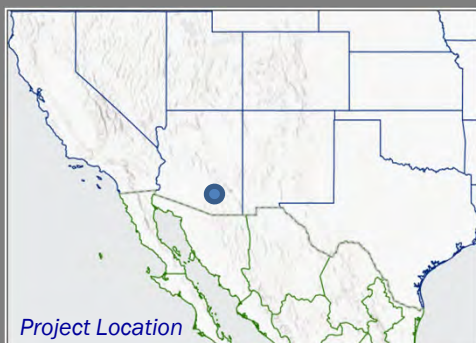


RESTORATION

Helping Pollinators Adapt to Climate Change



Pollinator populations are declining worldwide due to habitat loss, pesticide use, and climate change. The Sky Island region including southeastern Arizona and northern Mexico hosts an extraordinary diversity of resident and migratory pollinators that are at risk. Changes in climate patterns are creating phenological mismatches between pollinators and the plants they depend on. In 2017-2018, Sky Island Alliance (SIA) developed and implemented a climate-informed process for designing restoration projects that will boost resource availability for a diversity of pollinators now and in the future with climate change.



Native Penstemon along Aravaipa Creek

KEY ISSUES ADDRESSED

There is an urgent need to support the animal groups that provide the invaluable ecological service of pollination. As the climate changes, so do the distributions and bloom times of nectar plants. Pollinator distributions and the timing of their need for nectar also change. This can result in insufficient nectar resources for pollinators during their times of need. This mismatch can have cascading effects on ecosystem function, especially for plants and pollinators with specialized relationships. Small changes in restoration practices can increase effectiveness in supporting pollinators, and generate longer-lasting results.

PROJECT GOALS

- Establish habitat oases in riparian areas that provide resources needed by pollinators across all seasons
- Employ restoration techniques within migration and elevational corridors that will help species adapt to climate change and support local ecosystems

CREATING HABITAT

During the two-year project, SIA cleared over 8 miles of invasive plants from riparian areas and installed 75 pollinator-resource oases, with a total of 4,559 plants of 78 unique species.



Volunteers Removing Invasive Vinca from Aravaipa Creek

PROJECT HIGHLIGHTS

Site Selection: Riparian areas choked with invasives that do not provide nectar were selected for invasive plant removal, as they were considered “nectar deficit areas”.

Plant “Palettes”: Using data from SEINet on species’ elevational distributions and flowering times, SIA systematically identified temporal gaps in pollinator forage. They then focused on augmenting existing floral communities to fill in these gaps with carefully chosen assemblages of flowering plants.

Locally-Adapted Plant Materials: SIA worked with nurseries and volunteers to collect and grow plants with local seed collected within the same watershed as restoration sites. They followed Bureau of Land Management’s Seeds of Success protocols for ethical collection.

Pollinator-Resource “Oases”: SIA and volunteers installed native plants in groupings of multiple species to create “habitat oases” that provide food and shelter. Multiple oases were installed at multiple restoration sites throughout the larger project area.

Collaborators

- Borderlands Restoration
- Gila Watershed Partnership
- Pima County Native Plant Nursery
- Arizona Conservation Corps
- Sabino Canyon Volunteer Naturalists

Funding Partners

- Wildlife Conservation Society and the Doris Duke Charitable Foundation
- See online for full list of funding partners

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Photos courtesy of Carianne Campbell/Sky Island Alliance

LESSONS LEARNED

Combining manual and chemical techniques for treating invasive plants ensured minimal use of herbicide, and was more effective than either technique on its own. For difficult infestations, it was better to employ conservation crews than volunteers. Tightly planted “oases” concentrate nectar and pollen so that pollinators can use minimal energy to fuel up. It also helps humans tending the new plants, which are easier to find and water if they are close together.

Working with nurseries to collect seed had several advantages. Source-identified seed allowed SIA to consider the elevation from which the seeds were collected and compare to restoration sites, which is important for climate-smart planting.

Land managers can integrate pollinators into their work through simple tweaks to what they are already doing. Examples include restoring riparian areas with as many different native species as possible.

NEXT STEPS

- Continue to support pollinator communities as a central goal of restoration projects using this climate-smart process
- Create an online tool to share the approach to developing restoration planting palettes
- Work with the Xerces Society to create region-specific Best Management Practices for Pollinator Conservation in both English and Spanish

PROJECT RESOURCES

For more information on this project, contact Carianne Campbell: carianne@strategichabitats.com

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox: WWW.DESERTLCC.ORG/RESOURCE/CCAST



A Bumblebee Nectars on a Penstemon Flower In Aravaipa Creek