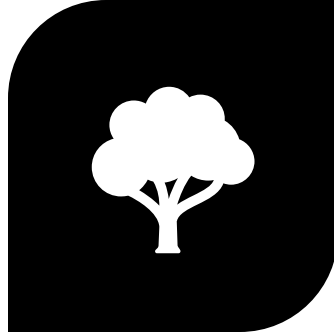


# Pollinator Habitat Creation & Enhancement

- 1) Habitat enhancement and management opportunities
- 2) Ecological restoration
  - a. Site preparation
  - b. Implementation
  - c. Maintenance



**POLLINATOR  
PARTNERSHIP**



ECOLOGICAL  
RESTORATION



HABITAT  
ENHANCEMENT

# Habitat Enhancement

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What can you do right now on the lands you currently manage?

## Integrated Vegetation Management (IVM)

“the practice of promoting desirable, stable, low-growing plant communities that will resist invasion by tall growing tree species through the use of appropriate, environmentally-sound, and cost-effective control methods. These methods can include a combination of chemical, biological, cultural, mechanical, and/or manual treatments.”

# Habitat Enhancement

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Selective herbicide use\*

Modify mowing practices

Utilize rights-of-way for habitat

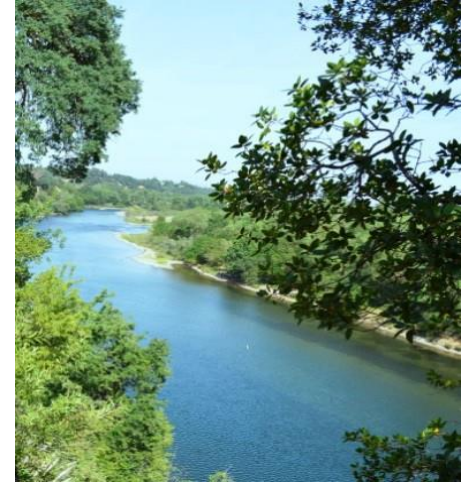
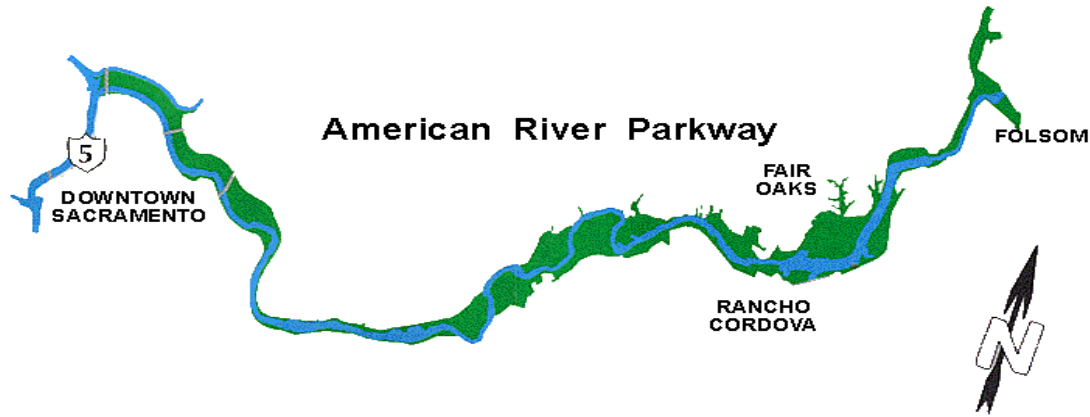
Incorporate native plants

Use social media

\*The use of herbicides in site preparations and maintenance can be an important tool for enhancing pollinator value in areas that are large and/or contain particularly difficult to control invasive plant species.

For smaller habitat projects or those without difficult to control species, initial preparation and maintenance methods such as hand-pulling, solarization, smothering, etc. can be feasible. Always use an Integrated Vegetation Management approach to site prep and maintenance.

# American River Parkway (ARP) Pollinator Partnership Project



## The “Jewel of Sacramento”

- 23 miles long with over 5 million annual visitors
- Multiple land and management issues



# Multiple Utility ROW

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## Partners

Pacific Gas and Electric Company  
(PG&E)

Sacramento Municipal Utility District  
(SMUD)

Sacramento County Parks

American River Parkway Foundation

## The Opportunity

Enhance habitat

Provide habitat connectivity

Provide recreation

Support public safety

Educate the public





American River Parkway (ARP) Pollinator Partnership Project

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# Project Activity Overview

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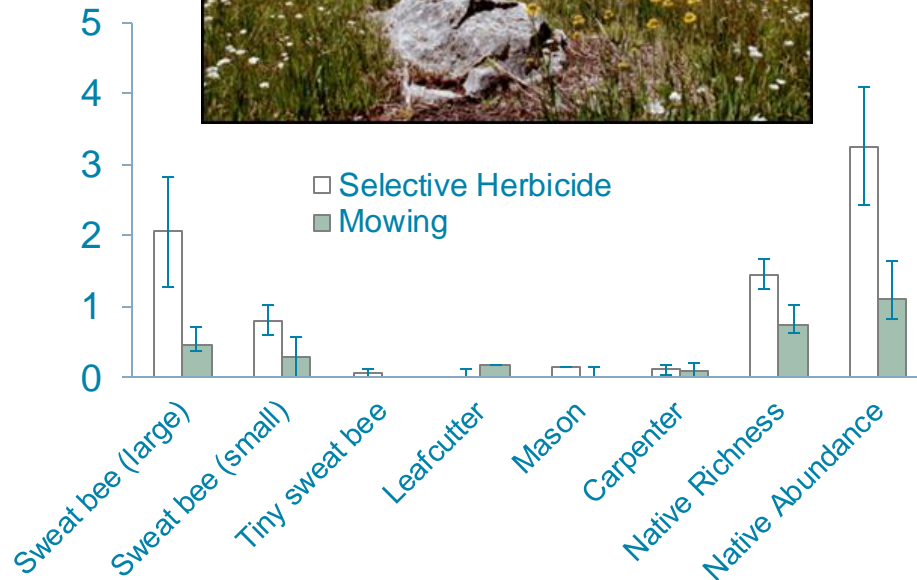
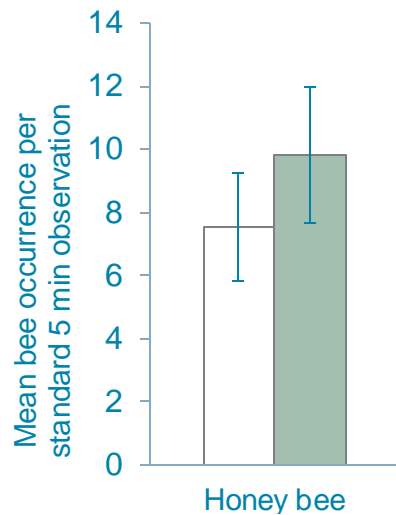


# Pollinator Assessments

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# Results





# Restoration

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# Standards

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Planning and design



Implementation



Monitoring,  
documentation,  
evaluation, and reporting



Maintenance

# Principles

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1. Engages stakeholders
2. Draws on many types of knowledge
3. Is informed by native reference ecosystems, while considering environmental change
4. Supports ecosystem recovery processes
5. Is assessed against clear goals and objectives, using measurable indicators
6. Seeks the highest level of ecosystem recovery possible
7. Gains cumulative value when applied at large scales
8. Is part of a continuum of restorative activities





# Evaluating a site

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Soil type

Land use history

Adjacent land use

Hydrology

Aspect

Existing vegetation

GIS (valuable resource)



# Design

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## Considerations

- What makes good pollinator habitat?
- Microclimates, microhabitats
- Selection of plant materials

## Species selection

- Locally adapted, native species
- Track bloom times

## Site preparation



Planning



Patience



Persistence

# Site preparation

## SMALL AREAS

< 1 acre

Examples: school gardens, educational areas, residential lawns

Organic options:

- Solarization
- Sheet mulching
- Manual Labor

Other options:

- Herbicide

Photo by Amber Barnes

## LARGE AREAS

> 1 acre

Examples: Crop fields and agricultural properties, transmission lines and ROWs

Organic options:

- Tillage (very intensive, longer timelines) or soil inversion
- Smother cropping

Other options:

- Herbicide

Photo by Amber Barnes

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# Herbicide

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Types of herbicide:

- Broad spectrum
- Selective
- Contact
- Systemic
- Residual



# Back to site preparation...



## Choosing an appropriate herbicide application method

- For heavily weed-infested sites, consider multiple applications
- Broadcast applications

## Timing of actions

- Multiple season approach
- Based on plant biology



## Limiting exposure to pollinators

- Low temperature periods
- Match the actions and conditions to target species and project goals





Photo by Amber Barnes

# Site preparation

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Things to remember:

- Site preparation depends largely on the existing vegetation at the site
- Pollinator plantings will vary in size
- Smaller projects may receive more care per unit area, but the steps for establishment are essentially the same as for larger projects

# Implementation

## Considerations from the planning phase

- Predation
- Irrigation
- Weather and climate

## Seeding methods

- Drill seeding
- Broadcast seeding
- Hydroseeding

Planting depth =  $2 \times$  diameter of the smallest seed

Seeding rates = 30 to 60 seeds/ft<sup>2</sup>



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# Maintenance

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Guiding question: What are we maintaining?

- Natural succession
- Life form
- Diversity
- Benefit

Do a little bit each year

Short term (0-2 years)

Irrigating

Weeding

Mowing

Long term (3+ years)

Protecting

Adapting

Disturbing

# Maintenance



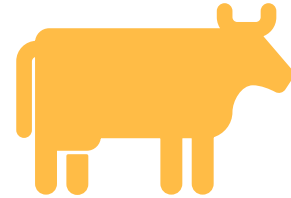




Mowing



Prescribed fire



Grazing

# What about existing habitat?

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## **Natural and Large Habitat Areas: Focus on enhancing existing habitats**

- IPM: Integrated Pest Management
- Mind the Rarities: Consider the needs of rare species
- Diverse by Design: Interseeding and supplemental seeding
- Big Picture, Better Habitats: Improve habitat connectivity through the management matrix
- Disturb the Disturbance: Keep management practices patchy and varied

## **ROWS, Roadsides, and Utility Corridors**

- Mowing: Reduce frequency and increase patchiness
- Waste Not: Use dead and down plant debris for habitat
- Connecting Corridors: Focus on linking fragmented habitats

## **Historic, Cultural, and Commemorative Landscapes**

- Education and Advocacy: Promote awareness of pollinator needs
- Opportunistic Planting: Choose historically relevant species based on site needs
- Think Ecologically, Act Strategically: Add ecological features like shelter and water when planting options are limited. have much say in which plants to include, seek to supplement other ecological needs like shelter/nesting areas and water

# Adaptive Management

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MONITORING AND  
EVALUATION



DOCUMENTATION  
OVER TIME



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Thank you

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