United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E327B

CONSERVATION STEWARDSHIP PROGRAM

Establish Monarch butterfly habitat

Conservation Practice 327: Conservation Cover

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Associated Ag Land; Farmstead

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Seed or plug milkweed (*Asclepias* spp.), and high-value monarch butterfly nectar plants on marginal cropland, field borders, contour buffer strips, and similar areas.

Criteria

- Habitat areas must be at least 0.5 acres.
- Establish and maintain habitat for monarch butterflies as described below:

A. Monarch butterflies

- Lists of larval host plants and nectar plants suitable for monarch butterfly habitat are provided in the NRCS Field Office Technical Guide (FOTG).
- A grass component to a monarch habitat planting is commonly needed for ecological stability, weed control, and fuel for prescribed burning. The FOTG provides information on the grass/forb ratio for monarch habitat plantings.
- To provide food (nectar and pollen) for adult monarch butterflies, at least 60% of the forb seeds (pure live seed) in the mix shall be from the monarch butterfly planting list

(FOTG). Milkweed seeds are included in meeting the 60% minimum because milkweeds are excellent nectar plants. The FOTG provides information on the required number of forb species per bloom period (early, mid, or late season) for monarch habitat plantings. Bloom periods are to coincide with monarch presence in the area.

- To provide food for monarch butterfly larvae, plantings shall include at least one species of milkweed (*Asclepias* spp.) from the FOTG monarch butterfly planting list. All milkweed species used in the mix must be from this list and shall represent at least 1.5% of the total seeds in the mix. The total seeds include pure live seed from both grass and forbs. Tropical milkweed (*Asclepias curassavica*) shall not be planted.

  Waiver: In some regions, a commercial source of native Asclepias species is limited or not available. In these situations, the NRCS State Conservationist may apply for a waiver, and only require that plantings include monarch nectaring species. In this situation, milkweed seed or plugs are still encouraged to be planted, if possible. If such a waiver is granted, the mix will result in at least 80% of the seed being from the state's monarch nectaring plant list.

- Any other use of the monarch butterfly habitat area must not compromise its intended purpose.

- If a Monarch Butterfly Wildlife Habitat Evaluation Guide (WHEG) is available for use in the state, a minimum planned Monarch WHEG score of "0.60 will be obtained for the planted area.

B. Planting criteria for monarch butterfly habitat

- Site selection should consider existing weed pressures and available methods of control. Delay planting and conduct an additional growing season of weed control if high weed pressure requires aggressive treatment.

- Site preparation and plant establishment shall be accomplished according to the state's specifications for NRCS Conservation Practice Standard Conservation Cover (Code 327) or Wildlife Habitat Planting (Code 420).

- Successful establishment is when the planting provides at least 80 percent soil cover when visually estimated, and resultant cover consists of at least 500 milkweed plants

per acre (approx. 1 stem per each 100-sq. ft.), and successful establishment of at least two targeted nectar plants per bloom period when monarchs are present in the state. A milkweed plant is defined as a single stem emerging from the ground.

- Insecticides should not be used in the habitat planting area.
- Herbicides are allowed during site preparation (prior to planting) when it is necessary to eliminate competing weeds from a planting area in order for nectar and pollen producing plants to establish.
- After a monarch habitat enhancement has been planted, herbicides may be spot-sprayed to remove broad-leaf weeds, or grass-selective herbicides may be applied to larger areas to eliminate persistent weedy grasses. Similarly, in the first-year post-planting, the entire site may be mowed 8 to 10 inches high to reduce annual or biennial weeds that persist (site should be mowed just before dominant annual weeds flower).

C. Operation and maintenance for monarch butterfly habitat

- Management and/or maintenance activities such as mowing, haying, burning, or grazing shall be conducted outside of the season when monarch larvae or adults are present.
- Insecticides should not be used in the habitat planting area.
- The planted habitat areas shall be regularly inspected for invasive and/or noxious plants or other plants that may compromise the purpose of this enhancement. Undesirable species shall be controlled using Individual Plant Treatment methods, for example, spot-spraying with herbicide or physical removal of individual plants.

CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide a map showing the location of proposed habitat areas with notes on land use adjacent to proposed habitat areas to discuss with NRCS staff.
- ☐ During implementation, purchase specified seed mix or plant materials that meets monarch-specific seeding or planting requirements provided by NRCS.
- ☐ During implementation, follow habitat establishment guidance provided by NRCS in the state specifications for NRCS Conservation Practice Standard Conservation Cover (Code 327).
- ☐ After implementation, provide a list of management and/or maintenance activities carried out to manage the habitat areas and the dates on which those activities occurred.
- ☐ After implementation, provide photo documentation of monarch habitat areas.

NRCS will:

- ☐ Prior to implementation, assess habitat condition using a monarch Wildlife Habitat Evaluation Guide (WHEG) to calculate current WHEG score and anticipated WHEG score after implementation of Enhancement. **Benchmark WHEG score = _____ Planned Post Implementation WHEG score = _____**
- ☐ Prior to implementation, provide participant with suitable larval host plants and nectar plants lists.
- ☐ Prior to implementation, provide and explain State specifications for NRCS Conservation Practice Standard Conservation Cover (Code 327) or Wildlife Habitat Planting (Code 420).
- ☐ Prior to implementation, provide participant with a recommended seed mix and planting specifications per above criteria (grass/forb ratio; number of forb species per bloom period for monarch habitat plantings).
- ☐ After implementation, verify successful establishment (per planting criteria above).

CONSERVATION STEWARDSHIP PROGRAM

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

Sign below in Oregon Supplement pages

USDA United States Department of Agriculture

OREGON SUPPLEMENT TO

CONSERVATION ENHANCEMENT

CONSERVATION STEWARDSHIP PROGRAM

ACTIVITY E327B

Additional Documentation Requirements and Information for Oregon

If the base practice (327) is being contracted and paid for along with the enhancement, complete an Oregon 327 IR for the project, indicating species and quantities to be seeded/planted. If the base practice has been completed or the site has been inventoried and found to meet or lack specifications, the planner should document this information (such as an IR from a previous contract, WHEG, or some other form of documentation/inventory).

- Use the Western Monarch Butterfly WHEG to determine pre- and post-enhancement condition for Monarch butterflies at: FOTG: Oregon: Section 3: Oregon Conservation Planning Documents: Wildlife Habitat Inventory Documents: Western Monarch Butterfly WHEG
- Western Monarch WHEG - planned rating must be 0.75 or greater.
- Enhancement parameters should target addition/augmentation with plant species that address a period of inadequate nectar and/or host plant presence as identified by the WHEG and National Enhancement parameters defined above. Augmentation with nectar producing plants should target species in bloom when Monarchs are present in Oregon -this is from June through September for western Oregon and the Inland Northwest or April through November for the Great Basin.
- Document (WHEG and narrative) how this enhancement will maintain or enhance the habitat for Monarch butterflies.
- Direct any additional questions to your Basin or State Wildlife Biologist or your State Plant Materials Specialist.

Oregon Supplemental Information: 327B

Planting Guidance:

Milkweeds are best established from rhizomes, plugs, or container plants. It is difficult to establish milkweeds from direct seeding. Please refer to information about milkweeds that occur in Oregon and which are suitable to the region of your project in "A Guide to the Native Milkweeds of Oregon" at: https://www.xerces.org/publications/id-monitoring/guide-to-native-milkweeds-of-oregon

Very little information is currently available that documents the use and importance of various flowers as nectar resources for adult Monarch butterflies across the Northwest region. The following tables show best estimates for good nectar plants for monarch habitat. Below you will find estimates on seeding rates and plant spacing when using bare-root, plugs or container plants. If planting small areas, highest success and shortened site preparation timing (although higher plant costs) will occur by planting plants (bare-root, plugs, container plants) over seeding into areas. When establishing large plantings, seeding is the most economical way to establish habitat. If funds are available, planting higher rates of plants or seeds is advised.

All native plant materials used to establish Monarch habitat should originate within the ecoregion where the project will occur (or from an adjacent ecoregion with similar climate). Make sure to select plants suitable/adapted to the enhancement site conditions - wet/dry, sun/shade, etc.. Use Ecological Site Descriptions (if available) to help guide plant selections.

Please refer to the Xerces monarch Nectar plant guides at these links for **general information** about recommended plants. Additional detailed information about potential plants to use are included in spreadsheets below.

The Maritime Northwest:

https://www.xerces.org/publications/plant-lists/monarch-nectar-plants-maritime-northwest

The Inland Northwest:

https://www.xerces.org/publications/plant-lists/monarch-nectar-plants-inland-northwest

Or the Great Basin:

https://www.xerces.org/publications/plant-lists/monarch-nectar-plants-great-basin

Planting and Seeding Recommendations:

Once adequate site preparation has been completed, planting or seeding can proceed.

In the Maritime Northwest, planting/seeding can occur any time in the fall to early spring time-frame, with best success with fall planting/seeding. In the Great Basin and Inland Northwest, planting should occur in late fall.

Selected species should target period(s) when nectar producing plants are limited and when monarch butterflies are expected to be present to use those nectar resources.

A grass component to a monarch habitat planting is commonly needed for ecological stability and weed control. To provide food (nectar and pollen) for adult monarch butterflies, at least 60% of the seeds (pure live seed) in the mix (on a seeds/square foot basis) shall be non-grass species that provide pollen or nectar resources.

Below are specific recommendations (pages 6-12) for each of the Ecoregions of Oregon. When plants from the documents above and below cannot be located or are not appropriate for the site, substitutions from the publications "Plants for Pollinators in Oregon" or "Plants for Pollinators in the Inland Northwest" can be made. Those document links are here:

Oregon Plant Materials Technical Note Note 13 - Plants for Pollinators in Oregon: https://www.nrcs.usda.gov/plantmaterials/orpmstn7451.pdf

For eastern Oregon plant recommendations, also refer to the Washington Plant Materials Technical Note No. 24. Plants for Pollinators in the Inland Northwest: https://www.nrcs.usda.gov/plantmaterials/wapmctn11733.pdf

For MLRAs 6, 7 and 8, refer to plant tables in: 327 OR GD - https://efotg.sc.egov.usda.gov/api/CPSFile/8930/___

For MLRAs 1, 2, 4, and 5, refer to plant tables in: 420 OR OTH Wildlife Habitat Planting files - https://efotg.sc.egov.usda.gov/#/state/OR/documents/section=4&folder=-270

This document may also be helpful in selecting west-side plants: Oregon Plant Materials Technical Note 42 - Enhancements for Native Bees in Western Oregon and Washington Cranberry Production, located at: https://www.nrcs.usda.gov/plantmaterials/orpmstn13176.pdf

How to Choose a Good Pollinator Seed Mix: https://www.nrcs.usda.gov/plantmaterials/orpmcbr13465.pdf - plant recommendations are suitable to western Oregon; broad concepts applicable to all seed mixes.

Seed and Plant Vendors - places to find plants

Oregon Plant Material Technical Note No. 9 – "Plant and Seed Vendors for Oregon, Washington, Idaho, and Northwest California"
https://www.nrcs.usda.gov/plantmaterials/orpmctn9149.pdf

To be released Summer, 2023 - Oregon Flora Project Website – Gardening Portal – Nurseries that supply native plants: https://oregonflora.org/garden/

Additional detailed information about potential plants to use are included in spreadsheets below.

Design Approvals & Acknowledgements:

Design Approval	Date	Job Approval Authority
Designed by:		
Approved by:		

Client's Acknowledgement Statement:

The client acknowledges:

- I have received a copy of the specification and understand the contents and requirements.
- It is my responsibility to obtain all necessary permits and/or rights and to comply with all ordinances and laws pertaining to the application of this practice.
- I will not begin installation of this practice until I have received appropriate approval to do so. I understand NRCS also has Federal and state laws to comply with that may take some time to address (e.g. cultural resources).

Client's	Date
Signature	

Certification Documentation:

☐	Field Evaluation: Post-treatment inventory, measurements, notes, as-built, and supporting documentation (document completion in conservation plan), as required.
☐	Map(s): Including field numbers, fields treated, and units treated (may document on conservation plan map), as required.
☐	Photos or other supporting documentation (e.g., seed tags, soil tests, receipts, invoices, spray records, fertilizer records, etc.)
Brief Description of Work Accomplished (types of equipment used, date of application, extents and quantities installed, etc.)	

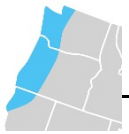
Certification Statement:

The employee certifies the implementation of this conservation practice:

- Meets the purpose, general criteria, and any required additional criteria as documented in the conservation practice standard and/or enhancement sheet.
- Meets the specifications contained herein and is complete.
- Conforms to my existing Job Approval Authority controlling factors and levels.

Name	Date	Job Approval Authority

Field Level Certification – For multiple applications of this design.				
Land Unit/ Contract Item Number	Date	Unit(s)	Amount Installed	Certifier



Maritime Northwest (northwestern California, western Oregon, western Washington)

Species Name	Common Name	Bloom (orange=monarchs present)												Planting depth	Percent of seed mix (%)	PLS lbs/acre for solid stand	Spacing between plants	Notes
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
Abronia latifolia	Coastal sand verbena			x	x	x	x	x	x	x	x			1/8-1/4; plants	0-5		4	Appropriate along the coast in sandy soils
Aesculus californica	California buckeye					x	x	x						plants			10	Not naturally-occuring in Oregon
Agastache urticifolia	Nettleleaf giant hyssop						x	x	x					plants	0-5	1	4	Tolerates clay soil and wet conditions.
Asclepias cordifolia	**Heartleaf milkweed**					**x**	**x**							plants	Planted at density to result in 4-10% cover of milkweeds		4	Drought tolerant. Appropriate for SW Oregon
Asclepias fascicularis	**Narrow-leaved milkweed**						**x**	**x**	**x**					plants	Planted at density to result in 4-10% cover of milkweeds		4	Tolerates clay soil and wet or dry conditions.
Asclepias speciosa	**Showy milkweed**						**x**	**x**	**x**					plants	Planted at density to result in 4-10% cover of milkweeds	**8**	4	
Baccharis pilularis	Coyotebrush								x	x	x			plants			10	Drought tolerant.
Ceanothus thyrsiflorus	Blueblossom				x	x	x							plants			10	

Chamerion angustifolium	Fireweed							x	x					1/8-1/4; plants	0-10	0.5	4	**Will easily** spread from rhizomes over time.
Cirsium occidentale	Cobwebby thistle					x	x	x						1/8-1/4; plants	0-5		3	Appropriate for SW Oregon; other native thistles may be substituted
Clematis ligusticifolia	Western white clematis						x	x	x					plants			4	
Delphinium glaucum	Sierra larkspur							x	x	x				1/8-1/4; plants	0-5		2	Appropriate for SW Oregon
Dichelostemma capitatum	Bluedicks				x	x	x							1/4-1/2; plants	0-5	5	2	
Ericameria nauseosa	Rubber rabbitbrush								x	x	x			1/8-1/4; plants	0-5	0.5	4	Drought tolerant. Appropriate for SW Oregon
Eriogonum umbellatum	Sulphur-flower buckwheat						x	x	x	x				1/4-1/2; plants	0-10	4	4	
Helianthus annuus	Common sunflower						x	x	x					1/2-1	0-10	30		annual
Monardella odoratissima	Mountain monardella						x	x	x					1/8-1/4	0-10	4		Appropriate for SW Oregon
Penstemon procerus	Littleflower penstemon						x	x	x					1/8-1/4; plants	0-5	4	3	
Philadelphus lewisii	Lewis' mock orange					x	x	x						plants			10	
Rudbeckia occidentalis	Western coneflower						x	x	x					1/4-1/2; plants	0-5		3	
Solidago can. var. *salebrosa*	Rough Canada goldenrod							x	x	x				1/8-1/4; plants	0-10	0.5	4	
Symphyotrichum chilense	Pacific aster								x	x				1/8-1/4; plants	0-5	1	4	Other Symphyotrichum species, such as S. subspicatum or S. hallii, will be more suitable

Symphyotrichum hendersonii	Lyall aster							x	x	x				1/8-1/4; plants	0-10	1	4	Appropriate for SW Oregon
Verbena lasiostachys	Western vervain				x	x	x	x	x	x				1/8-1/4	0-5			Appropriate for SW Oregon
Wyethia angustifolia	California compassplant					x	x	x						1/4-1/2; plants	0-5	24	4	Very slow to establish from seed
Festuca roemeri	Roemer's fescue													1/8-1/4	10	8		
Elymus glaucus	Blue wildrye													1/8-1/4	10	15		
Danthonia californica	California oatgrass													1/8-1/4	10	8		

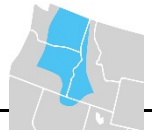
Milkweeds (shown in bold) are monarch caterpillar host plants.

Plant assortment of plant seed with a mix of approximately 30% grasses - roemer's fescue, blue wildrye and California oatgrass

Shrubs should be planted in clumped patches with approximately 5-10 plants of each species in a clumping

If using plants, herbaceous plants should be planted in clumped patches of at least 5 plants per species

When using seed with varying seed depths in a mix, use the shallowest depth to the plant mix



Inland Northwest (western Idaho, eastern Oregon, eastern Washington)

Species Name	Common Name	Bloom (orange=monarchs present)												Seeding depth (inches)	Percent of seed mix (%)	PLS lbs/acre for solid stand	Spacing between plants (feet)	Notes
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
Agastache urticifolia	Nettleleaf giant hyssop						x	x	x					plants		1	4	Tolerates clay soil and needs wet conditions
Asclepias cordifolia	**Heartleaf milkweed**			**x**	**x**	**x**	**x**	**x**						plants	Planted at density to result in 4-10% cover of milkweeds		4	Appropriate for SW Oregon

Asclepias fascicularis	**Narrow-leaved milkweed**						x	x	x					plants	Planted at density to result in 4-10% cover of milkweeds		4	Tolerates clay soil and wet or dry conditions.
Asclepias speciosa	**Showy milkweed**						x	x	x					plants	Planted at density to result in 4-10% cover of milkweeds	8	4	
Chrysothamnus viscidiflorus	Yellow rabbitbrush								x	x	x			1/8-1/4	0-5	3	4	
Cirsium occidentale	Cobwebby thistle					x	x	x						1/8-1/4	0-5		3	
Cleome lutea	Yellow spiderflower					x	x							1/4-1/2	0-5	11	3	
Dasiphora fruticosa	Shrubby cinquefoil					x	x							plants			5	
Ericameria nauseosa	Rubber rabbitbrush								x	x	x			1/8-1/4	0-5	0.5	4	Drought tolerant.
Erigonum elatum	Tall woolly buckwheat						x	x						1/4-1/2	0-5			
Eriogonum umbellatum	Sulphur-flower buckwheat							x	x	x				1/4-1/2	0-10	4	4	
Euthamia occidentalis	Western goldentop								x	x	x			1/8-1/4	0-5			
Gaillardia aristata	Blanketflower							x	x	x				1/4-1/2	0-5	7		
Helianthus annuus	Common sunflower							x	x	x				1/2-1	0-10	30		annual
Helianthus nuttallii ssp. nuttallii	Nuttall's sunflower							x	x					1/4-1/2	0-5			
Monardella odoratissima	Mountain monardella						x	x	x					1/8-1/4	0-10			Needs regular water and full sun for best flowering.
Penstemon speciosus	Royal penstemon						x	x						1/4-1/2	0-5	3		
Prunus virginiana var. melanocarpa	Black chokecherry					x	x							plants		1	10	Plants toxic to livestock
Rosa woodsii var. ultramontana	Woods' rose					x	x	x						plants		1	4	
Rudbeckia occidentalis	Western coneflower						x	x	x	x	x	x		1/4-1/2		3		
Salix lasiolepis	Arroyo willow	x	x	x	x	x	x							stakes, plants				
Salvia dorrii	Purple sage					x	x	x						plants			2	

Solidago canadensis	Canada goldenrod								x	x	x			1/4-1/2	0-10	1		Drought tolerant.
Solidago missouriensis	Missouri goldenrod								x	x	x			1/4-1/2	0-10	1		
Symphyotrichum chilense	Pacific aster								x	x				1/8-1/4	0-5	1		Other Symphyotrichum species may be more suitable in this region
Pseudoroegnera spicata	bluebunch wheatgrass													1/4-1/2	15	9	N/A	
Poa secunda	Sandberg bluegrass													1/8-1/4	15	2	N/A	

Milkweeds (shown in bold) are monarch caterpillar host plants.
Plant assortment of plant seed with a mix of approximately 30% grasses - bluebunch wheatgrass and Sandberg bluegrass

Great Basin (Nevada, southeast Oregon, eastern Utah)

Species Name	Common Name	Bloom (orange=monarchs present)												Planting depth	Percent of seed mix (%)	PLS lbs/acre for solid stand	Spacing between plants (Feet)	Notes
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
Agastache urticifolia	Nettleleaf giant hyssop						x	x	x					plants		1	4	Tolerates clay soil and needs wet conditions
Asclepias fascicularis	**Narrow-leaved milkweed**						**x**	**x**	**x**					plants	Planted at density to result in 4-10% cover of milkweeds		4	Tolerates clay soil and wet or dry conditions.
Asclepias speciosa	**Showy milkweed**					**x**	**x**	**x**	**x**	**x**				plants	Planted at density to result in 4-10% cover of milkweeds	**8**	4	

Chamerion angustifolium	Fireweed							x	x	x				1/8-1/4; plants	0-10	0.5	4	Will easily spread from rhizomes over time
Chrysothamnus viscidiflorus	Yellow rabbitbrush								x	x	x			1/8-1/4	0-5	3	4	
Clematis ligusticifolia	Western white clematis						x	x	x									
Cleome lutea	Yellow spiderflower					x	x							1/4-1/2	0-5	14	3	
Cleome serrulata	Rocky Mountain beeplant							x	x	x						17		
Ericameria nauseosa	Rubber rabbitbrush							x	x	x	x			1/8-1/4	0-5	3	4	Drought tolerant.
Eriogonum umbellatum	Sulphur-flower buckwheat						x	x	x	x				1/4-1/2	0-10	6	4	
Erysimum capitatum	Sanddune wallflower					x	x	x										Drought tolerant.
Helianthus annuus	Common sunflower							x	x	x	x			1/2-1	0-10	30		annual
Helianthus nuttallii ssp. *nuttallii*	Nuttall's sunflower								x	x				1/4-1/2	0-5			
Heliotropium curassavicum	Salt heliotrope			x	x	x	x	x	x	x	x	x						Plants toxic to livestock
Mertensia ciliata	Tall fringed bluebells					x	x											
Monardella odoratissima	Mountain monardella						x	x	x					1/8-1/4	0-10			Needs regular water and full sun for best flowering.
Penstemon speciosus	Royal penstemon					x	x	x						1/4-1/2	0-5	3		
Prunus virginiana var. *melanocarpa*	Black chokecherry				x	x								plants			10	Plants toxic to livestock
Rosa woodsii var. *ultramontana*	Woods' rose					x	x	x						plants			4	
Salix lasiolepis	Arroyo willow	x	x	x	x	x	x							stakes, plants		NA		
Salvia dorrii	Purple sage					x	x							plants		NA	2	
Solidago canadensis	Canada goldenrod									x	x	x		1/4-1/2	0-10	1		Drought tolerant.
Solidago spectabilis	Nevada goldenrod							x	x	x				1/4-1/2	0-10	1		
Sphaeralcea ambigua	Desert globemallow		x	x	x	x	x	x	x	x	x	x						
Symphyotrichum lanceolatum	White panicle aster							x	x									

Pseudoroegnera spicata	bluebunch wheatgrass												1/4-1/2	15	9	N/A	
Poa secunda	Sandberg bluegrass												1/8-1/4	15	2	N/A	

Milkweeds (shown in bold) are monarch caterpillar host plants.

Plant assortment of plant seed with a mix of approximately 30% grasses - bluebunch wheatgrass and Sandberg bluegrass