



THE XERCES SOCIETY
FOR INVERTEBRATE CONSERVATION

Native Bee Conservation

Pollinator Habitat

Assessment Guide for Organic Farms



June 2011

The Xerces Society for
Invertebrate Conservation

www.xerces.org

Native Bee Conservation Pollinator Habitat Assessment for Organic Farms

Instructions

- This habitat assessment can be used in both orchard and field crop settings.
- The accompanying photos and notes will help you identify and assess some specific habitat features.
- An assessment should be done twice, once before project implementation and once after.
- Prior to conducting an assessment, print out aerial photos to help with site and landscape questions.
- Each item in the assessment should be given a score of 0 (not present) or the appropriate value from the “Score” column.
- Add up the scores to calculate a subtotal for each subsection (e.g., 1a. Sites for ground-nesting bees).
- In addition, add up subsection subtotals to get a total for each section. Transfer these figures into the summary table on page 3 to generate the overall score for each assessment.
- The post-implementation goal is an overall score of at least 100, and an improvement of at least 40 points.

Copyright © 2011 The Xerces Society for Invertebrate Conservation

4828 SE Hawthorne Blvd., Portland, OR 97215 ◦ 503-232 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.

ACKNOWLEDGEMENTS

Authors Staff of the Xerces Society’s Pollinator Conservation Program.

Editing and layout Matthew Shepherd.

Funding Support for the Xerces Society’s pollinator conservation program is provided by Aveda Earth Fund, Columbia Foundation, CS Fund, Disney Worldwide Conservation Fund, Elizabeth Ordway Dunn Foundation, Gaia Fund, McCune Charitable Foundation, Organic Farm Research Foundation, Organic Valley Farmers Advocating for Organics Fund, Panta Rhea Foundation, Sarah K. de Coizart Article TENTH Perpetual Charitable Trust, Sea World Busch Gardens Conservation Fund, The Richard and Rhoda Goldman Foundation, Turner Foundation, USDA Natural Resources Conservation Service, Whole Systems Foundation, and Xerces Society members.

Photo credits © Hannah Gaines: page 5 all. © Jennifer Hopwood: page 4-Bc. © Eric Mader: page 4-Tr; page 6-l, cr, r. © Matthew Shepherd: cover-BI, Br; page 4-TI, Tc, Bc. © Katharina Ullmann: page 6-cl. © Mace Vaughan: cover-T; page 4-Br.

Site Summary

Owner/Operator:	
County:	
Field Office:	
Planner:	
Date	Assessment Before Implementation (Existing Habitat):
	Assessment After Implementation:
Location Description:	
Sketch of Site:	

Total Score for Habitat Assessment

The figures entered into this summary table will be calculated during completion of the assessment.

	Before	After
Section 1: Native Bee Nesting Habitat		
Section 2: Foraging Habitat		
Section 3: Landscape Features		
Section 4: Farm Practices		
OVERALL SCORE		

1a. Sites for ground-nesting bees.

Ground nests are often marked by a small mound of excavated soil, but may also be nothing more than a small hole in the ground. Nests may be dug in bare soil, areas of patchy vegetation, or hidden among plants. They are usually in marginal areas such as ditch banks or track sides, and frequently can be found close to buildings or other structures. (Photos below illustrate some nest sites.)

SCORE ALL OPTIONS THAT APPLY A = abundant, M = moderate, S = scarce	Score	Before	After	Treatment to increase score
Areas of well-drained bare ground, or with sparse vegetation	A = 10 M = 5 S = 1			
Areas with sandy to sandy loam soil	A = 10 M = 5 S = 1			
No-till cropping system: 1 point for every 10% of area untilled	0 – 10			
Areas with bare but compacted soil, or excavated soil	1			
<i>Subtotal (1a)</i>				



1b. Sites for wood- and cavity-nesting bees.

The great majority of wood- or cavity-nesting bees do not excavate their own nest; they occupy pre-existing tunnels or cavities in snags, the center of pithy-stemmed shrubs, and in brush piles. Bumble bees frequently nest in abandoned rodent burrows or under clump-forming bunch grasses. (Photos below illustrate some nest sites.)

SCORE ALL OPTIONS THAT APPLY A = abundant, M = moderate, S = scarce	Score	Before	After	Treatment to increase score
Dead wood, brush piles, or snags present	A = 10 M = 5 S = 1			
Pithy twigs (elderberry, cane fruit, sumac, etc.)	A = 10 M = 5 S = 1			
Overgrown native bunch grasses (clump-forming) present	3			
<i>Subtotal (1b)</i>				



Section 1 (cont.)

1c. Supplementary wood- and cavity-nesting sites.

Wood- or cavity-nesting bees readily occupy artificial nests. Nest blocks should be obvious, and ideally placed near a large visual landmark such as a building. Nest hygiene is an important consideration. For optimum pollinator populations, blocks should be cleaned and maintained.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score
Nest blocks: 1 point for every one placed in the field (at least 50 feet between blocks)	0 – 10			
Nest blocks with no more than 20 holes per block	5			
Nest blocks regularly cleaned or replaced	5			
Nest blocks placed near large visual landmarks	3			
<i>Subtotal (1c)</i>				

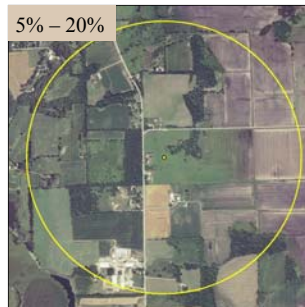
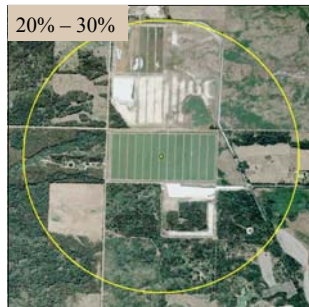
Nesting Habitat Total

(1a + 1b + 1c)

2a. Percent of natural vegetation within 1/2 mile of site.

The photos below illustrate these different categories.

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
> 30%	10			
20% – 30%	7			
5% – 20%	3			
< 5%	0			
<i>Subtotal (2a)</i>				




Section 2: Foraging Habitat

2b. Dominant vegetation in non-cropped area within 1/2 mile of site.

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
Native plants	10			
Mix of native and naturalized (non-invasive) plants	7			
Naturalized flowering species (e.g., alfalfa)	5			
Invasive flowering weeds	0			
Sod-forming grasses	0			
<i>Subtotal (2c)</i>				


Section 2: Foraging Habitat (cont.)

2c. Percentage of vegetative cover (non-crop area) that is forbs or flowering shrubs within 1/2 mile of site.
The photos below illustrate some categories. See regional technical notes (listed on page 8) for lists of preferred pollinator plants and other information.


SELECT ONLY ONE	Score	Before	After	Treatment to increase score
> 85% cover	10			
45% – 85% cover	7			
30% – 45% cover	5			
20% – 30% cover	3			
< 20% cover	1			
<i>Subtotal (2c)</i>				




2d. Number of species of forbs and flowering shrubs on farm that bloom in spring (including crops).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10			
3 – 4 species	5			
1 – 2 species	3			
0 species	0			
<i>Subtotal (2d)</i>				

2e. Number of species of forbs and flowering shrubs on farm that bloom in summer (including crops).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10			
3 – 4 species	5			
1 – 2 species	3			
0 species	0			
<i>Subtotal (2e)</i>				

2f. Number of species of forbs and flowering shrubs on farm that bloom in fall (including crops).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10			
3 – 4 species	5			
1 – 2 species	3			
0 species	0			
<i>Subtotal (2f)</i>				

Foraging Habitat Total			 (2a + 2b + 2c + 2d + 2e + 2f) 
-------------------------------	--	--	--

Section 3: Landscape Features

3a. Average field size.				
SELECT ONLY ONE	Score	Before	After	Treatment to increase score
< 5 acres	10			
5 – 10 acres	5			
10 – 50 acres	3			
> 50 acres	1			
<i>Subtotal (3a)</i>				

3b. Additional landscape features within one mile.				
SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score
Riparian buffers: 1 point for every 20% of area within 25 feet of water feature that is vegetated	0 – 5			
Hedgerows, windbreaks, or fencerows of diverse tree/shrub species	5			
Flowering cover crops, bee pasture, bolting crops	5			
Source of clean surface water (non-contaminated)	3			
<i>Subtotal (3b)</i>				

Landscape Features Total

(3a + 3b)

Section 4: Farm Practices

4a. Use of pesticides.				
SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score
No use of any insecticides	40			
IPM program in place	10			
Insecticides sprayed at night	5			
Crops sprayed only outside of bloom period	5			
Spray drift carefully controlled	5			
Annual calibration of spray equipment	5			
<i>Subtotal (4a)</i>				

4b. Land management techniques.				
SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score
Burning, mowing, or haying is done to < 1/3 of area each year.	10			
Grazing plan that encourages wildflower diversity/abundance	10			
No cultivation for weed control	10			
No disturbance of field borders	5			
<i>Subtotal (4b)</i>				

Farm Practices Total

(4a + 4b)

Habitat Assessment Reference Materials

California

Pollinator Biology and Habitat in California (NRCS Technical Note)
http://ftp-fc.sc.egov.usda.gov/CA/technical/technotes/TN_Biology_19_Pollinator_Biology_CA_5-09.pdf

Pacific Northwest

Plants for Pollinators in the Inland Northwest (Pullman PMC Technical Note)
http://www.xerces.org/wp-content/uploads/2011/02/nrcstechnote_plantsinlandnw1.pdf

Plants for Pollinators in Oregon (NRCS Technical Note)
http://plants.usda.gov/pollinators/Plants_for_Pollinators_in_Oregon_PM%2013.pdf

Mountain Region

Plants for Pollinators in the Intermountain West (Aberdeen PMC Technical Note)
http://www.xerces.org/wp-content/uploads/2011/02/nrcstechnote_plantsintermtwest.pdf

Pollinator Biology and Habitat (Colorado NRCS Technical Note)
<http://efotg.nrcs.usda.gov/references/public/CO/pollinators.pdf>

Habitat Development for Pollinator Insects (Montana NRCS Technical Note)
http://plants.usda.gov/pollinators/Habitat_Development_for_Pollinator_Insects_MT-20.pdf

North Central States

Pollinators (South Dakota NRCS Fact Sheet)
http://plants.usda.gov/pollinators/Pollinators_South_Dakota_Fact_Sheet_SD-FS-55.pdf

Southwest and South Central Regions

Pollinator Plants for Texas Conservation Practices (NRCS Technical Note)
<http://www.plant-materials.nrcs.usda.gov/pubs/txpmctn8222.pdf>

Great Lakes States

Wisconsin Pollinator Biology and Habitat (NRCS Technical Note)
<ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/biology-tn8.pdf>

Illinois Pollinator Biology and Habitat (NRCS Technical Note)
<http://efotg.nrcs.usda.gov/references/public/IL/BTechNote23.pdf>

Southeast Region

Alabama Conservation Security Program: Wildlife Enhancement Activity, Pollinator Areas (NRCS Job Sheet)
http://plants.usda.gov/pollinators/CSP_Wildlife_Enhancement_Activity-Pollinator_Areas.pdf

Mid Atlantic States

Delaware Native Plants for Native Bees (NRCS and Delaware Department of Agriculture Technical Bulletin)
<http://dda.delaware.gov/plantind/forms/publications/Delaware%20Native%20Plants%20for%20Native%20Bees.pdf>

Habitat Development for Pollinators in New Jersey (NRCS Technical Note)
http://plants.usda.gov/pollinators/Habitat_Development_for_Pollinators_NJ.pdf

Wildflower Meadows for Wildlife and Pollinators (Virginia NRCS Job Sheet)
http://plants.usda.gov/pollinators/Conservation_Cover_Wildflower_Meadow_for_Wildlife_and_Pollinators_327a.pdf

Northeast Region

New England Pollinator Biology and Habitat (NRCS Technical Note)
ftp://ftp-fc.sc.egov.usda.gov/NH/WWW/Technical/New_England_NRCS_Pollinator_Tech_Note_FINAL.pdf

Program and Practice Standard Guidance for Pollinator Conservation

Using Farm Bill Programs for Pollinator Conservation (NRCS Technical Note): Guidelines on how EQIP, CSP, and other programs can be used to restore or enhance habitat for pollinators.
<http://www.xerces.org/wp-content/uploads/2009/04/using-farmbill-programs-for-pollinator-conservation.pdf>

Farm Management Guidelines for Pollinator Conservation

Farming for Bees (Xerces Society Conservation Guidelines): A guide to adapting farm practices to conserve native crop pollinators and their habitat.
http://www.xerces.org/wp-content/uploads/2008/11/farming_for_bees_guidelines_xerces_society.pdf

Pesticide Considerations for Native Bees in Agroforestry (USDA National Agroforestry Center Technical Note): An article highlighting how to reduce bee poisoning from pesticides.
<http://www.xerces.org/wp-content/uploads/2008/10/agroforestrynotes35-pesticides.pdf>

How to Reduce Bee Poisoning from Pesticides (Oregon State University Extension Fact Sheet): A publication listing common agricultural pesticides and their known effects on multiple bee species.
<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>

Supplementing Native Bee Nest Sites

Managing Alternative Pollinators: A Handbook for Beekeepers, Growers, and Conservationists (Sustainable Agriculture Research and Education Program Handbook): A full color guide to providing nests sites for bumblebees, mason bees, leafcutter bees, alkali bees, and other native species.
<http://www.sare.org/publications/pollinators/pollinators.pdf>

Tunnel Nest Construction and Management (Xerces Society Fact Sheet): Guidelines on the construction and maintenance of nests for tunnel nesting native bees.
<http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>