

POLLINATOR CONSERVATION ON RANCHES

Monarch recently eclosed from its chrysalis on
little bluestem by Brittney Viers-Scott.

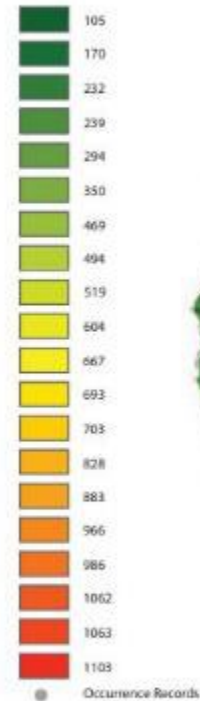
Western Rangelands = Important Habitat for Monarchs and other Pollinators

Semi-arid lands = highest bee diversity and highest suitability for monarch breeding habitat

Semi-arid lands = high use as rangelands

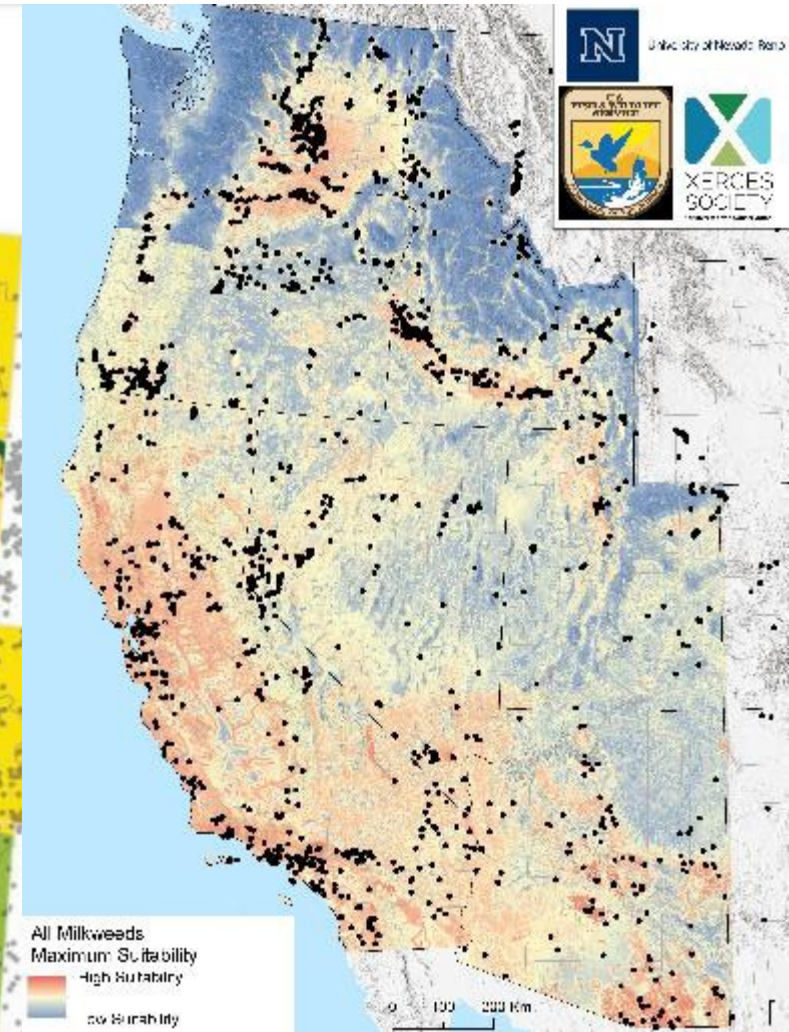
FIGURE 1: Bee Diversity in the West.
Displayed as the total number of bee species collected within each ecoregion

Bee Diversity within Ecoregion



Data source: Biodiversity Information Serving Our Nation (BISON)

Note: This map is only as accurate as the data available in the BISON database. Actual bee diversity may be higher than that displayed on this map. Map created by Stephanie McKinright of the Xerces Society for Invertebrate Conservation, 2018.



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Managing Rangelands

Management practices which can positively or negatively impact pollinators: grazing, fire, mowing, pesticides, recreation, grasshopper management, and managed pollinators



Photos: Heritage Seedlings, Inc.; NYSDOT; Xerces Society / Anne Stine; Yamhill County Council

Rangeland Management for Pollinators: Overarching Principles

Heterogeneity: diversity in vegetation, structure, and management practices helps maximize biodiversity

Interactions: consider how natural forces, and active management interact

Adaptive Management: management for diversity requires active feedback loops and the ability to adapt to changing conditions

Knowledge Gaps: the status of knowledge is incomplete and will benefit from data, tinkering, and information sharing

How to Protect Habitat: Management Timing

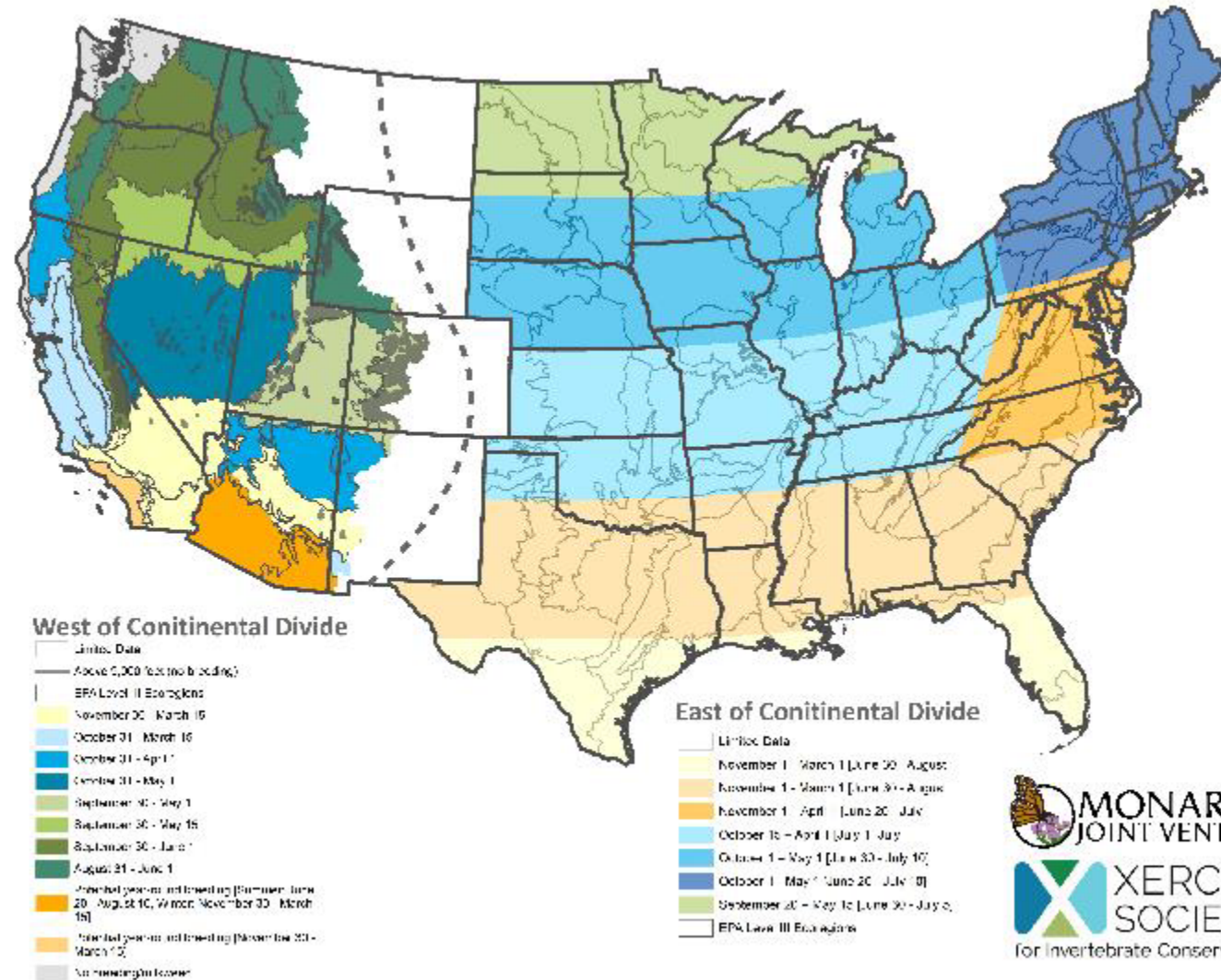
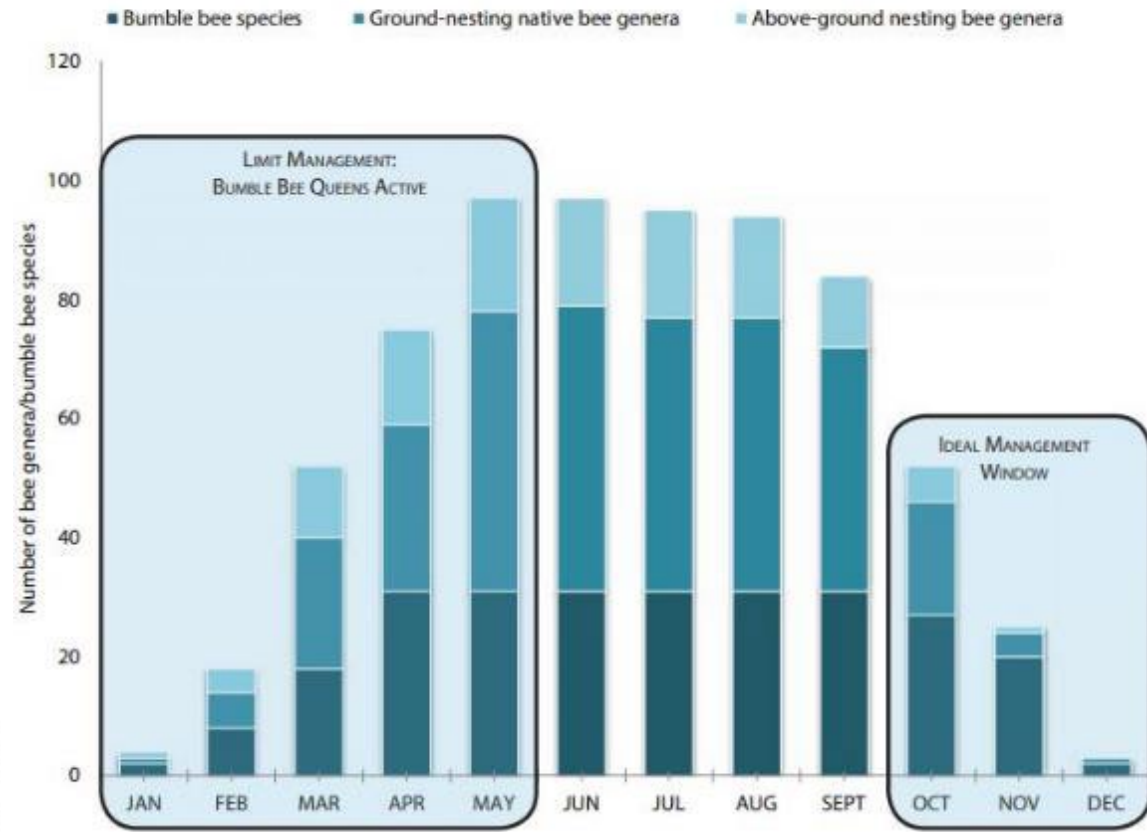


FIGURE 2: Recommended Management Timing for Native Bees in Western North America.
(Based on above- and below-ground nesting bee activity by genera and bumble bee activity by species)



Options listed in [] are recommended only if necessary. These summer management intervals may still cause some mortality. In Arizona, summer management windows are only recommended for low elevation areas with high summer temperatures.

Livestock Grazing

In general, as grazing intensity increases, pollinator abundance and diversity decreases, especially at high grazing intensities.

- Direct effects: trampling, behavior changes
- Indirect effects: removing floral & nesting resources, hydrology, community changes



Photo: Xerces Society / Sarina Jepsen

Livestock Grazing

However, grazing can also be an important management tool to maintain forb-dominated grasslands which can benefit specific pollinator species.



Photo: flickr/USFWS Josh Hull

Overarching Livestock Grazing BMPs

- **Timing, Intensity, Duration, Location**
- Fall and winter grazing = less direct effects (reduced host and nectar plants) – downside may have more indirect effects (wet soils = more disturbance etc.)
- 40% max utilization rate: rotational grazing; HDSD=high intensity short duration; low AUMs
- Limit access to riparian areas & sensitive pollinator/butterfly host plant areas (milkweed for monarchs)



Photo: Xerces Society / Stephanie McKnight

Invasive & Non-Native Plant Control

- PLEASE don't spray your native forbs!!!
- Livestock EAT many forbs because they are nutritious
- Avoid broadcast applications, use targeted applications
- Follow the label directions
- Many native pollinators use invasive species for nectar and pollen, do not apply herbicides while pollinators are actively foraging



Photo: Deedee Soto

Fire and Pollinators – limited research in West

Anecdotal evidence that summer fire encourages growth of clonal milkweed species (showy and narrowleaf).

It may not be feasible to conduct controlled burns in the summer in many western locations, given the high fire danger at that time. To avoid causing direct mortality to immature and immobile stages of monarchs and other pollinators, fall and winter burns are generally advised.

**Research from the Eastern US: Baum and Sharber (2012) found that early summer fire increased the density of milkweed and number of monarch eggs per plant, but it is unknown if milkweed species in the West would respond positively to summer fire.



Photo: Jeff Vanuga, NRCS

A monarch egg on milkweed (L); prescribed fire boosted narrowleaf milkweed at this site in the Central Valley of California (R).



Fire BMPs

- Leave at least 1/3 of an area unburned (especially important if burning during summer)
- Ideally burn during the dormant season: ~October-February
- Plan burns to increase habitat heterogeneity
- Include pollinator-attractive plants in post-fire seeding (monarch or other pollinator host and nectar plants)
- Some limited research suggests that shade is important for monarch breeding during the hot summer months in the West. When burning, ensure some trees and shrubs are conserved/protected from fire. Spring blooming shrubs are also important floral resources for native bees in the West (Research by Sandy DeBano at Oregon State University)



Photo: Robert Parks/National Park Service

NRCS Practices for Pollinators



- **Brush Management (314)**
- **Riparian Plantings (390/391)**
- **Wildlife Habitat Planting (420)**
- **Hedgerow (422)**
- **Prescribed Grazing (528)**
- **Tree/Shrub Establishment (612)**



Managed Pollinators: Honey Bees & Others

Beekeeping ≠ Bee Conservation

There are lots of good reasons for keeping honey bees, but bee conservation is not one of them...



Photo: Eric Lee-Mäder

Additional Resources

Rangeland Management and Pollinators

A GUIDE FOR PRODUCERS IN THE GREAT PLAINS





Figure 1: Healthy rangeland provides quality forage for cattle and is home to a diversity of plants and animals, including pollinators.

Overview

Ranchers are essential stewards of grasslands and prevent rangeland from being converted to cropland or urban areas. Rangelands are important for pollinators, providing contiguous and often expansive areas of habitat (food and shelter) in the Great Plains. In turn, pollinators are important for rangelands; by sustaining a wide array of wildflowers, they provide valuable forage for cattle, food for wildlife, support soil health, and make grasslands more resilient. These best management practices (BMPs) will help you manage your rangeland using grazing, fire, or haying, to support both livestock production and pollinator health. Well-managed rangelands are home for many species of wildlife, and your management decisions play an important role in conservation.


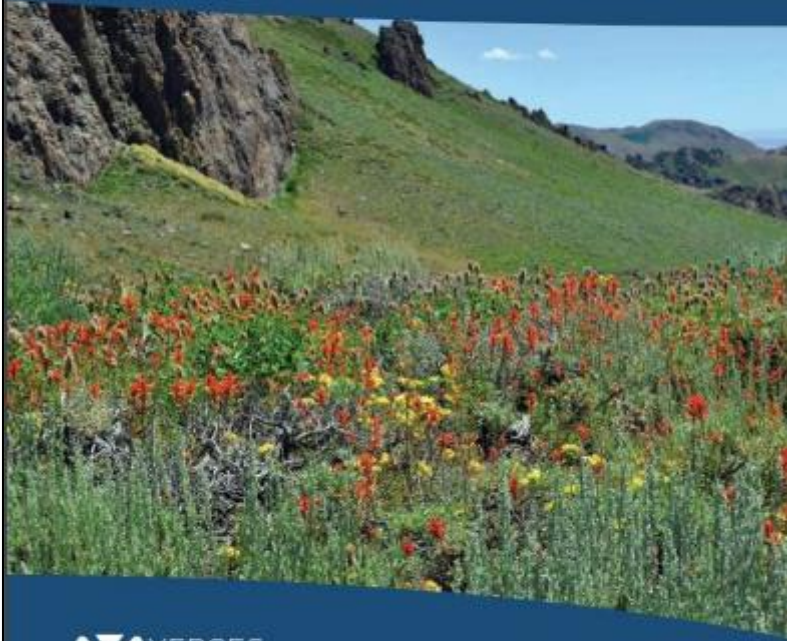
Incorporating pollinator conservation into your rangeland management may not require large-scale changes, but rather a shift to a broader view of rangelands as permanent habitat for creatures large and small. Some of the practices we recommend can also bring additional benefits. For instance, many of these practices enhance habitat for other wildlife, including game birds, and reduced stocking rates can increase rangeland resilience to drought.

We hope this document provides a framework for the management of healthy rangeland for livestock, pollinators, and other wildlife, and helps you view your rangelands through the eyes of a pollinator.



Best Management Practices for Pollinators on Western Rangelands

(Completed July 2018)



Regional Monarch Nectar Plant Guides



Nectar guides include information on species which are

- Native & attractive to monarchs (documented visitation)
- Commercially available
- Search web for “Xerces Monarch Plant Lists” and “Xerces Pollinator Plant Lists”



Bloom	Common Name	Scientific Name	Flower Color	Max. Height	Water Needs	Notes
Forbs						
Spring to Summer	1 Nettleleaf giant hyssop	<i>Agastache urtifolia</i>	Purple/red	2	L	Establishes better from transplant than seed. Tolerates clay soil and wet or dry conditions.
	2 Yarrow	<i>Achillea millefolium</i>	White	3	L	Tolerates clay soil and wet or dry conditions. Attractive to many insects.
	3 Coastal sand verbena	<i>Abronia latifolia</i>	Yellow	1	L	Tolerates salt spray and prefers sandy soils. Can bloom year-round.
Spring to Fall	4 Gumplant	<i>Grindelia camporum</i>	Yellow	4	L-H	Tolerates clay soil and wet or dry conditions.
	5 Milkweed	<i>Asclepias</i> spp.	Pink/white/purple	2-4	L/M	Monarch caterpillar host plant. Likely entire genus is attractive to monarchs.
	6 Oregon gumweed	<i>Grindelia stricta</i>	Yellow	5	H	Wetland / riparian.
	7 Western vervain	<i>Verbena lasiostachys</i>	Purple	3	L	Good butterfly plant. Tolerates seasonal flooding, sand and clay. Can be used for erosion control.

Images: www.xerces.org



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THANK YOU

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