



April showers bring May flowers

By: **Aspen Thies, Watershed
Restoration Project Manager**



Erosion control structures with sediment and vegetation built by BRN's Watershed Restoration Program.

English poet Thomas Tusser definitely didn't live in Arizona when he wrote his famous line, "April showers bring May flowers." Our precipitation cycle is unique, constantly changing, and always unexpected. While we may not expect much in April, our winter and summer rainy seasons make this region so unique. Plants and wildlife are deeply tied to the landscape and have adapted to be hardy and resilient by making the most of rain when they get it. Our erosion control structures follow suit, capturing sediment and slowing down water as the precipitation influx usually causes dry drainages to flow. For the Watershed Restoration Program, spring is the time to enjoy the pleasant temperatures and refine our erosion control structures because the summer monsoon is our final exam - our structures are put to the test as water finally enters our seemingly dormant watersheds.

The monsoon season in southern Arizona typically occurs from late June to early September. It is marked by a shift in wind

patterns that brings moisture-laden air from the Gulf of California and the Gulf of Mexico. This influx of moisture creates the perfect conditions for thunderstorms and, subsequently, life-giving rain. When the monsoon rains arrive, dormant seeds spring to life, and perennial plants experience a burst of growth. Our Zuni bowls, built at Pyeatt Ranch with funding from Arizona Land and Water Trust (ALWT) and at the Borderlands Wildlife Preserve (BWP) with funding from the Arizona Department of Forestry and Fire Management (ADFFM), are perfect spots to watch seed balls made in-house by Borderlands Nursery and Seed come to life amongst the carefully constructed rock structures.

All of Arizona undergoes a magical transformation every summer when the eagerly anticipated monsoon season arrives. Our arid landscape, typically characterized by vast deserts, rugged mountains, and rolling grasslands, burst into vibrant colors due to increased rainfall. As we visit our work site in the

Huachucas, we watch the hillsides turn greener and greener by the week. Thanks to our partners at Sierra Vista Ranger District (SVRD) and funding from the US Department of Agriculture Joint Chiefs' Landscape Restoration Partnership program, we have begun building erosion control structures in Coronado National Forest in the Huachuca Mountains to help improve soil and bank stability and overall habitat for plants and wildlife. Before we know it, the sea of dead, dried, golden plants from the past year is replaced by a new wave of growth.

Plants play an essential role in erosion control; as their roots grow and expand horizontally into the substrate, they hold nutrients and soil together. They also collect water and keep the soil moist for longer, improving and maintaining microclimates in the increasingly hot summer months. When we see them taking root in our structures, we know we have created a stable environment for them to grow and add an extra layer of protection against accelerated erosion. They also make our structures look absolutely beautiful!



Prickly poppies (*Argemone albiflora*) in a Zuni bowl at the BWP.



Two Arizona blue-eyes (*Evolvulus arizonicus*) in the Huachucas.

We look forward to continuing our work in the Huachucas and starting a new project with ALWT at Emmerson Ranch, part of the Fort Huachuca Sentinel Landscape, to help slow erosion and encourage plant growth. Above all, we look forward to the rain and the beauty it brings.

Biodiversity

at the Borderlands Wildlife Preserve

By: Aspen Thies, Watershed Restoration Project Manager

Southeastern Arizona is characterized by its diverse landscapes, intense elevational gradients, and an epicenter of overlapping ecosystems and habitat ranges, sometimes called an ecotone. An ecotone is a transitional area between two or more distinct ecological communities, where characteristics of both environments intermingle. Ecotones are dynamic zones that often support unique species and biodiversity by combining elements from adjacent ecosystems. In regions with high biodiversity, such as Southeastern Arizona, ecotones can contribute significantly to the overall richness of species by providing a variety of niches and resources. This unique environment fosters a remarkable array of ecosystems, making it a hotspot for animal biodiversity. The Borderlands Wildlife Preserve (BWP) highlights the various species that call this region home and the conservation efforts aimed at preserving their delicate habitats.

One of the defining features of Southeastern Arizona is the presence of “Sky Islands,” isolated mountain ranges that rise dramatically from the surrounding desert floor. These Sky Islands, like the nearby Santa Catalina Mountains and the Chiricahua Mountains, create distinct habitats at different elevations. Each elevation zone harbors its own flora and fauna,

contributing to the region’s species richness. The wildlife cameras at BWP, nestled in the foothills of the Santa Rita Mountains, give us a unique insight into the plethora of animal biodiversity surrounding us. This past fall, one camera captured photos of three out of the four different species of skunk found in Arizona.

Southeastern Arizona is renowned among bird enthusiasts as a prime bird-watching destination. The region serves as a crucial migratory route, attracting a plethora of avian species. From graceful hummingbirds to the elusive elegant trogon and majestic raptors such as Harris’s hawk, birdwatchers flock to the area to witness the impressive diversity of feathered inhabitants. One exciting look at bird diversity was captured last November as three different woodpecker species were seen throughout the month at the same spot on a willow at Dragonfly Pond.

Part of this unique biodiversity is attributed to the blend of habitats found in the region and essential canyons and riparian areas that provide critical



Left to right: Gila woodpecker, ladder-backed woodpecker, and red-naped sapsucker.



The elusive ringtail captured by one of our wildlife cameras at the BWP.

habitats and oases for wildlife. Amphibians, reptiles, and various mammals rely on these water-rich habitats. Notable species include the elusive ringtail and coati. One camera at BWP captured all three members of this family, the Procyonids, the third being the well-known common raccoon.

Despite its remarkable biodiversity, Southern Arizona faces conservation challenges. Urbanization, climate change, and habitat fragmentation threaten the region’s unique ecosystems. Borderlands Restoration Network is actively engaged in initiatives to protect and restore habitats, manage wildlife corridors, and promote sustainable practices to ensure the long-term survival of the diverse species inhabiting this region. As conservation efforts continue, our collective responsibility is to ensure that the rich tapestry of animal biodiversity in Southeastern Arizona endures for future generations to explore and admire.



Left to right: Striped skunk, hog-nosed skunk, and hooded skunk.

BECY 2024: What's new?

By: **Jordan Sene, Education Program Manager**



This year, Borderlands Restoration Network (BRN) will host the Borderlands Earth Care Youth (BECY) program for local youth in Santa Cruz County. We've expanded environmental education programming to reach young, growing professionals ages 15 - 24. We've extensively recruited youth from high schools, community colleges, career fairs, and community events in Patagonia, Sonoita, Rio Rico, and Nogales. Our goal is to provide quality environmental education and training to increase awareness of climate change and empower youth to engage in applied restoration projects.

The BECY curriculum focuses on rehabilitating communities, watersheds, and ecosystems and collaborating to make these systems resilient to the impacts of climate change. Part of BRN's mission is to reconnect our border communities to the land through shared learning. BECY is our hands-on way of equipping the next generation of environmental stewards to connect the borderlands where people, flora, and fauna thrive. It isn't just any internship - this is a paid opportunity where youth will work full days Monday through Thursday during county school breaks.

During their first week, youth complete an orientation, learning about BRN and our programs: Watershed Restoration, Native Plant, and Education and Outreach efforts. They'll get hands-on training with the watershed restoration crew in local watershed drainages and at the Borderlands Wildlife Preserve. The cohort will learn about prioritizing restoration projects, the various techniques to combat erosion, and how to heal the soil by installing erosion control structures to slow down water on the landscape. By the end of the program, students know the necessity of planting the water before planting the plants!

Students will participate in an arts and ecology series BRN is hosting on Saturdays in April in collaboration with the Patagonia Community Art Center. The cohort will learn about sustainable development goals, community

placemaking, and how the arts can be a part of restoration-related careers. During this series, the curriculum emphasizes the importance of developing ecotourism and a restorative economy in the borderlands. The crew will work on a mural for Patagonia Plants and complete reflective craft projects with local artists.

Since BRN acquired Deep Dirt Farm (DDF), we plan to create a demonstration space for educational programs, visitors, and community events. The cohort will help with spring cleaning and maintenance of restoration projects on the property. BRN is convening with community stakeholders to gain input on how DDF could best serve Patagonia and surrounding areas. BECY youth will also be a part of the visioning and design of BRN's education center, which aims to inspire a sense of place and purpose.

As always, BECY will team up with the Native Plant Program, helping plant the grow-out field, transplant, maintain nursery structures, seed clean, and make seed bombs. Throughout the curriculum, they learn about the native flora of the Sky Islands region and why the borderlands are a biodiversity hotspot. They also learn about BRN's role in providing restoration quality plant materials for the community and partners.

This year, we're thrilled to introduce new elements to the program! BECY participants will meet and work with sustainability professionals from the Friends of Sonoita Creek and the Canelo Project and complete site visits at neighboring organizations, including Las Milpitas and Watershed Management Group in Tucson. Towards the end of the program, students will meet Sky Island Alliance and Northern Jaguar Project staff to delve into wildlife conservation in the borderlands.

Another new collaborative project will be with Tumacacori National Historical Park. The cohort will explore the national park, learn about natural and cultural resources, and learn more about the area's history. During a work week, BECY will participate in agricultural land restoration projects, including invasive species control.

At the end of the program, BECY will work at the Patagonia-Sonoita Creek Preserve, conducting invasive species removal and creating a pollinator garden for the visitor center. As part of their culminating program experience, BECY will camp at the preserve - often a first-time experience for participants. To graduate from the program, BECY students deliver an individual or small group reflection project on their experience and what they learned. Everyone is invited to attend the BECY graduation ceremony, where final presentations will be shared, and students will receive their certification of program completion on June 27, 2024.



BECY 2023 participants.

Restoration Funding Award:

Milkweeds For Monarchs



BRN's farm plot where the project will establish native milkweed species for future seed collection.

By: Francesca Claverie,
Native Plant Program Director

We are thrilled to announce that BRN is a recipient of the National Fish and Wildlife Foundation (NFWF) Monarch Butterfly and Pollinators Conservation Fund for our project *Expanding Seed Sources and Creating Pollinator Corridors in the Madrean Archipelago!* This two-year project establishes a one-acre milkweed seed amplification plot at the Borderlands Restoration Farm, restores milkweed and pollinator nectar species at the Borderlands Wildlife Preserve, and engages the community in milkweed for monarch butterfly restoration through free workshops, hikes, and volunteer opportunities.

Since 2015, the Monarch Butterfly and Pollinators Conservation Fund has awarded approximately \$23.8 million to 140 projects that are helping conserve and recover the imperiled monarch butterfly and other pollinators. Grantees have matched this investment with an additional \$38.9 million, for a total on-the-ground impact of over \$62.7 million. This investment has provided support for the restoration/enhancement of 390,000 acres, propagation of 1.1 million native milkweed seedlings, collection of 3,100 lbs. of native milkweed seeds, and the coordination of 1,700 workshops and meetings. We are honored to have been selected along with an amazing list of organizations working throughout the United States to improve habitat for the monarch butterfly and other pollinators over the next two years.

This project continues our efforts of local ecotypic native seed collection



LEARN MORE:

www.borderlandsrestoration.org/pollinator-corridors-in-the-madreaan-archipelago



to increase seed at our 60-acre farm in Patagonia, Arizona. We do this through priority milkweed and nectar forb species lists for wild seed collection in coordination with federal partners and private landowners. The collected seed is cleaned in our seed barn and curated in our database, where we record propagation information and decide whether to grow it out in containers at our nursery to be later transplanted or directly sown into our fields on the farm. The one-acre farm plot we plan to establish will have eight or more native milkweed species (*Asclepias angustifolia*, *A. asperula*, *A. linaria*, *A. subverticillata*, *A. involucrata*, *A. tuberosa*, *A. oenotheroides*, *A. speciosa*, *A. elata*, *A. nummularia*, and *Funastrum cynanchoides*), and will regenerate seed for years to come without having to collect so much from wild sources. In future years, we'll collect small amounts of seed from the wild to continue amplification in our farmed plots to ensure wild genetic diversity, and we will be able to provide this seed for garden and restoration use.

In deciding our seed collection lists, having a wide array of native host and nectar species for monarch butterflies is essential. Milkweed plants (Genus *Asclepias* & *Funastrum*) are host plants for monarchs, meaning they are caterpillar food. The caterpillar larvae eat mostly the leaves and stems of milkweed plants, filled with toxic latex sap containing cardiac glycosides, which protect the caterpillar by making them unsavory to birds and other predators. However, monarch butterflies rely not only on milkweeds but also on various native

flowering species that provide nectar to sustain them once they are in adult flight form. These include late summer and fall blooming species like *Ericameria* and numerous other asters. Southern Arizona hosts dozens of nectar species perfect for monarch butterflies on their migration.

Dr. Randy Moore will be leading our monitoring efforts and deciding the ideal areas to plant milkweeds in the wildlands of the Borderlands Wildlife Preserve. Once the 1,000 plugs are planted in the preserve for ecological restoration, they will be monitored by Randy and our interns for survival and the presence of monarch butterfly larvae and adults. We are so lucky to be working with Randy, who has years of experience in scientific study and monitoring, and we are looking forward to working with him more during the two years of this project.

Although this project targets and supports the restoration of native plants for monarch butterflies, each native plant species supports many other native pollinator and animal species, including birds, moths, other butterfly species, bees, aphids, and more. We love the opportunity to work with charismatic species in need of restoration as it elevates restoration for the region and is a great way to engage the public.

Through this project, we will involve the community by providing free workshops and hikes. The workshops will center around native plant propagation and seed collection, emphasizing milkweed species. The hikes will include looking for and pointing out our native

milkweed species in the region, and hopefully, we'll spot a monarch or two! Engaging our communities is critical in getting the word out and educating the public. We need many individuals and entities to restore our habitats and make a difference for our native flora and fauna. We appreciate the strong community of southeastern Arizona that helps tremendously in fulfilling our mission as we jointly learn how to make a difference in our environment. Again, thank you to the National Fish and Wildlife Foundation for awarding us this opportunity; we will keep you updated as the project progresses.



Milkweeds grow in containers at Borderlands Nursery & Seed in Patagonia.

Salud Comcaac Community Health

*Advancing community
and environmental health*



Dr. Laura Monti, BRN Senior Fellow, Comcaac Program Manager

The Salud Comcaac Community Health team, an initiative led by BRN Senior Fellow Dr. Laura Monti, integrates traditional medicine with modern medicine to improve the health of the Comcaac community, located along the coast of Sonora, Mexico, while promoting and protecting the biodiversity of medicinal and food plants of the region. In 2023, doctors, nurses, health promoters, and herbalists provided integrated health to over 300 patients a month.

The program aims to strengthen integrative primary healthcare, including preventing and treating COVID-19 and its consequences, fortifying leadership and governance for community-environmental health, and increasing food and water security with sustainable livelihoods.

Mexico's Secretary of Health has recognized the Salud Comcaac traditional medicine initiative nationally as a model for its success during the COVID-19 pandemic.

At least 80% of the health center users continue to rely on desert plants for their health, generally combining modern and botanical medicine. Comcaac herbalists, drawing from their time-tested heritage of medicinal plants, collect combinations of over 50 plant species to treat complex emerging diseases such as diabetes, heart disease, and COVID-19.

During the spring and fall seasons of 2023, they traveled by car or boat and hiked to gathering sites throughout their upland and coastal territory to collect desert herbs that heal. Native food plants such as eelgrass, mesquite, and pitaya fruits from the giant cardon are usually harvested using sustainable harvest practices in late spring, summer, and fall. However, during the late spring and summer collecting seasons, the extreme heat of the summer climate took its toll on both herbalists and patients, limiting their collection efforts and increasing heat-related illnesses- dehydration, kidney disease, infections, and skin ulcers. Compounding the problem is



Graduation Class, Year One of Traditional Medicine of Northern Mexico Diploma Program.

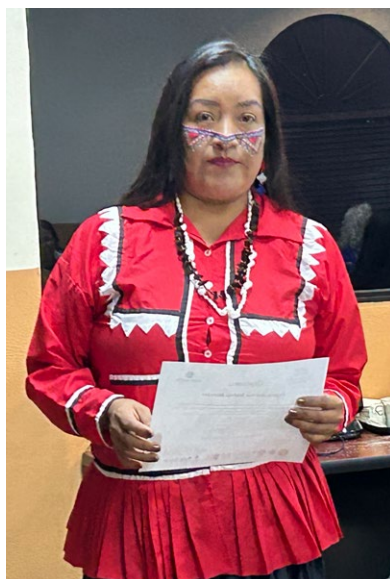
Left: Herbalists Guadalupe Romero, Filomena Barnett, and Betina Romero. Photo: Laura Monti.

that these heat extremes occur when crab and other fisheries are off-season, and families are also economically stressed.

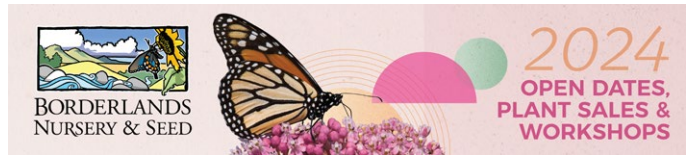
The Comcaac herbalists display an uncommon resilience borne from generations of surviving and thriving in extremes of coastal desert shores. To support their families during these times, herbalists Filomena, Isabela Vilma, and Christina guide tourists and engage in shallow water fishing for crab, octopus, and scallops. During evenings and weekends, eight health team members completed nursing and traditional medicine programs, receiving recognition and increased income or employment options. Omar Herrera Casanova and Francely Garcia Morales advanced to permanent employment with increased pay with the Secretary of Health after they completed nursing studies. Herbalist Vilma Morales of Desemboque will complete her nursing assistant studies in May 2024. In Punta Chueca, health promotor Gemma Torres secured employment with the National Indigenous Institute and has recently received the State Award for Emerging Young Leaders for her leadership efforts during COVID-19.

Six Comcaac participated in the first year of the Traditional Medicine Diploma Program coordinated by *El Colegio Sonora* with the support of Mexico's *Comisión Nacional de Ciencia y Tecnología*. Vibrant exchanges and relationships developed among traditional healers of four indigenous communities in Sonora and their medical and public health practitioners and activists' allies. Each community hosted two-day seminars: Guarijio, Yaqui, Mayo, and Comcaac.

We are grateful for the support of the Amazon Conservation Team and Borderlands Restoration Network's administrative team's efforts to make this work possible.



Comcaac Herbalists Marina Angela Molina (left) and Vilma Morales (right) at the completion of the Traditional Medicine Diploma Program.



BN&S Native Plant Propagation & Nursery Management Workshops
 April 13: 10AM - 2PM,
 August 8: 10AM - 2PM

Virtual Bilingual Plant Propagation Workshop
 June 1: 10AM - Noon

The Courtyard Bisbee Plant Delivery
 July 7: 11AM - Noon

BN&S Open to the Public
 April 13: 10AM - 2PM,
 June 15: 8AM - Noon,
 August 8: 10AM - 2PM,
 August 17: 8AM - Noon,
 October 12: 9AM - Noon (Sky Islands Artisan Festival)

BN&S Monsoon Plant Sale
 July 13: 8AM - 2PM

Tohono Chul Plant Sale
 July 26: 3PM - 7PM &
 July 27: 8AM - 1PM

Scottsdale Museum of Contemporary Art Plant Delivery
 April 20: 11AM - Noon

Sierra Vista Food Co-op Plant Delivery
 Aug 1: 11AM - Noon

BN&S Fall Plant Sale
 Sept 28: 9AM - 2PM

BN&S Spring Plant Sale
 May 4: 8AM - 2PM

Native Seed Collection Workshop
 Oct 5: 10AM - 2PM

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AZ Gives Day April 2

[www.azgives.org/
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Spring Plant Sale May 4, 8AM - 2PM

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