The Xerces Society for Invertebrate Conservation

NRCS Natural Resources Conservation Service

USDA United States Department of Agriculture

Rutgers The State University of New Jersey

Hedgerow Planting (422) for Pollinators

New Jersey

Installation Guide and Job Sheet

Photo credit: Jolie Goldenetz Dollar, Xerces Society

September 2013

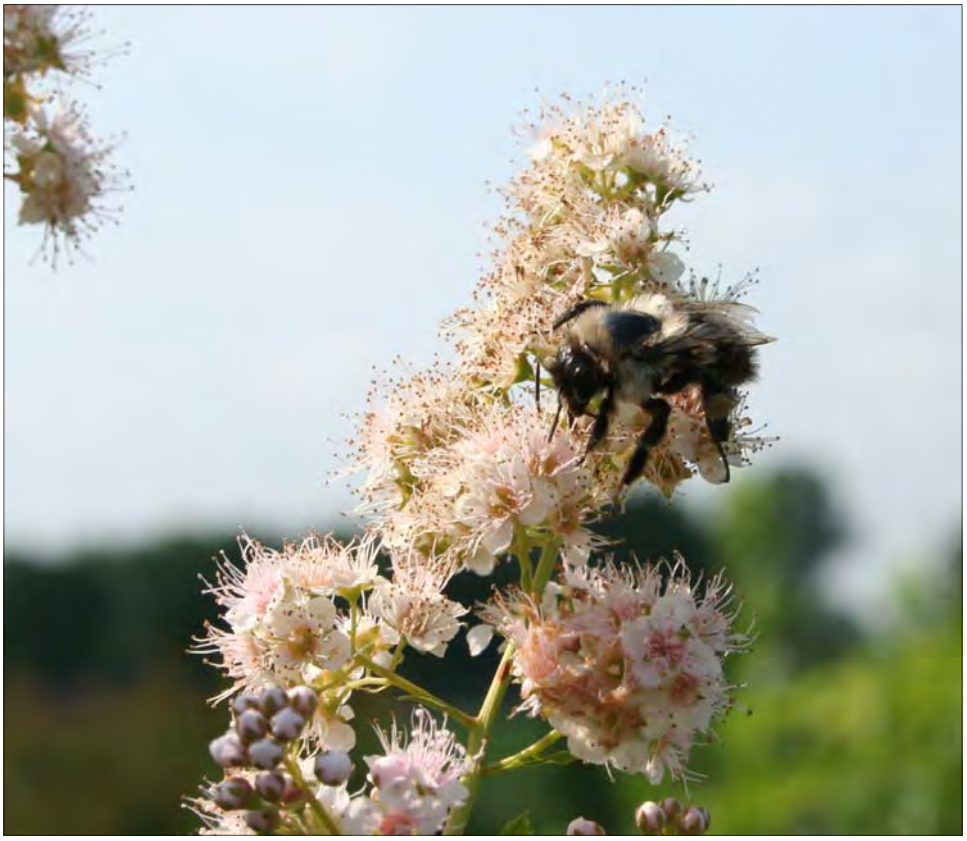
The Xerces Society for Invertebrate Conservation

www.xerces.org

Acknowledgements

This guide was written in November 2012 by Mace Vaughan, Eric Mader, Jessa Guisse, Jolie Goldenetz-Dollar, and Brianna Borders of the Xerces Society for Invertebrate Conservation, Dr. David Biddinger (Pennsylvania State University Fruit Research and Extension Center), and James Gillis (Pennsylvania NRCS). The authors would like to thank Hank Henry (USDA NRCS East National Technology Support Center), Paul Salon (NRCS Big Flats Plant Materials Center), and Terrence Salada (Pennsylvania State University Fruit Research and Extension Center). We also thank Tim Dunne, Betsy Clarke, Evan Madlinger, and Chris Miller for their support of pollinator conservation work in New Jersey. Please contact Mace Vaughan (mace@xerces.org) to improve this publication.

Financial support to the Xerces Society for the development of this guide was provided by an NRCS Conservation Innovation Grant, a Contribution Agreement with the New Jersey NRCS, the CS Fund, the Turner Foundation, the Columbia Foundation, the Ceres Foundation, the Dudley Foundation, the Bullitt Foundation, the Disney Worldwide Conservation Fund, the Panta Rhea Foundation, the Gaia Fund, the Bill Healy Foundation, the Aveda Earth Fund, the Sarah K. de Coizart Article TENTH Perpetual Charitable Trust, the Elizabeth Ordway Dunn Foundation, the Goldman Foundation, the Natural Resources Foundation of Wisconsin ATC Environmental Steward-ship Fund, the SeaWorld and Busch Gardens Conservation Fund, the Wildwood Foundation, and Xerces Society members.



(Photo credit: Bumble bee on pin cherry, Jolie Goldenetz Dollar, Xerces Society)

628 NE Broadway Suite 200, Portland, OR 97232 ◦ 866-232 6639 ◦ www.xerces.org

The Xerces Society is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. Established in 1971, the Society is at the forefront of invertebrate protection worldwide.

The Xerces Society is an equal opportunity employer.

Hedgerow Planting for Pollinators: New Jersey

Installation Guide

Purpose

These instructions provide in-depth guidance on how to install nectar and pollen habitat for bees in the form of linear rows of native flowering shrubs. To plan a specific project, use this guide with the Practice Installation Job Sheet found at the end of this document.

Client Conservation Objectives

Depending on landowner objectives and project design, pollinator habitat may also provide food and cover for other wildlife, provide windbreaks, reduce soil erosion, protect water quality, and attract other beneficial insects such as predators and parasitoids of crop pests.

Key Site Characteristics

Site selection for pollinator habitat should take the following into consideration:

- **Pesticide Drift:** Habitat must be protected from pesticides (especially insecticides and bee-toxic fungicides and herbicides). Only sites with no to very low risk for pesticide drift should be established as new habitat. This includes some pesticides approved for use on organic farms.
- **Accessibility:** New habitat should be accessible to equipment for planting and maintenance operations.
- **Sunlight:** Most native shrubs grow best in full sunlight.
- **Slope:** Steep or highly erodible sites should not be disturbed. For re-vegetating such sites, consider Critical Area Planting (342) or other suitable Practice Standards.
- **Weed Pressure:** Areas with high weed pressure will take more time and effort to prepare for planting. It is also important to note the primary weed composition. Knowing the most abundant weed species on site, their reproductive methods, and whether they are grass or broadleaf, perennial or annual, and woody or herbaceous will help significantly in planning for site preparation and follow up weed management during establishment.
- **Site History:** Factors such as past plant cover (e.g., weeds, crops, grass sod, and/or native plants), use of pre-emergent herbicides or other chemicals, and soil compaction can affect plant establishment. It is also important to know if sites may have poor drainage, or may flood, as such conditions make habitat establishment more difficult or require a plant mix adapted to the site.
- **Soils and Habitat:** Most plants listed in the Appendix of this guide are tolerant of many soil conditions and types, however all plants establish better when matched with appropriate conditions.
- **Irrigation:** To establish plants from plugs, pots, or bare root will require irrigation.
- **Other Functions:** The site may offer opportunities to serve other functions, such as run-off prevention, stream bank stabilization, wildlife habitat, or windbreaks. Those factors can influence plant choice and/or design.

Plant Selection

Native Plants: Plant species selection should be limited to plants providing pollen- and nectar-rich forage resources for bees. The Appendix provides information on acceptable plants in New Jersey.

If you are designing a custom plant list, individual species should be chosen so that there are consistent and adequate floral resources throughout the season. In order to achieve this goal, a minimum of three species from each blooming period (early, mid and late season), should be included. Plant composition (i.e., percent of each species) can be designed to complement adjacent crop bloom time or other abundant species in the landscape, with more plants blooming immediately before and after adjacent crops.

Non-Native Plants: Plant selection should focus on pollen and nectar rich native plants, non-invasive, non-native plants may be used when cost or availability are limiting factors.

Alternate Pest or Disease Hosts: In most cases, native pollinator plants do not serve as alternate hosts for crop pests or diseases, but selected plants should be cross-referenced for specific crop pest or disease associations. Research indicates that weedy borders harbor more pests than are found in diverse native plantings.

Site Preparation

Site preparation is **one of the most important** and often inadequately addressed components of project success. It is also a process that may require more than one season of effort to reduce competition from invasive, noxious or undesirable non-native plants prior to planting. *In particular, site preparation should focus on the removal of perennial weeds* (there are more options to address annual or biennial weeds after planting). Regardless of whether the objective is to establish herbaceous or woody vegetation, more effort and time spent eradicating undesirable plants prior to planting will result in higher success rates in establishing the targeted plant community. Weed removal methods are provided in **Table 1** (for site preparation where wildflowers will be seeded within or adjacent to a hedgerow, see the *Conservation Cover for Pollinators Installation Guide and Job Sheet: New Jersey).*

Note: If weed pressure is high, then the weed abatement strategies detailed here should be repeated for an additional growing season. High weed pressure conditions are characterized by:

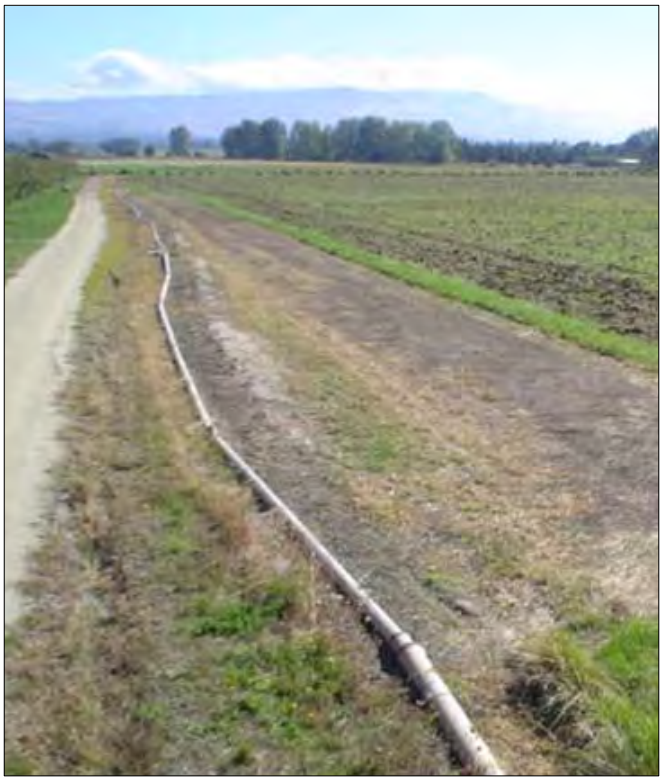
- Persistent year-round cover of undesirable plants (covering the entire surface of the site);
- Sites where weeds have been actively growing (and producing seed) for multiple years;
- Sites dominated by introduced sod-forming grasses and rhizomatous forbs (e.g. Canada thistle).

If desired, site preparation can also include the creation of a berm to serve as the hedgerow base. Hedgerows with bermbases are preferred in some regions for greater windbreak and screening benefits (due to the raised base). Hedgerow berms are often roughly 3 feet in width and height, and are created using soil excavated from the sides of the berm (creating a parallel ditch on both sites of the hedgerow). Field stones are sometimes added to hedgerow berms as well, adding additional height and structure.

Figure 1

(*Photo: Ed Vaughn)*

The site on the left is not ready for planting. Site preparation should focus on removing existing weedy vegetation.



(Photo: Oregon NRCS)

Weedy vegetation has been removed from the site on the right; creating a clean planting area where hedgerow plants can become established with less competition for sunlight and water.

Table 1 Weed Removal Methods

METHOD: MOWING OR STRIP TILLAGE

Where to Use	Timing
• Where weed pressure is low • Areas with a low risk of erosion • Areas accessible to equipment	• Total time: 1 month • Begin: anytime • Plant: anytime

Basic Instructions:

1. Where weed pressure is low, mow or till the existing vegetation as low to the ground as possible for the length of the hedgerow.
2. If necessary, rake or lightly harrow the strip to create a clean surface for installing transplants.

METHOD: NON-SELECTIVE (NON-PERSISTENT) HERBICIDE

Where to Use	Timing
• Where weed pressure is high • Conventional farms and organic farms* • Areas with a low risk of erosion • Areas accessible to sprayer	• Total time: 1 + month(s) • Begin: anytime • Plant: anytime

Basic Instructions:

1. Mow existing thatch as needed before beginning herbicide treatments to expose new weed growth to the herbicide spray.
2. Apply a non-selective, non-persistent herbicide as per label whenever weeds are actively growing.
3. If necessary, repeat herbicide applications at 6 week intervals until the desired level of weed control is achieved.
4. Plant the transplants, waiting at least 72 hours after the last herbicide treatment. Refer to the Planting Methods section of this document for specific recommendations.

NOTE: Do not till. Avoid any ground disturbance that may bring up additional weed seed. An additional year of site preparation is recommended if weed pressure is particularly high. Avoid use of herbicides that are bee-toxic (e.g., Paraquat and Gramoxone).

**** Choice of herbicide must be acceptable to OMRI for organic operations or, if not, used outside of certified ground AND approved by an organic certifier.***

Table 2 (Cont.) Weed Removal Methods

METHOD: SOLARIZATION	
Where to Use • Where weed pressure is high • Organic and conventional farms • Areas with a low risk of erosion • Areas accessible to mowing equipment • Locations with full sun	**Timing** • Total time: 6+ month(s) • Begin: spring • Plant: fall

Basic Instructions:

1. Mow, till or lightly harrow and smooth the site in the spring (raking off debris, if necessary).
2. After smoothing the site, lay UV stabilized plastic (such as high tunnel plastic) burying the edges to prevent airflow between the plastic and the ground. Weigh down the center of the plastic if necessary to prevent the wind from lifting it. Use greenhouse repair tape for any rips that occur during the season.
3. Remove the plastic in early-fall before the weather cools and the area beneath plastic is recolonized by nearby rhizomatous weeds.
4. Immediately install transplants. Refer to Planting Methods section of this document for specific bed preparation recommendations.

NOTE: Avoid any ground disturbance that may bring up additional weed seed. An additional year of site preparation is recommended if weed pressure is particularly high.

Planting Methods

Regular shovels are usually adequate for transplanting most woody nursery stock. However, dibble sticks or mechanical transplanters are sometimes helpful for plug-planting. Power augers and mechanical tree spades can be helpful for larger plants.

Depending on weed pressure, hedgerow plants can be installed through planting holes cut into landscape fabric (after which the fabric is typically covered with mulch). While this practice may be highly effective for weed control, it likely reduces nesting opportunities for ground-nesting pollinators and other wildlife. Hedgerows should be installed without landscape fabric when possible.

Plant size at maturity should be considered when planting. Most woody shrubs can be spaced on 4 – 10’ centers (depending upon size at maturity), with most herbaceous plants spaced closer on 2 – 3’ centers. It is helpful to measure the planting areas prior to purchasing transplants, and to stage the transplants in the planting area prior to installing them in the ground.

Transplanting can occur any time the ground can be worked, but should be timed to avoid prolonged periods of hot, dry, or windy weather. Regardless of when planting occurs, however, the transplants should be irrigated thoroughly immediately after planting. Holes for plants can be dug and pre-irrigated prior to planting as well. Follow-up irrigation is dependent upon weather and specific site conditions, but generally even native and drought tolerant plants should be irrigated with at least 1” of water per week (except during natural rain events), for the first two years after planting. Long, deep watering is best to encourage deep root system development and shallow irrigation should be avoided. Drip irrigation is useful, and other methods that allow for deep watering can be successful. It is advisable to irrigate at the base of plants and avoid overhead irrigation that would encourage weed growth. Once plants are established, irrigation should be removed or greatly decreased.

Most of the plants in the Appendix are adapted to a variety of soil conditions and do not need any specific amendments. However, in areas where the soil is compacted, degraded, or depleted, compost should be used during planting. Compost should be free from weed seeds, aged properly, and mixed thoroughly with soil in the holes during planting.

Where rodent damage may occur, underground wire cages around roots are recommended. Plant guards also may be needed to protect plants from above ground browsing or antler damage by deer. Newly planted areas should be clearly marked to protect them from herbicides or other disturbances.

Mulching is recommended to reduce weed competition and to retain moisture during the establishment phase. Recommended materials include wood chips, bark dust, weed-

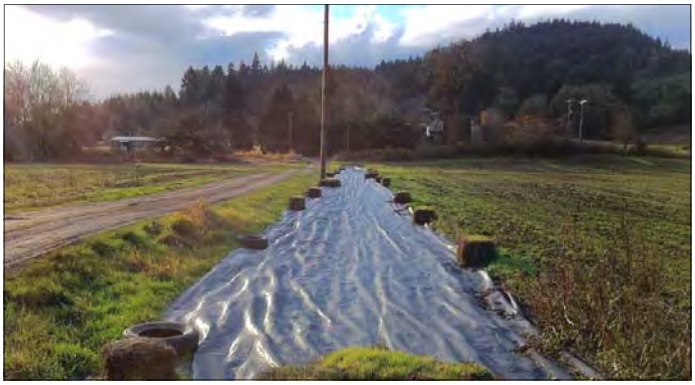
free straw, nut shells, grapeseed pumice, or other regionally appropriate weed free mulch materials.

Seeding Wildflowers: Wildflowers can also be planted from seed within or adjacent to hedgerows to provide additional plant structure and diversity. Seeding requires **excellent** site preparation to reduce weed pressure since weed control options are limited when the wildflowers start to germinate. For more information on establishing wildflowers from seed, see the *Conservation Cover for Pollinators Installation Guide and Job Sheet: New Jersey*

Planting Method Photos

Figure 2

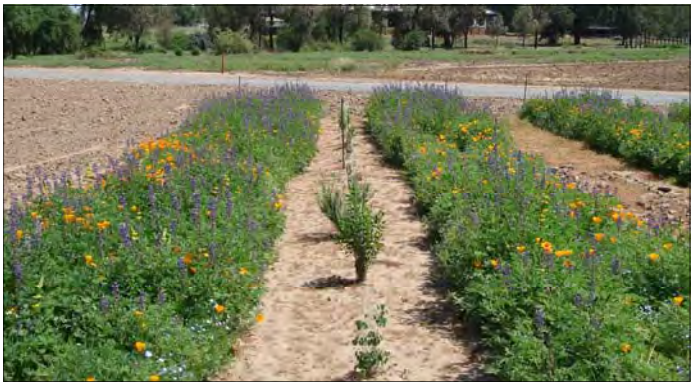
(Photo: Eric Mader, Xerces Society)

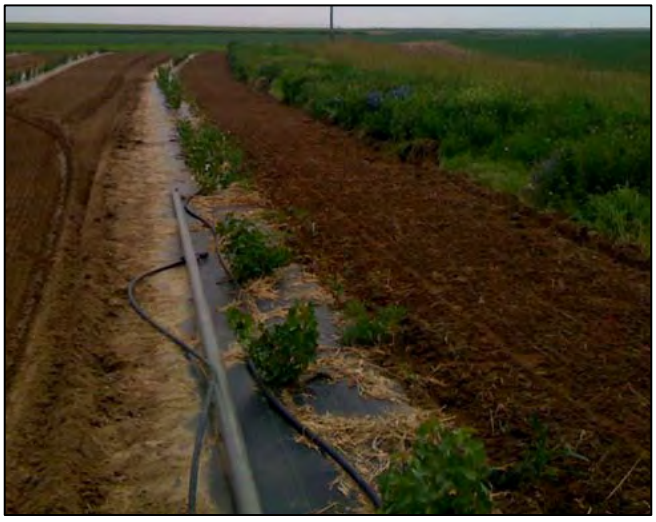


(Photo: Gwendolyn Ellen, Oregon State University)

Hedgerow plants can be staggered in multiple rows, providing a wider habitat feature, with greater secondary benefits (such as screening, wind reduction, and dust control) (left). Where weed pressure is particularly severe, the ground below the hedgerow can be covered in weed barrier landscape fabric (right). The use of weed barrier however may reduce the value to ground-nesting wildlife, including many species of bees.

Figure 3





Grow tubes or trunk protectors may help during establishment to reduce browsing by herbivores and trunk damage from mowers or weeding operations (top left) *(Photo by: John Anderson, Hedgerow Farms)*. Wildflowers can be seeded in linear strips alongside newly planted hedgerows to provide pollen and nectar resources while slower growing shrubs become established (top right) *(Photo by: Jessa Guisse, Xerces Society)*. Site preparation and weed eradications needs to be very rigorous prior to planting seeds. See *Conservation Cover for Pollinators Installation Guide and Job Sheet: New Jersey.* Most species will benefit from an inch of water per week during the first two years of establishment, either from natural rainfall, or from irrigation, such as the drip irrigation lines used on this hedgerow (left) *(Photo by: Eric Mader, Xerces Society)*.

Maintenance During Establishment (Short-Term)

Weed control is critical in the first and second years after planting. If the site is well prepared, then less effort will be required for weeding after project installation. Maintenance practices must be adequate to control noxious and invasive species and may involve tools such as mowing, string trimming, hand hoeing, or spot spraying with herbicides.

Weeds should be prevented from going to seed in, or adjacent to, the hedgerow during the first two (and possibly three) years after planting to help ensure long-term success. Familiarity with the life cycle of weeds will facilitate appropriate timing of management activities.

Common weed-management strategies include:

- **Spot Spraying:** Spot spraying with herbicides can be effective, relatively inexpensive, and require minimal labor, even on larger project areas. Care should be taken that herbicides do not drift or drip onto desirable plant species.
- **Selective Herbicides:** Grass-selective herbicides can be used to control weedy grasses in hedgerows. Contact a local crop advisor or Extension specialist for appropriate herbicide selection and timing.
- **Managing Irrigation:** Whenever possible, irrigation should be supplied at the base of the transplant (through drip irrigation, for example) to avoid watering nearby weeds.
- **Mowing / String Trimming:** Mowing or string trimming can be utilized to keep weedy species from going to seed and shading out hedgerow plants.
- **Hand Weeding:** Hand-weeding (including hoeing) can be effective in small areas with moderate weed pressure.

Operations and Maintenance (Long-Term)

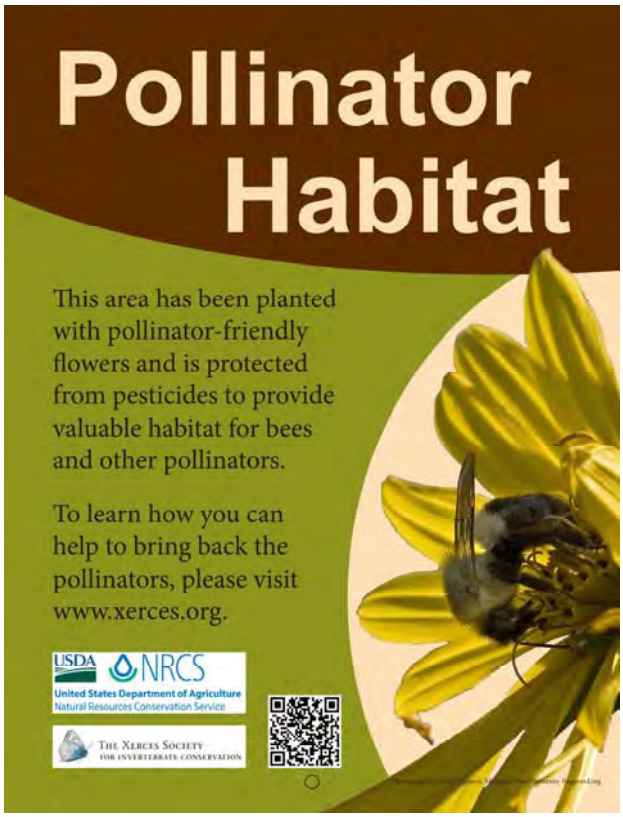
Control herbivores as needed, but remove tree guards or other materials that could impede plant growth as soon as possible after establishment. In most cases, irrigation can be removed from transplants by the end of the second year after planting. Continue to protect habitat from pesticides and herbicides except when necessary to control noxious or invasive plants. On-going herbicide use (spot-treatment) or occasional hand weeding may be necessary to control noxious weeds. Maintain the long-term plant diversity of pollinator habitat by re-planting as necessary.

Hedgerow plantings may need to be managed over time to prevent shrub encroachment into adjacent fields or roadsides or to cut back large trees that shade out other hedgerow species. Depending on management goals (e.g., preferred wildlife structure) larger hedgerow species are sometimes cut back to a stump and allowed to re-sprout (called coppicing) to produce multiple bushy stems. Another practice, called hedge-laying involves cutting most of the way through upright trunks, then pushing the still partially attached trunks over at an angle in line with the hedgerow. New growth from the stumps and laid trunks results in thicker hedgerow structure and fills in gaps where other shrubs may have died. Regardless of management needs, do not prune hedgerow plants during critical wildlife nesting seasons (consult your state wildlife biologist for specific guidance). After establishment, no more than 30% of the habitat area should be disturbed in any one year to ensure sufficient undisturbed areas for pollinators and other wildlife.

Finally, note that some common farm-management practices can cause harm to bees and other beneficial insects. Insecticides are especially problematic, including some insecticides approved for organic farms. Therefore, if insecticide spraying is to occur on the farm, it is critical that the pollinator hedgerow is outside of the sprayed area and/or protected from application and drift.

Figure 6

Newly planted areas should be clearly marked to protect them from herbicides or other disturbances.



Using signs such as the one on the above can be a useful tool to designate protected pollinator habitat.

Appendix: Recommended Plants, Sources, and References

Recommended Native Hedgerow Plants for Pollinators

COMMON NAME	SCIENTIFIC NAME	MATURE HEIGHT	WATER REQUIREMENTS	NOTES
Early Spring Blooming Species				
Allegheny Serviceberry	*Amelanchier laevis*	35 ft	Medium	Alternate host for fire blight
Black Willow	*Salix nigra*	100 ft	High	Male plants most useful
Eastern Redbud	*Cercis canadensis*	30 ft	Low	A source of nesting material for leaf-cutter bees
Fragrant Sumac	*Rhus aromatica*	6 ft	Low	
Pussy Willow	*Salix discolor*	40 ft	High	Male plants most useful
Red Maple	*Acer rubrum*	68 ft	High	A source of nesting material for leaf-cutter bees
Mid to Late Spring Blooming Species				
Allegheny Blackberry	*Rubus allegheniensis*	6 ft	Medium	Alternate host for fire blight
American Basswood	*Tilia americana*	100 ft	High	Potential host for BMSB
American Holly	*Ilex opaca*	40 ft	Medium	Good honey bee forage
American Plum	*Prunus americana*	24 ft	Medium	Alternate host for fire blight
American Red Raspberry	*Rubus idaeus*	9 ft	Low	Alternate host for fire blight
Beach Plum	*Prunus maritima*	12 ft	Medium	Alternate host for fire blight
Black Cherry	*Prunus serotina*	80 ft	Medium	Good for BMSB control; alternate host for fire blight
Black Chokeberry	*Photinia melanocarpa*	6 ft	Medium	
Blackgum	*Nyssa sylvatica*	95 ft	High	Good honey bee forage
Black Huckleberry	*Gaylussacia baccata*	4 ft	Low	
Black Locust	*Robinia pseudoacacia*	60 ft	Low	Good for BMSB control; potentially weedy
Blue Huckleberry	*Gaylussacia frondosa*	6 ft	Low	
Canadian Serviceberry	*Amelanchier canadensis*	23 ft	Medium	Alternate host for fire blight
Chinkapin	*Castanea pumila*	20 ft	Low	
Chokecherry	*Prunus virginiana*	25 ft	Medium	Good for BMSB control; alternate host for fire blight
Cockspur Hawthorn	*Crataegus crus-galli*	30 ft	Low	Alternate host for fire blight
Common Ninebark	*Physocarpus opulifolius*	10 ft	Low	
Common Persimmon	*Diospyros virginiana*	55 ft	Medium	
Common Winterberry	*Ilex verticillata*	10 ft	High	Good honey bee forage
Cucumber-Tree	*Magnolia acuminata*	100 ft	High	
Downy Hawthorn	*Crataegus mollis*	30 ft	High	Alternative host for fire blight
False Indigo Bush	*Amorpha fruticosa*	15 ft	Medium	Considered weedy in some riparian areas
Inkberry	*Ilex glabra*	8 ft	High	Good honey bee forage
New Jersey Tea	*Ceanothus americanus*	3 ft	Low	Attractive to deer
Northern Spicebush	*Lindera benzoin*	12 ft	High	
Pasture Rose	*Rosa carolina*	5 ft	Low	Alternate host for fire blight
Red Chokeberry	*Photinia pyrifolia*	5 ft	High	
Running Serviceberry	*Amelanchier stolonifera*	5 ft	Medium	Alternate host for fire blight
Purpleflowering Raspberry	*Rubus odoratus*	5 ft	Medium	
Sargent Crabapple	*Malus sargentii*	8 ft	Medium	
Silky Willow	*Salix sericea*	12 ft	High	Male plants most useful
Sugar Maple	*Acer saccharum*	100 ft	Medium	Good honeybee forage; alternate host for fire blight and apple maggot
Sweet Crab Apple	*Malus coronaria*	25 ft	Medium	

(Cont.) Recommended Non-Native Hedgerow Plants

COMMON NAME	SCIENTIFIC NAME	MATURE HEIGHT	WATER REQUIREMENTS	NOTES
(Cont.) Mid to Late Spring Blooming Species				
Tuliptree	*Liriodendron tulipifera*	120 ft	High	
Umbrella-Tree	*Magnolia tripetala*	30 ft	Medium	Good honey bee forage; alternate host for fire blight
Washington Hawthorn	*Crataegus phaenopyrum*	30 ft	Medium	Alternate host for fire blight
White Meadowsweet	*Spiraea alba*	3 ft	High	
Winged Sumac	*Rhus copallinum*	8 ft	Low	
Summer Blooming Species				
American Mountain Ash	*Sorbus americana*	40 ft	High	Alternate host for fire blight
Buttonbush	*Cephalanthus occidentalis*	15 ft	High	Will survive periodic flooding
Coastal Sweetpepper-bush	*Clethra alnifolia*	16 ft	High	
Devil's Walkingstick	*Aralia spinosa*	20 ft	High	Good honey bee forage; be sure to use native species
Highbush Blueberry	*Vaccinium corymbosum*	12 ft	High	
Lowbush Blueberry	*Vaccinium angustifolium*	2 ft	Medium	
Northern Catalpa	*Catalpa speciosa*	60 ft	Low	Potential host for BMSB
Staghorn Sumac	*Rhus typhina*	25 ft	Low	
Steeplebush	*Spiraea tomentosa*	4 ft	Medium	
Swamp Rose	*Rosa palustris*	8 ft	High	
Sweetbay	*Magnolia virginiana*	60 ft	High	
Fall Blooming Species				
Autumn Willow	*Salix serissima*	10 ft	High	Male plants most useful

Regional Native Seed Vendors and Native Plant Nurseries

Inclusion on this list does not constitute an endorsement or a recommendation. Other vendors not listed below may also have suitable plant materials. Before ordering, ensure that all plants or seeds purchased for pollinator habitat have **NOT** been treated with systemic insecticides.

Cicconi Perennial Farm • Jackson, NJ • 723-363-1420 • www.cicconifarms.com

New Moon Nursery • Bridgeton, NJ • 888-998-1951 • www.newmoonnursery.com

North Creek Nurseries • Landenberg, PA • 610-255-0100 • www.northcreeknurseries.com

Pinelands Nursery • Columbua, NJ • 609-291-9486 • www.pinelandsnursery.com

Redbud Native Plant Nursery • Glen Mills, PA • 610-358-330 • www.redbudnativeplantnursery.com

Toadshade Wildflower Farm • Frenchtown, NJ • 908-996-7500 • www.sugarbushnursery.com

References

Conservation Buffers (US Forest Service Technical Guide)
Design guidelines for buffers, corridors, and greenways. Includes extensive information on hedgerows and windbreaks.
www.unl.edu/nac/bufferguidelines/docs/conservation_buffers.pdf

Windbreaks Designed with Pollinators in Mind. (Inside Agroforestry)
An overview of multi-purpose windbreaks designed with pollinator-friendly trees and shrubs.
www.unl.edu/nac/insideagroforestry/vol20issue1.pdf

Xerces Society Seed Mix Calculator
Develop your own pollinator conservation seed mix using this seed rate calculator.
www.xerces.org/wp-content/uploads/2009/11/XERCES-SEED-MIX-CALCULATOR.xls

Attracting Native Pollinators: Protecting North America's Bees and Butterflies
This comprehensive book on pollinator conservation includes information about pollinator ecology, guides for identifying common bees, and habitat designs for multiple landscapes.
www.xerces.org/announcing-the-publication-of-attracting-native-pollinators/

Pollinator Conservation Resource Center
For additional information on pollinator plant lists, conservation guides, pesticide protection and more.
www.xerces.org/pollinator-resource-center

Hedgerow Planting (422) for Pollinators: New Jersey

Practice Installation Job Sheet

Client:	**Farm #:**	**Date:**
Field(s):	**Tract #:**	**Planned By:**
Client Conservation Objectives:		

Purpose

This Practice Installation Job Sheet documents the process of establishing nectar and pollen habitat for bees in the form of linear plantings of flowering trees and shrubs. Other natural resources may also benefit, depending on your conservation objectives and the integration of this habitat with other conservation practices. Installation shall be in accordance with these requirements and any attached drawings. **No changes are to be made without prior approval from the technical specialist who approved the installation plan.**

For detailed instructions on each step in this Job Sheet, please see the *Hedgerow Planting for Pollinators Installation Guide: New Jersey.*

Key Site Characteristics

Risk of pesticide drift on site? ☐ Low to high ☐ Very low to none

Weeds: weed pressure, and primary weed species of concern:

Site history: historic and current plant cover, past use of land, pre-emergent herbicide use, compaction, etc.:

Soils and habitat: soil texture (coarse to fine), drainage, and moisture level:

Irrigation: availability and method (necessary if transplants are to be used):

Other concerns or conservation goals that may affect plant choice or site preparation and planting:

Plant Selection: Native Flowering Shrubs and Subshrubs

See the Appendix in the Installation Guide

Early Spring Blooming Species
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____

Mid to Late Spring Blooming Species
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____

Summer and Fall Blooming Species
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____
(No.___) _____

Note additional woody plant species here:

Note: Hedgerows can also include herbaceous wildflowers as an understory feature, or as linear strip plantings running alongside the row of shrubs. For suggested wildflowers, see the *Conservation Cover for Pollinators Installation Guide and Job Sheet: New Jersey*.

Note herbaceous species being established here:

Site Preparation Method

Choose an option and note any adjustments.

☐ Mowing ☐ Herbicide ☐ Solarization

Adjustments:

Planting Method

See Hedgerow Planting for Pollinators Installation Guide and Job Sheet: New Jersey

Adjustments:

Maintenance During Establishment

Choose all options that apply and note any adjustments.

☐ Spot spraying weeds with herbicide
☐ Grass specific or other selective herbicide
☐ Managing irrigation
☐ Mowing / string-trimming
☐ Hand weeding and/or hoeing
☐ Other:_____

Adjustments:

Long Term Site Operations and Maintenance

Control herbivores as needed, but remove plant guards or other materials that could impede plant growth as soon as possible after establishment. In most cases, irrigation of transplants is no longer required by the end of the second growing season after planting. Maintain the long-term plant diversity of pollinator habitat by re-planting or re-seeding as necessary.

Finally, after establishment, no more than 30% of the habitat area should be mowed, grazed or burned in any one year to ensure sufficient undisturbed refuge areas for pollinators and other wildlife. Continue to protect habitat from pesticide applications and drift (especially insecticides and bee-toxic fungicides). Herbicide spot-treatments and hand weeding may be used to control noxious or invasive plants.

Check Out and Certification Requirements

I certify that the above Design and Installation requirements (circle one) *have / have not* been met in accordance with the criteria of the Conservation Practice 422. The _____ acres of this practice installed on the locations covered by this job sheet were installed on the date(s) of _____ .

Signature of Designated Conservationist or Technical Service Provider *Date*