Monarch Recovery Initiative: Gearing Up to Establish 15-Million Milkweed by 2030

Presented by:

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River Partners

1. River Partners 2. Washington State University 3. Xerces Society

“We create wildlife habitat for the benefit of people and the environment.”

Who is River Partners?

Since 1998 we have…

- Restored over 18,000 acres along 212 river miles
- Planted more than 4 million plants
- Developed technological advancements in plant propagation and field design
- Captured over a millio… of greenhouse gasses
- Conserved over 1… gallons of fresh w…

Declining Populations & Potential Threats

- Western monarch overwintering in coastal California have declined
- Population growth and conversion of habitat
- Disease
- Climate Change
- Predation

Overview & Goals

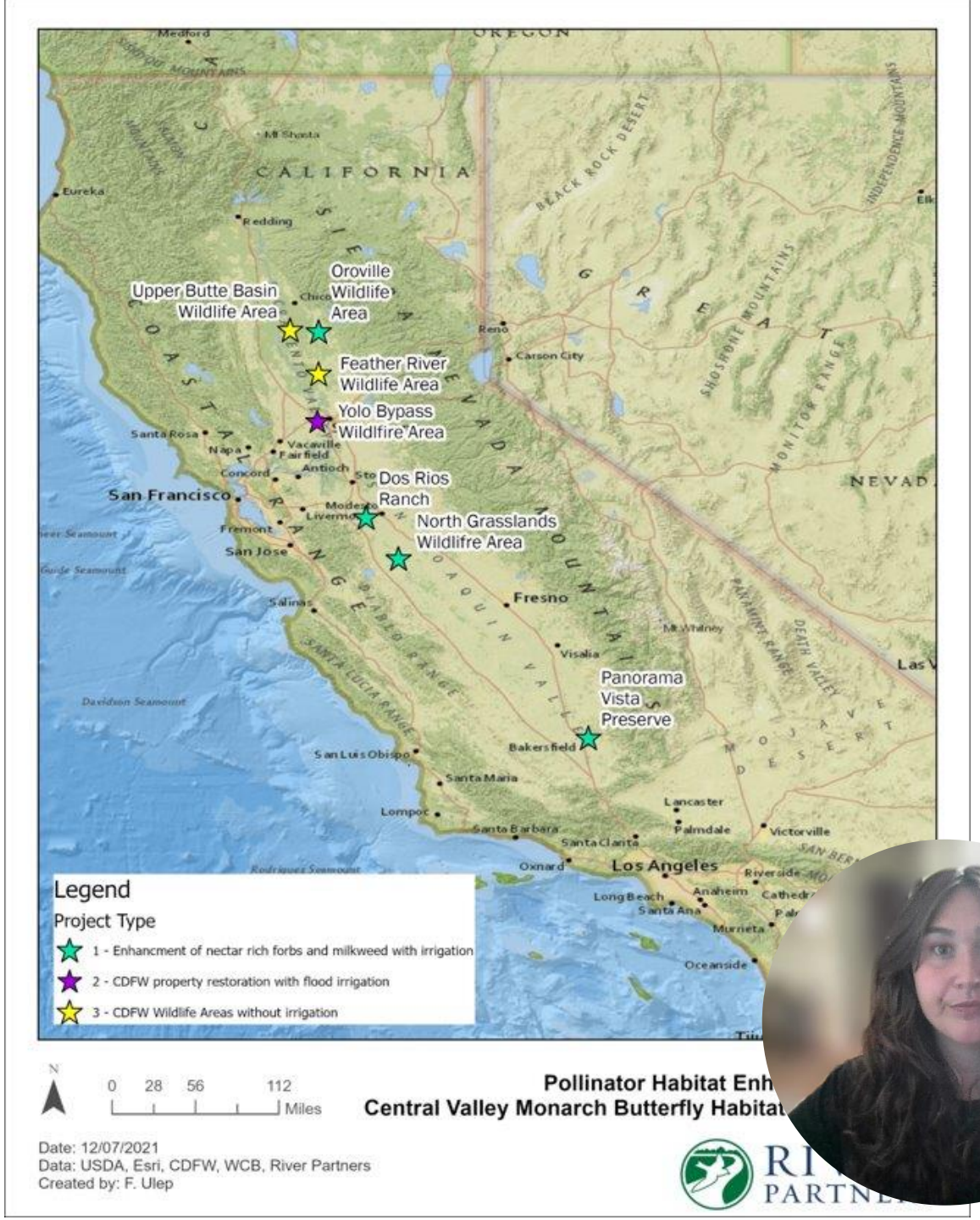
With generous funding from the California Department of Fish and Wildlife the goal was to…

- Enhance over 600 acres statewide
- Easily repeatable experiment
- Study monarch egg deposition preferences
- Provide flowering resources from early spring to late fall
- Increase the diversity and abundance of pollinators on each site

Narrowleaf milkweed, Oroville Wildlife Area

Site Types

1. Enhancement of existing restoration sites
2. California Department of Fish and Wildlife (CDFW) property with flood irrigation
3. CDFW property without irrigation



Plot Based Experimental Design Guidelines

Treatment

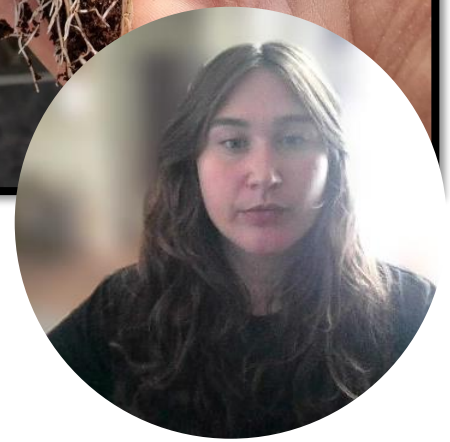
- Plot size
  - Small plots – 50m x 10m
  - Large plots – 100m x 100m
- Conditions
  - Distance from water
  - Vertical structure/shade

Planting

- Density of milkweed – 2989 plants/hectare
- Pollinator Plant Seed mix

Showy milkweed rhizomes ready to be planted

milkweed plugs



Monitoring

- Xerces Society site visits
  - Monarch sampling
  - Pollinator sampling

- Plot based design sites – relevés
- Non plot based design sites – full census

Hollenbeck Canyon Wildlife Area,
Rancho Jamul Project, San Diego

Photo: Angela Laws, Xerces Society

Xerces Society

Monarch Sampling

- Search all stems for monarchs
- Record number of eggs and caterpillars found (by instar)
- Record number of stems searched for each milkweed species (vegetative, fruiting, flowering stems)
- If more than 500 stems present, milkweed was sampled along six 25m transects

Hollenbeck Canyon Wildlife Area, Rancho Jamul Project, San Diego

Relevés & Census

- Techniques for vegetation surveys
- Plot-based design sites – relevés (5 sites)
  - Followed the California Native Plant Society (CNPS) protocol
  - Size and number of relevé plots determined by size of pollinator plot
- Non-plot-based design – full census (3 sites)

Monarch Results

- 6 sites had monarchs
- 4 sites with monarch breeding

Total number of monarchs (eggs, larvae, or adults)

	2021	2022			2023
Site	**# larvae**	**# eggs**	**# larvae**	**# adults**	**# adults**
Hollenbeck Canyon WA	3	0	0	0	0
Panorama Vista Preserve	0	2	15	0	1
North Grasslands WA	0	0	0	0	0
Dos Rios Ranch	0	9	32	0	1
Yolo Bypass WA	0	0	0	0	
Feather River WA	0	0	0	0	
Upper Butte Basin WA	0	0	0	1	
Oroville WA	0	0	6	0	

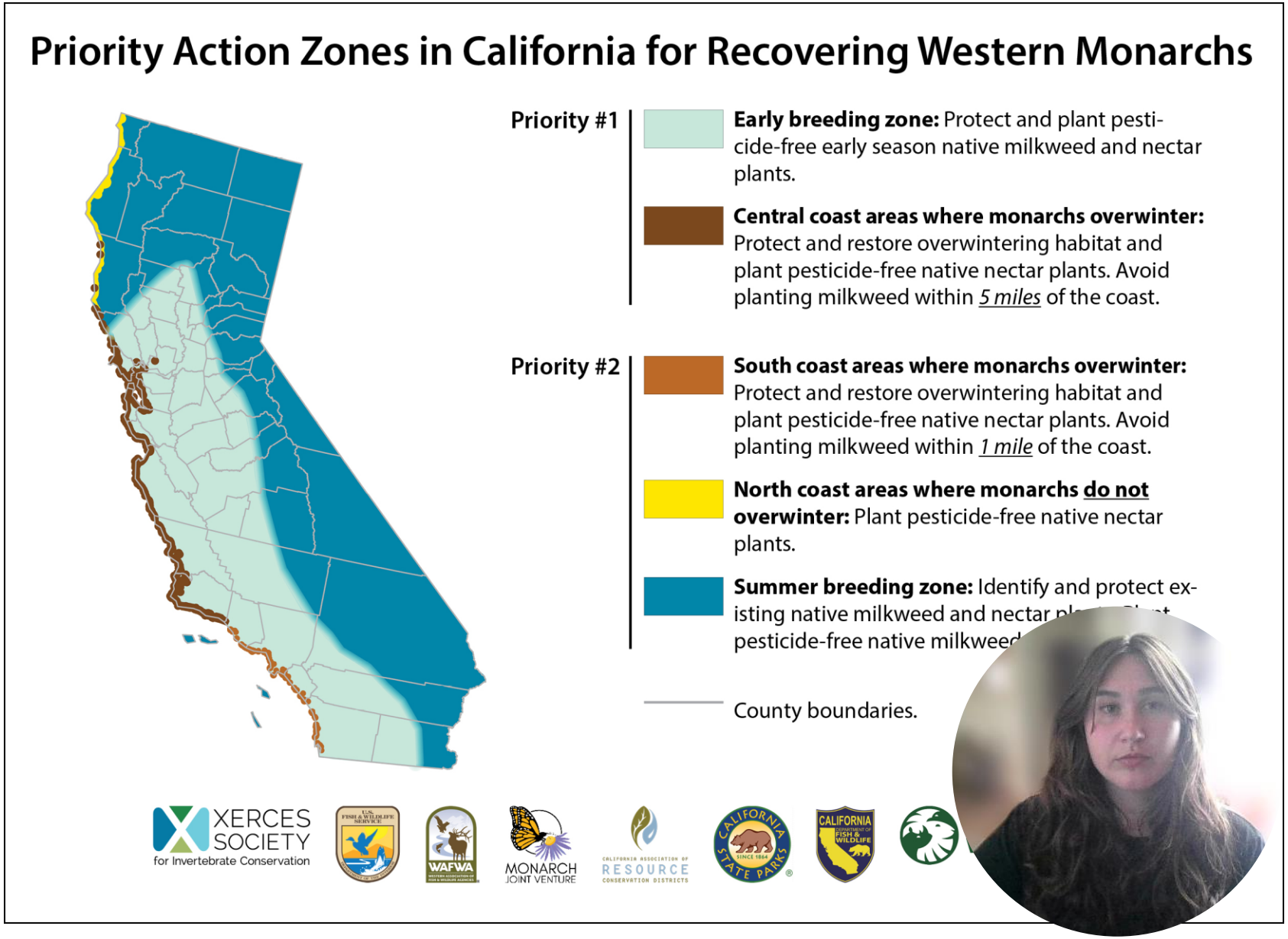
Challenges

- Exotic floral resources
- Drought
- Varying landscapes – keeping the experiment consistent
- Land use/neighboring land use

Showy milkweed seed pod, Upper Butte Basin Wildlife Area

What Next?

- Develop projects in high priority zones
- Establishing 15-million milkweed across the state by 2030!



A big thank you to our partners and funders!

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https://www.youtube.com/watch?v=w_qjYp_jxSg