

# CALENDAR



## Borderlands Nursery & Seed Spring Plant Sale

May 1  
9 - 4 PM  
42 San Antonio Road, Patagonia, AZ

Masks and social distancing required.

US Nonprofit  
PAID  
Permit #4  
Patagonia, AZ

# SUPPORT THE BORDERLANDS

YES, I WANT TO SUPPORT THE ECOLOGICAL WELL-BEING OF THE BORDERLANDS!

Visit our website, [www.borderlandsrestoration.org/donate](http://www.borderlandsrestoration.org/donate) to make your tax-deductible gift, or mail this form and your check made out to Borderlands Restoration Network to: Borderlands Restoration Network PO Box 121 Patagonia, AZ 85624

NAME: \_\_\_\_\_ Please do not publish my name.

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ ST: \_\_\_\_\_ ZIP: \_\_\_\_\_

EMAIL: \_\_\_\_\_ Please send my acknowledgment via email to save paper and postage costs.

I WOULD LIKE TO:

MAKE A ONE-TIME GIFT \$ \_\_\_\_\_



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Join the FOUNDERS SOCIETY special giving society for donors contributing \$1000 or more annually [www.borderlandsrestoration.org/founderssociety](http://www.borderlandsrestoration.org/founderssociety)

I'm interested in contributing a major gift, please contact me.

I'm interested in making a legacy gift through a bequest, please contact me.

QUESTIONS? Sarah Taylor, CFRE Development & Communications Director  
E: [staylor@borderlandsrestoration.org](mailto:staylor@borderlandsrestoration.org) P: 520-216-4148

REBUILD. RESTORE. RECONNECT.  
PO Box 121 Patagonia, AZ 85624



# NEWSLETTER

ISSUE 3: SPRING 2021

[www.borderlandsrestoration.org](http://www.borderlandsrestoration.org)

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## Restoration Along the Path of the Jaguar By: Kurt Vaughn, Executive Director



Borderlands Restoration Network is honored to have received a \$245,000 grant from the Wildlife Conservation Society Climate Adaptation Fund, established by the Doris Duke Charitable Foundation, to fund critical ecological restoration work along the path of the jaguar in southeast Arizona. WCS's goal is to conserve the world's largest wild places in 14 priority regions, home to more than 50% of the world's biodiversity.

The Sky Islands region of southern Arizona and northern Mexico encompasses more than thirty mountain ranges and is recognized as a globally-significant biodiversity hotspot home to half the bird species in North America, and over 7000 species of plants and animals, including the last remaining jaguar in the United States.

Climate change is impacting habitat quality through increased aridification of the region, exacerbating drought intensity, and increasing extreme precipitation events. Increasing temperatures and declining annual precipitation have had severe consequences for many of the region's ecosystems, particularly riparian habitats.

This process of aridification combined with unsustainable groundwater use has caused a 96% reduction of surface flows in the historic rivers and streams in Arizona. Decreasing soil moisture availability and declining groundwater have left riparian habitats severely water-stressed. This regional aridification is further punctuated by seasonal and longer-term droughts. In the near future drought is projected to become more frequent, more intense, and more prolonged, resulting in water deficits in excess of those during the last 2000 years. Securing sufficient water availability to weather these extreme events is essential to the continued integrity of this migratory corridor.

During 2021 - 2022 BRN will perform restoration work in and around the Borderlands Wildlife Preserve, the critical wildlife corridor linking the Huachuca and Santa Rita mountains, complementing and expanding upon our work in the area. 250 erosion control structures will be installed including one-rock dams, media-lunas, trincheras, stick structures, and one log dams. Borderlands Earth Care Youth will build 26 of these structures as part of their programming.

Scientific studies show ECS can increase surface water availability, extend seasonal flows and increase in-stream volume, decrease water stress in plants, increase vegetation cover and increase soil carbon sequestration. ECS are constructed of parallel rows of self-reinforcing rocks incorporated into eroding ephemeral stream channels. These structures, often only one-rock high in profile but several rows wide, rest at right angles to the direction of water flow and remain passive to overtop flows. This arrangement allows ECS to trap organic-rich sediment upstream while extending the hydro-period for plant establishment and increasing water infiltration.

In conjunction with erosion control efforts, we will actively revegetate the site with hardy, locally-adapted plants grown from hand-collected seed at our Borderlands Restoration Nursery & Seed native plant nursery to return degraded ecosystems, further stabilize soil, and provide habitat for fauna. Plant material will be selected based on resiliency to increased environmental stressors. Over 4000 seedlings and saplings will be planted with monsoonal rains on grazing-excluded sites, as grazing in conjunction with climate change has been determined to be one of the largest threats to sapling success. Plantings will be co-located with ECS to increase the likelihood of survival.

To address the 40+ acres of bare soil surfaces across the project area, BRN will distribute native mulch and grass seed pellets. Mulch promotes soil moisture retention and revegetation of bare ground, further stabilizing the soil surface. It will also act as a seed refugia for hand-scattered seed pellets, further promoting vegetative recovery. Additionally, we will monitor wildlife camera data to better understand impacts on wildlife communities in the Borderlands Wildlife Preserve.

We are grateful to the Wildlife Conservation Society's Climate Adaptation Fund for the opportunity to advance this corridor toward a trajectory of recovery and enhance the resilience of this landscape to current and future climate impacts.

Learn more about the project & volunteer opportunities: [www.borderlandsrestoration.org/path-of-the-jaguar](http://www.borderlandsrestoration.org/path-of-the-jaguar)



Aerial view of the Borderlands Wildlife Preserve and the Santa Rita Mountains.



Erosion Control Structure

# SPRING BRINGS NEW GROWTH TO NATIVE PLANT PROGRAM

By: Sarah Taylor, Development & Communications Director



**BORDERLANDS  
NURSERY & SEED**

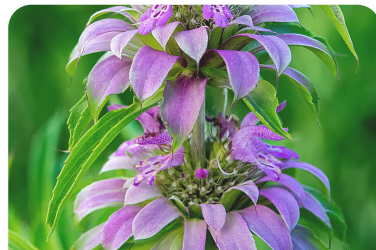


Spring is a season of growth and fresh beginnings when the chill of winter begins to slip away and most notably, the flora that has been dormant through the winter months begins to reemerge. This is also the time of year gardeners delight as they stalk their gardens for first blooms, and start planning for the coming growing seasons.

With declining rains in general, a poor 2020 monsoon season followed by a dry winter, what you plant in your landscape is all the more important. Development, climate change, and other factors impact nectar and habitat availability in the Sky Islands. We as individual gardeners can plant with a purpose by filling our spaces with native plants that are critical food and habitat sources for the abundance of birds, bees, moths, butterflies, and other animals that make the Sky Islands one of the most biologically diverse and recognized hotspots in the world.

Restoring native flora and habitat is a key piece of the Borderlands Restoration Network mission and one we enthusiastically invite you to participate in! Our Native Plant Program, which manages Borderlands Plants & Seed, has collected 2,400 native seed collections representing over 200 species and propagated 200,000 native plants for use in restoration projects and for residential use since inception.

As we continue to grow and build capacity we are excited to launch our new Borderlands Plant & Seeds e-commerce website, [www.borderlandsplants.org](http://www.borderlandsplants.org), making information more readily available to our customers about what we have in stock, growing tips, and other valuable information. Order plants online for pick-up at the nursery or schedule an appointment to shop in person. We also offer free local delivery in Patagonia with any \$20 order and free delivery to Sonoita with any \$50 order. Seeds can be ordered online and shipped directly to you.



Now you can also join our subscription service with a three month seasonally appropriate nursery subscription. Enjoy three hand-selected one gallon plants and one packet of seeds each month during May, July and August for \$120.

Plants will be selected based on the season, flowering time and nectar needs of our area. Make sure you are planting with a purpose and have the right plants in your yard to support the abundance of wildlife that call the Sky Islands home.

Subscription orders will be available for pick-up from the Borderlands Plants & Seeds Nursery in Patagonia, as well as Exo Roast in Tucson on designated dates in May, July and August.

Available as supplies last, email [horticulture@borderlandsrestoration.org](mailto:horticulture@borderlandsrestoration.org) to secure your subscription.



We have also added some new perks including 10% off purchases and one free plant benefit to all our Restoration Partners monthly giving society members who contribute \$60 or more to BRN, and to our Founders Circle giving society members. Visit the BRN website to join. When you shop at the nursery or buy our seeds, your purchases support the ongoing efforts of BRN, which is a win, win!

We also invite you to follow our new social channels specifically for the nursery and seed lab on Facebook and Instagram, [@borderlandsplants](https://www.facebook.com/borderlandsplants). As always the Native Plant Program staff is happy to answer your questions and help you select the right plants for your needs.



**FOLLOW THE BRN NATIVE PLANT NURSERY AT:  
@BORDERLANDSPANTS**



Prickly Pear

# PLANTING A RESILIENT FOOD FUTURE

By: Denise Ortega Lorona, Education Program Director

Borderlands Restoration Network has partnered with the University of Arizona's Desert Laboratory on Tumamoc Hill and the Southwest Center for a collaborative project, Planting a Resilient Food Future, bringing together food, culture, community, and the Sonoran Desert with innovative solutions and an opportunity to explore Southern Arizona local food systems. Through this multidisciplinary collaboration, BRN was awarded a \$14K grant. Our partners in this unique collaboration include Pima Smartscape and The Garden Kitchen from the University of Arizona Cooperative Extension, University of Arizona Food Studies Department, The Arizona-Sonora Desert Museum, and Mission Gardens.

Through this project, BRN will have the opportunity to build a desert food garden at Deep Dirt Farm, providing more access to wild food plants from our region to our southern Arizona communities. Along with the new garden, BRN will also host free community workshops that will focus on the history, uses, and regions where our wild desert foods can be foraged. The desert food workshops will also include classes on planting and plant care tips for growing and harvesting desert foods at home, while also providing recipes and food tastings for participants. The food crops that will be planted and highlighted at Deep Dirt Farm and Mission Gardens include different varieties of Prickly Pear, Chiltepin, Purslane, Mesquite, and Tepary Beans.



Chiltepins



Purslane



Tepary Beans

BRN Senior Fellow renowned Agricultural Ecologist, Ethnobotanist, Ecumenical Franciscan Brother, and author Gary Nabhan, will teach a few of the classes and host our annual Mesquite Walks highlighting the many uses and values provided by mesquite, its natural history, nutritional value, and processing techniques including how to select, harvest, and store mesquite tree pods.

We hope this project will empower Southern Arizona communities to grow their own climate-resilient foods, which have high nutritional value and do well in our arid hot climate. Southern Arizona's food heritage spans over 4000 years, blending edible native plants, heritage fruit trees, and heirloom crops from indigenous, immigrant, and refugee communities. Desert food crops require less water and provide both health and environmental benefits. Through this project, we hope to further engage our community with the abundance of desert wild foods we have at our disposal, while also learning how to grow food that is resistant to our increasingly unstable climate.

Workshops will take place in the late spring and early summer of 2021, from April through July, with specific workshop dates to be announced on our website and social media channels. COVID precautions will be taken to ensure health and safety with socially distanced, limited attendance in-person workshops requiring masks and practicing appropriate hand hygiene.



Mesquite Pods



# Agaves for Bats at Mission Garden

By: Francesca Claverie, Native Plant Program Manager

Recently, the Native Plant Program again joined with Bat Conservation International (BCI) for our ongoing agave planting initiative. Our goal is to plant thousands of Agave palmeri across southern Arizona for nectar-feeding Lesser long-nosed bats that migrate through the area each year. Previous planting sites included Fort Huachuca in Sierra Vista, at the Babacomari Ranch in Elgin, Coronado National Memorial in Hereford, the Borderlands Wildlife Preserve in Patagonia, and now 100 more agaves have been added to the landscape at Mission Garden in Tucson.

Agave palmeri is a diverse agave species that comes in many sizes characterized by its long, thin leaves, cold-hardiness, and late summer bloom time making them ideal for nectar-feeding bats on their return trip to Mexico from northern habitats where they follow blooming spring flowers and find roosts to give birth. Agave palmeri are the most common agave found in the mid-elevation grasslands of southern Arizona and Sonora and in the Tucson region at high elevations up to 8,000 ft. Although, factors such as climate change, land development, and wild harvest of agaves for bacanora production threaten their existence.

Mission Garden joined the cause by coordinating a planting event with approximately fifty volunteers. Following instructions and safely social distancing, BRN staff joined volunteers to plant 100 agaves grown from seed at the BRN Borderlands Plants & Seeds Nursery. Often, restoration plants are placed in remote locations where it's difficult to bring water to the plants, making their chances of survival lower. However, we know these agaves at the Mission Garden will have plenty to drink and TLC ensuring a high success rate. Following the planting, volunteers learned from BCI's Dan Taylor, I spoke about agaves, followed by human interactions between both bats and agaves from Jesus Garcia of the Arizona-Sonoran Desert Museum.

The day after the Mission Garden planting, BCI staff was able to join BRN at the Babacomari Ranch in Elgin to monitor the success of previously planted agaves. We are so happy to report a 70% survival rate and are looking forward to adding more agaves to the area going back to water them once in the early summer prior to monsoon season to help them survive the heat. Thank you to all our partners in this great effort to restore agaves and support bats!



## Volunteer: Agave Mapping

You can get involved with ongoing agave restoration efforts by joining our agave mapping volunteer team to help us identify and observe populations of Agave palmeri in southern Arizona. Mapping efforts will create a baseline for Agave palmeri population health as part of our Bacanora for Bats project funded through the Salazar Center's Connectivity Challenge. Agave mapping volunteers will locate and map agave populations on your own time March - August 2021. Training will be provided and no prior experience necessary.



Email [horticulture@borderlandsrestoration.org](mailto:horticulture@borderlandsrestoration.org) to sign-up!



Lesser-long nosed bat feeding from an agave. Watch your hummingbird feeders at night if you live in the area as they will visit those too!

# INTERNSHIP DURING PANDEMIC BRINGS LIGHT

By: Anays Blanco, Omar Calva, Jorge Chacón and Miranda Díaz, BRN Sonoran Interns



2020 was a year of great challenges and losses for everyone, in all aspects, personal, social, economic, and environmental; however, we were agents and witnesses of how we can adapt and transform those adverse situations into opportunities, and tell some successful stories, which were born out of uncertainty. Such is the case of the emergence of a great work team, the Borderlands Restoration Network 2020 Sonoran Internship Program.

Initially, in March 2020 we applied to be part of the 2020 Sonoran Field Course, organized by the BRN Education Program. The course would have been held at Cuenca Los Ojos, near Agua Prieta, Sonora, Mexico during the month of July. However, in June we were informed that, unfortunately, the course would be postponed until further notice due to the growing health concerns of the pandemic. Instead, we were offered a new opportunity; internships to learn and work in some of the areas that the course would address.



We were sent a new internship application form and four of us were selected: Anays Blanco, Omar Calva, Jorge Chacón and Miranda Díaz to be part of this new project. We presented ourselves virtually to the Education Program staff, Denisse Ortega Loroña and Juliet Jivanti, who called us one by one, asked us about our learning interests and assigned us responsibilities, which we had to fulfill remotely.

Some of the activities consisted of translating educational materials, BRN's website, articles, and technical studies. We were also constantly offered learning opportunities by Juliet, who coordinates our internships. These virtual conferences and lectures by experts included various topics of interest such as: watershed management, desert animals, books on desert nature, plant-based feeding, and seed propagation, among others.

Our activities involved us in each of the BRN programs and their objectives. One that was of great interest to the four interns was the Native Plant Program, which resulted in a collaboration with Palo Alto Escuela Americana. One of the interns, Omar, proposed the idea of building a nursery at the school to produce native plants to support the restoration and reforestation programs in Sonora.



Palo Alto Escuela Americana and BRN aim to raise student awareness of environmental issues, promote values focused on environmental care and the creation of future leaders in conservation. With this background, the desire of the interns to carry out a tangible project, and with the collaboration and guidance of the Native Plant and Education Program, the construction of the nursery at Palo Alto began.

By coordinating our activities, we were able to adapt the space, build, and materialize what we had planned. Today the nursery is ready, and we will start planting the first seeds. We will have a space for native plant production, biointensive beds (growing a lot of food in a small space) and vermicompost, as well as an exterior garden for pollinators.

When the children return to school, they will find and adopt this new project, which will accompany them in their elementary education. With their fill of dirt, they will learn about the native flora features, the importance of reforesting, and growing their own food. Undoubtedly this has been a great team effort, which we are proud to share. We thank Palo Alto Escuela Americana and BRN for making this possible, we greatly appreciate their commitment.



# SIGNAGE & SIGNS OF SPRING AT BORDERLANDS WILDLIFE PRESERVE

By: Cholla Nicoll, Borderlands Wildlife Preserve Lead Technician

Late winter begins to give us the gift of beautiful days with high temperatures in the low 70's. This pleasant weather awakens animals and plants that prefer warmth to cold. We see the occasional lizard zipping by our feet and begin to see the first green shoots popping through the earth. Spring migrating birds start to return from lower and warmer elevations. By April, the sunrise chorus now includes the voices of Violet-green Swallows, Vermillion Flycatchers, and warblers. Birds such as the Violet-crowned hummingbird and Turkey Vulture are familiar sights in and around Patagonia. Other flying creatures such as the Black Swallowtail become welcome sights.

Late spring brings another warm-weather creature vital to our region's healthy ecosystem, the snake. At least 54 different species of snake live in Arizona of which 18 are rattlesnakes. Pictured below is a Coachwhip, *Coluber flagellum*, taking a cool drink from one of the wildlife drinkers located within the Borderlands Wildlife Preserve and a Western Diamondback Rattlesnake, *Crotalus atrox*. More species of rattlesnake live in Arizona than anywhere else in the world! These fantastic creatures keep our rodent populations in check and provide us with a healthy dose of respect for our fellow animals. Rattlesnakes only exist in North and South America, so consider yourself lucky to share space with such a unique and powerful animal.

April frequently sees the highest rate for rattlesnake bites, so here are some tips to stay safe. Most people are bitten-provoking or trying to handle a snake, so do not do this, call your local animal control officer instead. When completing routine activities like gardening or moving firewood, be aware of your hands and feet and wear gloves and closed-toe shoes. When exploring the outdoors, wear loose-fitting pants and over the ankle boots. If bitten, stay calm and call 911, wash the area gently with soap and remove any objects that may constrict swelling like rings or tight clothing. Do not apply a tourniquet, ice, or try to suck the poison out. Remember that Poison Control is your friend in AZ. Call them if you are bitten or have questions about venomous creatures. They can assist your pets too. Keep their number handy, 1-800-222-1222.



Queen Butterfly



Summer Tanager



Pipevine Swallowtail



Coachwhip



Chris & Mary Strohm

One more thing popping up this spring is interpretive signs on the Smith Canyon Loop Trail within the Borderlands Wildlife Preserve. These signs range from geology and wildlife to the exceptional work that Borderlands Restoration Network accomplishes regularly. The process to develop these signs involved so many local helping hands, including a generous donation of funding and time from Chris and Mary Strohm. The installation also included Chris Strohm's help along with the Dirtbags, a local volunteer trail building crew. The signs are in English and Spanish, thanks to some exceptional student interns from Sonora, Mexico. Last but certainly not least, the design skills of Shannon Villegas and the fabrication from Rockart Signs and Markers were superb. We invite you to enjoy the culmination of this project and set aside some extra time during your hike to learn from these great signs.

Please enjoy this spring with us and visit the BWP regularly. Share any unique sightings, questions, or concerns at [wildlife@borderlandsrestoration.org](mailto:wildlife@borderlandsrestoration.org)!

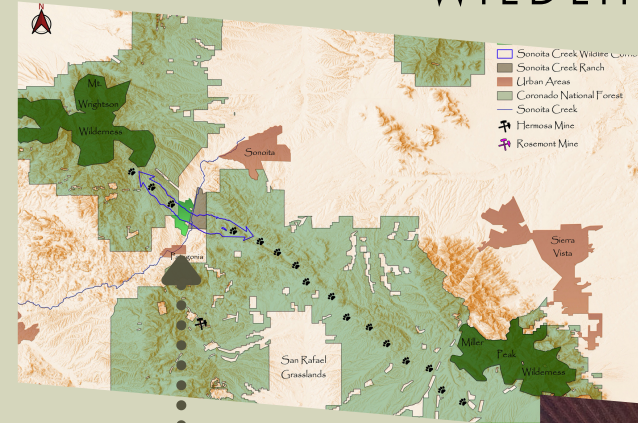


Ash Throated Flycatcher

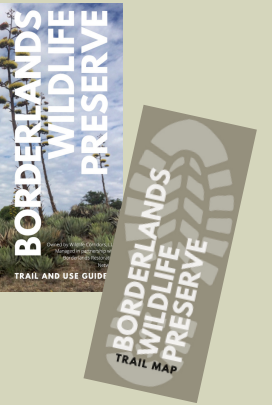


Western Diamondback Rattlesnake

# BORDERLANDS WILDLIFE PRESERVE



The Sky Islands, encompassing more than thirty mountain ranges, are recognized as a globally-significant biodiversity hotspot, however, the valleys connecting the ranges are highly threatened by development and fragmentation. As a segment of the larger Sonoita Creek Wildlife Corridor, the 1400 acre and growing Borderlands Wildlife Preserve is protected and managed to conserve critical wildlife habitat, and to maintain a route for migratory species.



Check out the new welcome kiosk at the entrance to the Preserve. Make sure to stop and learn more about the history of the Preserve, usage guidelines, wildlife, safety and more!

When you stop at the kiosk, make sure to pick-up a brochure and trail map for the three hiking trails at the Preserve. Kick back at the picnic table, and refill your water bottle at the drinking fountain!



Members of the Dirtbags volunteer trail building crew that built and maintains the trail system at BWP.



Siena and Matteo Brancaloneo & Violet Nicoll



Violet Nicoll & Hana Bartine



Violet Nicoll & Celine Schlappy



Thank you to the Patagonia Creative Arts Association, Tammie Quiroga, Martha Kelly, Cassina Farley, and Alex Johnson for designing and installing the beautiful drinking fountain.

Thank you to the BRN/Patagonia Area Arts Association youth big cat drawing contest winners who were recently lead by a fellow contest winner, Violet Nicoll, to see the completed sign displaying their awesome big cat drawings.