S. Woods and S. Hoffman. 2005. *Conservation and management of native bees in cranberry.* Maine Agricultural and Forest Experiment Station Technical Bulletin 191. Orono, ME: University of Maine. www.umaine.edu/mafes/elec_pubs/techbulletins/tb191.pdf

NAPPC Pollinator Conservation Digital Library http://libraryportals.com/PCDL

Choosing Native Plants:

Lady Bird Johnson Wildflower Center Native Plant Database www.wildflower.org/plants/

Missouri Botanical Garden's Kemper Center For Home Gardening Plantfinder www.mobot.org/gardeninghelp/plantfinder/

NRCS Plants Database: http://plants.usda.gov/

Regional Resources:

Delaware Native Plant Society (DNPS) www.delawarenativeplants.org

Delaware Native Plant Society. 2005. *Delaware native plants for landscaping and restoration: recommended species for the property owner and land steward. 2nd ed.* DNPS. 21 pp.

McAvoy, W.A. and K.A. Bennett. 2001. *The flora of Delaware: an annotated checklist.* Dover, DE: Delaware Dept. of Natural Resources and Environmental Control, Division of Fish and Wildlife. 265 pp. Available for purchase at: www.dnrec.state.de.us/fw/floraform.pdf

University of Delaware Cooperative Extension Native Plant Publications http://ag.udel.edu/extension/horticulture/index.htm

Maryland Native Plant Society (MNPS) www.mdflora.org

Adkins Arboretum: www.adkinsarboretum.org

More Information

Regional Resources:

US Fish and Wildlife Service Bayscapes Program
www.fws.gov/chesapeakebay/Bayscapes.htm

Native Plant Society of New Jersey: www.npsnj.org

Pennsylvania Native Plant Society (PNPS)
www.pawildflower.org

Bowman's Hill Wildflower Preserve: www.bhwp.org

Virginia Native Plant Society (VNPS): http://vnps.org

Virginia Natural Heritage Program Native Plant Lists
www.dcr.virginia.gov/natural_heritage/nativeplants.shtml

Planting for Pollinators:

The Xerces Society provides a wealth of information on pollinator conservation at their website:
www.xerces.org

MacCulloch, Bonnie. 2007. *Farming for Native Bees in Delaware.* Dover, DE: Delaware Department of Agriculture. Available from: http://dda.delaware.gov/plantind/pollinator.shtml

Vaughan, M., M. Shepherd, C. Kremen and S.H. Black. 2007. *Farming for Bees: Guidelines for Providing Native Bee Habitat on Farms.* 2nd ed.
www.xerces.org/pubs_merch/Farming_for_Bees.htm

Vaughan, M. and S.H. Black. 2006. Agroforestry Note 33: *Improving Forage For Native Bee Crop Pollinators.* USDA National Agroforestry Center.
www.unl.edu/nac/agroforestrynotes/an33g07.pdf

Establishment and Maintenance of Native Plantings:

Michigan State University's Enhancing Beneficial Insects with Native Plants program
http://nativeplants.msu.edu/getstarted.htm

Michigan DNR Wildflower Planting Guide
www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/landowners_guide/Habitat_Mgmt/Backyard/Wildflower_Planting.htm

Planting the Seed: A guide to establishing prairie and meadow communities in southern Ontario
www.on.ec.gc.ca/wildlife/docs/doc-planting-prairie-e.html

Wildlife Habitat Fact sheets from Illinois DNR
www.in.gov/dnr/fishwild/hunt/facts.htm

Some Regional Native Plant Suppliers for Conservation Projects

Note: this list includes primarily wholesale suppliers that can provide large quantities of plants and seed to individuals enrolled in cost-share programs. Many additional retail native plant nurseries and garden centers sell native plants in smaller quantities to homeowners and gardeners. Consult your local native plant society or search the internet to locate additional suppliers.

American Native Plants
4812 E. Joppa Road
Perry Hall, MD 21128
(410) 529-0552, wholesale
(443) 552-7022, retail
(410) 529-3883 fax
retailnativeplants@comcast.net
www.americannativeplants.net

Chesapeake Natives
annwing@
chesapeakenatives.org
www.chesapeakenatives.org/

Environmental Concern, Inc.
P.O. Box P
201 Boundary Lane
St. Michael's, MD 21663
(410) 745-9620
(410) 745-4066 fax
horticulture@wetland.org
www.wetland.org

Ernst Conservation Seeds
9006 Mercer Pike
Meadville, PA 16335
(800) 873-3321
(814) 336-5191 fax
ernst@ernstseed.com
www.ernstseed.com

Go Native Tree Farm
2310 Chestnut View Drive
Lancaster PA 17603
(717) 399-0195
(717) 380-1489 mobile
www.gonativetrees.com

John S. Ayton State Tree Nursery
3424 Gallagher Road
Preston, MD 21655
800/TREESMD
(410) 673-2467
(410) 673-7285 fax
anursery@dnr.state.md.us
www.dnr.state.md.us/forests/nursery/

North Creek Nurseries
388 North Creek Rd.
Landenberg, PA 19350
(877) ECO-PLUG
(610) 255-4762 fax
order@northcreeknurseries.com
www.northcreeknurseries.com

New Moon Nursery
13 Ways Lane
Kennett Square, PA 19348
(888) 998-1951
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(717) 529-4099 fax
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www.OCTORARO.com

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www.redbudnativeplantnursery.com

Sylva Native Nursery & Seed Co.
3815 Roser Road
Glen Rock, PA 17327
(717) 227-0486
(717) 227-0484 fax
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(215) 283-1330

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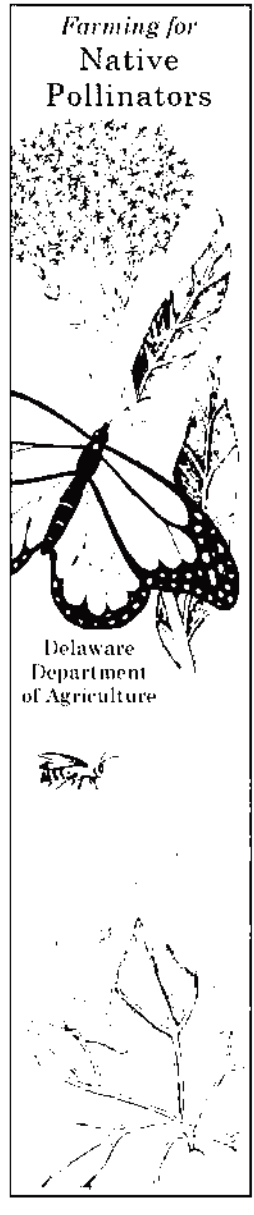
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David G. Smith's photos of Delaware native plants, used throughout much of this booklet, can be found on his website: www.delawarewildflowers.org

Front Cover:
Top row (l-r): New England Aster, *Symphyotrichum novae-angliae*, PA DCNR Forestry Archive, Bugwood.org (Licensed under: http://creativecommons.org/licenses/by/3.0/us/); Bumble bee (*Bombus* sp.) on Sweet Pepperbush, *Clethra alnifolia*, David G. Smith.
Middle row: Digger bee, *Svastra obliqua* on Aster, *Symphyotrichum* sp., Dan Tenaglia.
Bottom row (l-r): Polyester bee, *Colletes eulophi* on Goldenrod, *Solidago* sp., Edward Trammel; Northern Dewberry, *Rubus flagellaris*, David G. Smith; Blue Vervain, *Verbena hastata*, David G. Smith.

Back Cover:
Soldier beetle *Chauliognathus* sp. and Skipper, Hesperiidae, on native Field Thistle, *Cirsium discolor*, David G. Smith.

Page:
1: Large carpenter bee, *Xylocopa virginica* on False Foxglove, *Agalinis* sp., Dan Tenaglia.
2: Sweat bee, Halictidae on Spring Beauty, *Claytonia* sp., Edward Trammel; Long-horned bee, Melissodes druriella on Golenrod, *Solidago* sp., Edward Trammel.
4: Bee forage planting in Delaware, Randolph Ciurlino.
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17: Cockspur Hawthorn, Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA SCS. 1991. Southern wetland flora: Field office guide to plant species. South National Technical Center, Fort Worth.
18: Black Gum, Jean-Pol Grandmont; American Wild Plum, Quentin Cronk.
20: High Bush Blueberry, Quentin Cronk.

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