California Native Grasslands Association

GRASSLANDS

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Grasslands Submission Guidelines

All submissions are reviewed by the *Grasslands* Editorial Committee for suitability for publication. Written submissions include peer-reviewed research reports and non-refereed articles, such as progress reports, observations, field notes, interviews, book reviews, and opinions.

Also considered for publication are high-resolution color photographs. For each issue, the Editorial Committee votes on photos that will be featured on our full-color covers. Photo submissions should be at least 300 dpi resolution and include a caption and credited photographer's name.

Send all submissions, as email attachments, to the Editor at grasslands@cnga.org.

Submission deadlines:

Winter 2025 15 Oct 2024
Spring 2025: 15 Jan 2025
Summer 2025: 15 Apr 2025
Fall 2025: 15 Jul 2025

From the President's Keyboard

Dear Members, Sponsors, Supporters, and Friends,

As I write this note, the heat is intense! I hope you are all staying safe and healthy during these heat waves.

First, I want to extend a heartfelt thank you to everyone who donated during the Big Day of Giving. A special thank you goes to Victor Schaff and the Schaff Family Foundation for their generous matching donations again this year. Every contribution helps us further CNGA's mission. Remember, you can donate year-round, and your donations are tax-deductible.

While walking along the American Parkway in Sacramento, I noticed the significant changes this year. A wet winter followed by a hot summer has created the perfect environment for weeds and non-native invasive plants to thrive, adding to the fuel load again this year. Even with my long experience in native grassland ecosystem restoration, each year brings new learning experiences. Some years favor forbs, others grasses, and sometimes both. This year seems balanced, but predicting these patterns remains challenging. There is still much to learn about how our native grassland ecosystems adapt to seasonal and long-term climate changes.

Don't forget our next major event: the Grassland Science Symposium next February at the Hopland Research and Extension Center. You won't want to miss it!

Lastly, keep an eye out for our Grass Blast and calendar for ongoing virtual presentations by our student GRASS recipients. Their talks and research projects are excellent and offer new insights into our native grasslands.

On behalf of CNGA, I thank you again for your continuous support.

JP Marie, Board President

The mission of the California Native Grasslands Association is to promote, preserve, and restore the diversity of California's native grasses and grassland ecosystems through education, advocacy, research, and stewardship.

Grasslands Journal

Whitney Brim-DeForest, *Editor*
Michelle Halbur, *Editorial Committee Chair*

For membership and other organization information, contact CNGA Administrator via admin@cnga.org.

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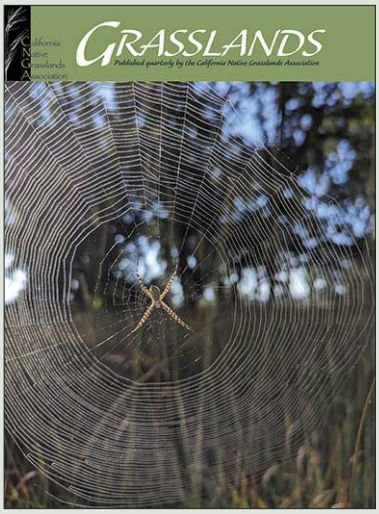

In this issue

California Native Grasslands Association

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GRASS-Net Survey

Greetings CNGA Members!

Please offer your opinion in this 10-min. survey for how a new network can serve your work as a grassland restoration practitioner. A similar survey for grassland restoration researchers is coming soon!

Recent research found that restoration of California grasslands typically focuses on seven key perennial species across the entire coast: To expand the restoration methods and collaboration, a UC Climate Resilience Action Seed Grant was awarded to establish a ***Grassland Restoration Action, Science, and Stewardship Network, or "GRASS-Net".***

Access the survey through this QR code

Have you implemented or planned a grassland restoration project? We need to hear from you!

As a first step, the GRASS-Net developed ***a survey for California grassland restoration practitioners*** to help establish a network in coordinating grassland restoration activities to share restoration knowledge and practices. *Please take this survey if you have implemented or planned any grassland restoration projects* (not research). GRASS-Net aims to develop and share effective climate-resilient practices, facilitate seed exchanges for hard-to-access species, and develop coordinated strategies to increase plant diversity in restoration with practitioners involved in restoration projects.

Researchers, keep an eye out for your survey soon!

Please help us by sharing this survey widely

Please also share this survey with any person in your networks who has implemented or planned California grassland restoration. The survey takes between 10-15 minutes to complete. Please contact Dr. Justin Luong (justin.luong@humboldt.edu) with any questions.

Thank you in advance from the growing GRASS-Net including partnerships with:

The Amah Mutsun Land Trust, Audubon Canyon Ranch, CA BLM, CA Fish and Wildlife, CA NPS, California Native Grassland Association, California Native Plant Society, CalPoly Humboldt, CalPoly San Luis Obispo, Cheadle Center for Biodiversity & Ecological Restoration, Chico State University, Hedgerow Farms, Heritage Growers, Mattole Restoration Council, Pepperwood Preserve, Point Blue Conservation Science, River Partners, The Nature Conservancy, University of California Irvine Nature Reserves, and the Wiyot Tribe.

MEET A GRASSLAND RESEARCHER **Chad Aakre**

Chad Aakre, Senior Ecologist, Westervelt Ecological Services

What is your study system?

As a restoration ecologist and land manager working in mitigation, my work typically centers around Central Valley habitats, often specifically associated with wetlands and/or special status species. I often focus on vernal pools and am amazed by the diversity of plant and animal species, as well as life forms. I love to learn about specific adaptations of individual species to harsh environments, where native species often thrive in California.

What are your primary research goals?

My research is centered around how to expand coverage of native plant species throughout California. How to put together the perfect planting and/or seeding plan for a restoration project. Which plant species can compete with non-native invasive species, and how to establish them? As a practitioner, I am always looking for how to get the most out of a particular opportunity.

Who is your audience?

Restoration practitioners and nature enthusiasts.

Who has inspired you, including your mentors?

John Anderson was the most significant influence on me with regard to native grasses and grasslands. He always had time to talk, and he spent a lot of time on the phone with me, discussing the various eccentricities of native grasses and forbs. Other significant mentors for me include my dad, Andrew Fulks, Carol Jefferson, and Aldo Leopold, to name a few.

How has or will your research align with the mission of CNGA "to promote, preserve, and restore the diversity of California's native grasses and grassland ecosystems through education, advocacy, research, and stewardship"?

Most of my work serves to increase stewardship of existing resources or restoration of impacted resources. Education occurs one-on-one with other restoration practitioners and professionals, and much occurs during workshops for CNGA and other organizations. Before moving to California, I was a teacher in Minnesota and focused on helping students understand the world better and how they fit into the natural world. I also had the opportunity to do a lot of grassland restoration while in Minnesota, both with students in a school setting and as a private citizen.

Why do you love grasslands?

This is a very difficult question to answer because the feeling I get while in a diverse grassland setting is ethereal and not easily described. It's a sense of peace and a sense of place that is never felt in an urban setting. Forested habitats are cool as well, but grasslands just hold some special power that is humbling and awe-inspiring. Something primal, I suppose.

Field Day attendees enjoyed a scenic hay ride tour, braving bridge crossings, muddy roads, and rainclouds at Hedgerow Farms. / *Photo: Jock Hamilton*

CNGA's 16th Annual Field Day at Hedgerow Farms — Recap

by Julia Michaels, PhD[1]

Each Spring, as Field Day approaches, we keep an eye on the weather and cross our fingers while preparing at Hedgerow Farms. As we all know, April in California can mean anything from scorching sun to freezing rain. But one thing we can always count on is our community of warm, enthusiastic, and resilient people coming together, rain or shine, to celebrate our most cherished annual CNGA tradition!

On April 5th, 180 people gathered for CNGA's 16th Annual Field Day at Hedgerow Farms. This year's theme, "Grasslands in Unexpected Places," brought together 180 participants, 15 nonprofits, and 8 speakers from solar projects, golf courses, municipalities, and vineyards. The seed barn at Hedgerow Farms was adorned with fairy lights and native plant bouquets, with beautiful and informative nonprofit booth displays adding to the cheer.

A special thanks to our sponsors, exhibitors, speakers, volunteers, and Hedgerow Farms staff who made this event possible. Their contributions and hard work ensured a memorable and enriching experience for all attendees.

When CNGA Board Member Julia Michaels asked the audience if it was their first field day, about half of the crowd raised their hands—a testament to the hard work our board members have been putting in to welcome new faces into the community!

We were honored to hear from two professors from UC Davis, Susan Harrison and Justin Valliere, who spoke about community-based grasslands research and the native seed supply chain. Special guest Erica Williams, attorney and project director for the Trust for Public Land's San Geronimo Commons, shared insights on a grassland restoration project recently highlighted in *The New York Times*!

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[1]Julia Michaels is Restoration Ecologist for Hedgerow Farms; Vice President of Scientific & Public Affairs for the NativeSeed Group; and CNGA Vice President.

Left: Victor Schaff (center) surprised Jodie Sheffield, CNGA Treasurer (left) and Haven Kiers, CNGA Director (right), with the Schaff Family Foundation's announcement of generous matching donations for CNGA's Big Day of Giving Fundraiser. / *Photo: Roann Pao, Rhizo Media*

Right: CNGA President JP Marie and Vice-President Julia Michaels, Hedgerow Farms Restoration Ecologist & Designer, kicked off Field Day by presenting the schedule and introducing the morning speakers, setting the stage for a day full of insightful discussions and activities. / *Photo: Jock Hamilton*

CNGA's 16th Annual Field Day at Hedgerow Farms — Recap *continued*

Attendees enjoyed hay rides across the property, walking tours of the hedgerows and seed barn, and visited exhibition booths set up by local conservation nonprofits, including the falcons at the CA Hawking Club, always a crowd favorite.

During lunch, Julia and CNGA President JP Marie led the crowd on a 'Whirlwind Tour of Unexpected Grasslands,' featuring a series of 7-minute lightning talks, each focusing on a different unexpected setting where grassland restoration is taking place. Speakers included UCD Professor/CNGA Board Member Haven Kiers (green roofs), Kendra Altnow (LangeTwins Family Winery), Alex Lepper (City of Elk Grove Parks), Jim Culley (Seed King Golf Courses), and Kathleen Ave (SMUD Solar Projects).

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Above: Don Hildebrandt of the California Hawking Club demonstrated the gentle nature of a Harris' hawk at his display during Field Day at Hedgerow Farms. / *Photo: Roann Pao, Rhizo Media*

Left: Susan Harrison, Professor and Chair, Dept. of Environmental Science and Policy, UC Davis, discussed the report released by the committee she chaired titled, *An Assessment of Native Seed Needs and the Capacity for their Supply: Final Report of the National Academies of Science, Engineering and Medicine, 2023. / Photo: Jock Hamilton*

Center: Erica Williams, Senior Project Manager and San Geronimo Field Director at the Trust for Public Land, presented her talk titled 'Rewilding Golf Courses: Challenges and Opportunities'. / *Photo: Roann Pao, Rhizo Media*

Right: Field Day attendees engaged with the Save the Snakes nonprofit exhibitor table, learning about snake conservation efforts and the importance of protecting these often-misunderstood reptiles. / *Photo: Jock Hamilton*

Field Day attendees gathered around for a fascinating seed-cleaning demonstration, observing the intricate process of preparing seeds. / *Photo: Jock Hamilton*

CNGA's 16th Annual Field Day at Hedgerow Farms — Recap *continued*

There were so many great questions from the audience that we had to cut the mic to stay on schedule!

A big thank you to Farm Manager Jeff Quiter for preparing the fields and ensuring everything was ready for our large crowd. Kudos to Alejandro Ramirez, Carlos Moreno, and Joshua Scoggin, Native Seed Group employees at Hedgerow Farm, who spoke about the challenges and adventures of wildland seed collection. Farm workers Juan and Irma Gomez gave demonstrations in the yard and seed-cleaning barn, with Joshua translating.

Justin Valliere, Assistant Professor of Cooperative Extension in Invasive Weed & Restoration Ecology at UC Davis, spoke to Field Day attendees about the upsides and downsides of targeted mowing to restore remnant native grasslands. The session took place in the large seed barn, with exhibitor tables arranged along the walls. / *Photo: Roann Pao, Rhizo Media*

The rainy weather held off long enough that everyone got the chance to see the property while creating a cozy atmosphere in the barn during the lunch speaker presentations. Attendees of this event commented that they were impressed by the thoughtful organization, engaging activities, and the wealth of knowledge shared by experts and enthusiasts alike.

Thank you again to all our participants for making this event a success. Your continuous support helps us further our mission of conserving and promoting California's native grasslands.

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Sustaining California's Heritage: Charitable Giving

"The California Native Grassland Association's leadership in the restoration of California grasslands has extended far beyond incorporating the latest science into restoration techniques, it's also pushed the frontiers of research — forging new directions and recruiting and collaborating with researchers to explore novel ways of understanding these grasslands, addressing critical knowledge gaps in our stewardship."

—Valerie Eviner & Michelle Halbur, 2021. "Thirty Years of Changes in How We Understand and Steward California's Grasslands," **Grasslands** *Vol. 31, No. 3. Summer 2021.*

California's native grasslands are invaluable havens of biodiversity, home to unique plants and wildlife. Imagine walking through vibrant fields of native grasses and wildflowers, knowing your support will help preserve these landscapes for future generations. By contributing to the California Native Grasslands Association, you play a pivotal role in safeguarding these vital ecosystems.

Thanks to the generosity of our supporters, CNGA offers educational workshops and training, advocates for grassland conservation, provides student scholarships for field research, and promotes networking and collaboration. Through these efforts, CNGA plays a crucial role in safeguarding California's native grasslands, ensuring their ecological integrity and sustainability for future generations.

By including CNGA in your estate planning, you ensure that your legacy endures by preserving California's grassland ecosystems. Your bequest will help fund critical conservation projects and educational programs, leaving an enduring mark on our environment.

The State of California offers various avenues for charitable giving, such as trusts, wills, and other planned giving strategies. These options not only provide significant tax advantages but also enable you to support CNGA in a manner that aligns with your financial planning goals.

Join us in our mission to promote, preserve, and restore the diversity of California's native grasslands. Your donation, whether a one-time gift or part of your estate planning, can make a lasting difference. Visit our website to learn more about how you can contribute or contact us directly to discuss your giving options. Together, we can ensure that these precious landscapes remain a vital part of California's heritage.

Transforming a traffic island (right) into an island of vibrant habitat has been a boon for migrating pollinators as well as the resident wildlife and their human neighbors.

An Archipelago of Biodiversity in the City:

Creating biodiversity connectivity by planting California native plants in traffic medians

Text and photos by Marcia Basalla[1]; sidebar by Charlotte Torgovitsky of Homeground Habitats Nursery-Novato

Just as human activity has caused a decrease/elimination of wildlife species, it also has the potential to contribute to the restoration of species in a variety of ways. Who would ever think an ordinary traffic median could become a thriving wildlife habitat, contributing to biodiversity connectivity in a suburban area? This was my objective in 2009 when I "adopted" a bare traffic island with a 560-foot perimeter as part of Novato's "Adopt a Median" program.

Located at the entrance to a residential neighborhood, the site was surrounded by open space, thus expanding the biodiversity corridor. With the assistance of the Novato Maintenance Department, the median was prepped and planted with 95% California native plants, not commonplace at the time. My purpose was to beautify, conserve water, and build healthy soil without the use of fertilizer and pesticides; thereby creating a thriving wildlife habitat and promoting sustainability in an otherwise wasted space.

Over this 14-year period, a native grassland/meadow formed — over 80 species of trees, shrubs, grasses, perennials, and annuals — becoming a vibrant habitat, attracting numerous pollinators, birds, and small mammals. In addition, a large swath of native Milkweed, *Asclepias speciosa*, and *A. fascicularis* was planted five or six years prior to create a Monarch waystation to support their declining numbers.

This habitat, a reflection of California's natural beauty, reverses the "Green Desert" effect of planting lawn and/or plants whose sole purpose is decorative with little habitat value. A study published by the University of Delaware and the Smithsonian Institution found that for a chickadee bird to survive and reproduce, an area needs to have a biomass of 70% native plants. Why? Native plants have evolved with insects, which are needed in large numbers for birds

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The success of this habitat as a Monarch waystation has inspired not only the addition of adjacent habitat, but similar projects throughout Marin County.

An Archipelago of Biodiversity in the City *continued*

to survive, thus native plants are vital to the food web. To have a sustainable, diverse habitat and/or pollinator garden, this 70–30 ratio is important.

Sustainable Landscapes

According to renowned entomologist Doug Tallamy, a habitat must perform four vital functions for a sustainable relationship with the natural world:

- Support a wide variety of pollinators.
- Provide energy for the local food web. Plants build their tissues from the carbon they harness and can hold the carbon within their structure for decades — they share that energy with local animals.
- Protect the local watershed. Native plants with large root systems facilitate rainwater infiltration, and trees with large canopies soften the impact of pounding rain, resulting in tons of water being held onsite after a large storm.
- Remove carbon from the atmosphere.

In addition to performing these important functions, these sites also provide seed, plant material in the form of seedlings, and larger plants which are propagated and grown out by Homeground Habitats Nursery here in Novato. The plants are donated to nonprofit organizations for various projects and also sold at California Native Plant Society plant sales. Some plants even come back to their "original home" to be replanted on the islands.

Throughout the seasons, a variety of colors grace this meadow, beginning in early Spring with the showy, fragrant pink wands of

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Lifecycle goals: From Monarch larvae to butterfly and back again.

An Archipelago of Biodiversity in the City *continued*

Flowering Currant *(Ribes sanguineum)*. This is followed by a cloud of Blue-eyed Grass (*Sisyrinchium bellum*) covering the ground. Offering a nice contrast are the pale,yellow flowers of Elderberry (*Sambucus mexicana*). Throughout the summer, Yellow Evening Primrose (*Oenothera flava*) blooms everyday and June Grass (*Koeleria macrantha*) sways gracefully in the breeze with elegant Coulter's Matilija Poppy (*Romneya coulteri)*, Yarrow (*Achillea millefolium*), and Showy and Narrow Leaf Milkweed (*A. speciosa* and *A. fascicularis*, respectively). Rounding out the flowering season is orange Willowherb (*Epilobium* sp.) as well as yellow-flowered Goldenrod (*Solidago californica*) and Gumweed (*Grindelia stricta*).

Based on the success of this habitat, Marin County Parks, Rotary Club of Ignacio, and Marin Master Gardeners, installed a native pollinator garden adjacent to this site to expand the Monarch waystation. Other cities in Marin County have been exploring these methods to support pollinator-friendly sites and which in turn require less maintenance, chemicals, and water.

Our objective is to promote this model to municipalities and other entities. These types of planted sites contribute to biodiversity connectivity for wildlife in the urban setting. In addition, these sites allow the community to experience and enjoy nature where they live "over here" instead of "over there." It has been suggested that these types of urban gardens not only benefit the environment, but creates a sense of well-being for people.

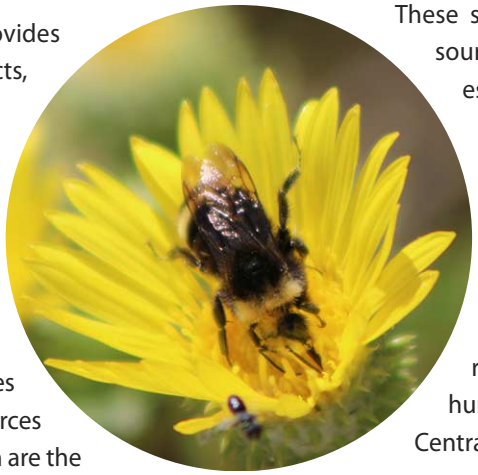
Some examples of the plants that helped create this dynamic, biodiverse habitat are as follows:

Trees

Blue Elderberry (*Sambucus mexicana*) — Provides nectar and pollen in the spring for many important pollinators, and berries in the fall for birds, especially migratory birds passing through on the Pacific Flyway.

Coast Live Oak (*Quercus agrifolia*) — Provides habitat for more than 500 species of insects, birds, reptiles, amphibians, and mammals.

Holly Leaf Cherry (*Prunus ilicifolia*) — Provides fruits and seed for birds and mammals and is a larval host for the Western Swallowtail butterfly.



Shrubs

Coyote Brush (*Baccharis pilularis*) — Studies have shown that this shrub provides resources for more than 400 species of insects which are the very foundation of all other life on Planet Earth. Birds, like Wrentits and White-Crowned Sparrows, may spend their entire lives among stands of Coyote Brush.

Native Salvias (*Salvia* sp.) — There are more than nine different Salvias in this habitat which provide nectar and pollen for numerous bees and butterflies and are an especially important source for our resident Anna's hummingbird.

Coffeeberry (*Frangula californica*) — Provides nectar and pollen for a diverse population of pollinators in the spring as well as berries in the fall for birds and mammals. It is also a larval host of the Pale Swallowtail butterfly.

Monkey Flower (*Erythranthe* sp. and *Diplacus* sp.) — These small shrubs are an important seasonal source of nectar for hummingbirds — especially for Rufous and Allen's whose migration through California is timed to the flowering of these beautiful shrubs.

California Fuchsia (*Epilobium canum*) — These beautiful orange plants bloom in late summer and early fall and are a vital source of nectar, perfectly timed for the return migration of the Rufus and Anna's hummingbird to their overwintering sites in Central America.

Important "staples"

Native grasses of various heights: **Deergrass** (*Muhlenbergia rigens*), **June grass** (*Koeleria macrantha*), **California Fescue** (*Festuca californica*), **Blue Fescue** (*F. idahoensis*), **Leafy Reed Grass** (*Calamagrostis foliosa*), **Purple Needle Grass** (*Stipa pulchra*).

SPECIES SPOTLIGHT

California Plantain (*Plantago erecta*)

by Consuelo Baez Vega, a Jr. Specialist for the UC Cooperative Extension in Sutter–Yuba. cbbaezvega@ucanr.edu

California plantain is a small, annual herb of many names — dot seed plantain, foothill plantain, and dwarf plantain — and it is found extensively throughout California. It is native to the foothill woodlands, coastal scrubs, chaparrals, and other open areas. Its grass-like appearance may make an observer think it's from the Poaceae family. Instead, California plantain is from the Plantaginaceae family. A casual observer will likely miss this species when hiking because of its diminutiveness and ability to blend in.

California plantain's origin likely came from the south, which has a similarly arid climate. It is also possible that ancestor plants migrated from the north or bird seed distribution where a bird dispersed seeds over long distances (Dean, 2011).

Identifying Characteristics

It grows no greater than eight to 12 inches tall and has sparse hairs covering the plant body. Leaves form a basal rosette around the stem from where a small cluster of off-white, translucent flowers will bloom. It is a perfect flower (male and female components) with four fused petals, sepals, stamens, and carpels. Seeds are small, about ⅛ inch in length, and dull brown with some white markings on the indented side of the seed.

Surviving The Wild

Seeds emerge from the soil at the onset of winter rains and begin the plants' short life cycle of growth, flowering (March–April), and desiccation before the hot summers. The mature herb will disperse its seeds over a short distance in an explosion of seeds, at which point the cycle will repeat. Harvester ants occasionally help disperse seeds when foraging. Small insects will aid in pollination.

The Butterfly Link

California plantain has a special relationship with the Quino checkerspot butterfly (*Euphydryas editha quino*), an endangered species that was historically prolific along the coast and inland valleys of southern California. This butterfly's survival depends on this native plant as its primary host because the checkerspot uses it as an egg-laying substrate. Once hatched, the larvae eat the leaves (Montalvo et al., 2010).

Challenges

Non-native, invasive plants, such as barbed goatgrass (*Aegilops triuncialis*), have displaced California plantain except in areas of little competition, such as sandy soils. This displacement can happen quickly because invasive plants have strong competing characteristics, such as expedient vegetative/reproductive growth and higher germination rates (Valliere et al., 2019). Soft brome (*Bromus mollis*) has also been observed to outcompete California plantain in serpentine grasslands. Regardless, California plantain is typically a good competitor for nutrients and is noted as a commonly found plant. Seed production farms in California have successfully grown this plant for seeds, which have been used for habitat restoration in southern California's coastal sage scrub areas (Montalvo et al., 2010).

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Inset: Close-up of California plantain flower. / *Photo: NatureShutterbug, https://creativecommons.org/licenses/by/2.0/, flickr.com*

California Plantain *continued*

Interesting Relevant Studies

California plantain has been a source of research on soil microbe changes, invasive species effects, and other species interactions with native plants, such as gophers. Batten et al. (2008) examined how the performance of two native plants was affected under an altered soil microbe environment. This alteration was caused by the growth of an invasive species. In the plantain's case, no feedback effects were noted in the two-month and five-month assessment of the study. A greenhouse study tested the impact of gopher mounds on two annuals, including California plantain. A negative plant effect was observed when growing in a gopher mound soil since plant productivity was lower. This effect was possibly attributed to less macro-nutrient content alongside other factors such as lowered soil bulk density and quicker drying in mound soils (Koide et al. 1987).

Interesting Facts

Seeds of the California plantain may have been harvested by Native Americans to grind up and process (Santa Monica Trails Council 2019).

Psyllium, a type of laxative and dietary fiber, is made from plantain seeds (Nature Collective 2024).

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California plantain growing in a field. / *Photo: David A. Hoffman, https://creativecommons.org/licenses/by/2.0/, flickr.com*

Meet the Class of 2024: Grassland Research Awards for Student Scholarship (GRASS) Scholars

Thanks to the generous support of our members and donors, we funded sixteen outstanding graduate students who submitted quality research proposals to the GRASS program. One of CNGA's most important tasks is to enable the future of grassland conservation by training future generations of grassland managers and researchers. Since 2019, CNGA has offered competitive research funds to promote student research focused on understanding, preserving, and restoring California's native grassland ecosystems.

We congratulate and thank the GRASS Class of 2024 for their important work.

Gabriel Abundis, 2024 GRASS Scholar

Cal Poly Humboldt

Project Title: *Exploring the impact of photovoltaic cells on microhabitats and plant communities in Coastal California*

I'm Gabriel Abundis, an Air Force veteran now immersed in my third year of studies, majoring in Rangeland Resource Science. Having traversed various landscapes during my service, I was able to experience and foster a profound appreciation for ecosystem management, which fuels my current academic pursuits. My research focuses intently on exploring the intricate dynamics between photovoltaic cells and the delicate coastal California grasslands. I aim to give insight that is crucial for informing future co-use strategies. From the development of native pollinator gardens to implementing managed grazing practices, my research seeks to maximize the ecological benefits of renewable energy installations while minimizing their ecological footprint. By understanding the complexities of solar panel interactions within grassland ecosystems, I hope to contribute to the broader discourse surrounding biodiversity conservation, and restoration.

Jannike Allen, 2024 GRASS Scholar

San Jose State University

Project Title: *Prescribed fire behavior in masticated and non-masticated coastal prairie sites experiencing coyote brush shrub encroachment*

Jannike (pronounced YON-ick-a) is a MS student in Dr. Kate Wilkin's Fire Ecology and Management lab at San Jose State University, studying prescribed fire ecology on the Central Coast. Jannike grew up in California and has also lived in the Pacific Northwest where she obtained a BS in Environmental Science at Portland State University. She has worked on land stewardship and fire resilience issues from multiple angles, including researching the impacts of reburns on Alaska's boreal vegetation composition, helping carry out prescribed burns in coastal Northern California, and implementing wildfire mitigation programs in the Sierra Nevada foothills. She is interested in conducting research that serves the needs of land stewards and their restoration efforts, and currently focuses on coastal prairie with coyote brush encroachment and maritime chaparral ecosystems. She is enjoying getting to know grasslands, especially when observing fire behavior during prescribed burns in coastal prairies.

Meet the Class of 2024: GRASS Scholars *continued*

Ava-Rose Beech, 2023 & 2024 GRASS Scholar

UC Davis

Project Title: *Impacts of soil multifunctionality on native species diversity and restoration success: Efficacy of strip-seeding and prescribed burning to improve soil characteristics*

I am a second year PhD Student in the UC Davis Ecology graduate group studying under Dr. Leslie Roche in the UC Rangelands Lab. My research focuses on harnessing soil ecology to improve drought resilience in rangeland ecosystems. I am specifically excited about understanding how rangeland management practices can help ranchers cope with difficult challenges related to climate change including water scarcity, wildfire, increased temperatures, and invasive species. I am passionate about engaging in both basic and applied research that can have a positive impact for California ranchers and local stakeholders. I also love engaging in science education, community outreach, and working at the intersection of art and science.

Katherine Brafford, 2022 & 2024 GRASS Scholar

UC Davis

Project Title: *Drivers of seed germination and seedling success in medusahead* (Elymus caput-medusae) *dominated grasslands*

I am a PhD Candidate in Dr. Jen Funk's lab in the Ecology Graduate Group and an affiliate of the Center for Population Biology at UC Davis. I am broadly interested in how plant individuals and populations respond to their environment. This current project investigates how *Elymus caput-medusae* (medusahead), a common, non-native, thatch-producing annual grass, and medusahead thatch alter the soil and ground-level environment and what traits allow other species to grow and compete in medusahead stands and thatch. I hope to shed light on how traits relate to community assembly; clarify mechanisms underlying annual grass invasion and grassland restoration management outcomes; re-examine accepted wisdom based on 1960s experiments; and inform future restoration efforts.

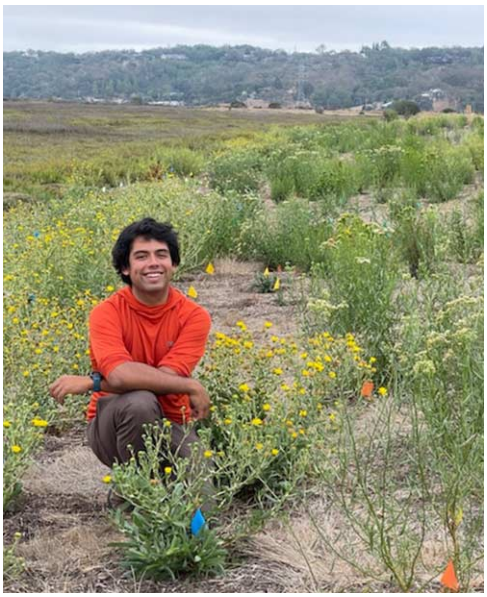
Lynn Breithaupt, 2024 GRASS Scholar

UC Merced

Project Title: *Monitoring California's Central Valley vernal pool pollinator and plant communities*

My name is Lynn Breithaupt. I was born and raised in Stockton, California. I attended San Joaquin Delta College for my AS in Horticulture and worked in the greenhouse and nursery industry for years before I decided to continue my education and transfer to CSU Stanislaus. There, I received my B.S. in Organismal Ecology and Evolution and received several awards including the outstanding undergraduate researcher of the year, 2022–23. I am now a PhD student at UC Merced, working with Dr. Jason Sexton and Dr. Marilia Gaiarsa conducting research on vernal pool and grassland plant-pollinator interactions.

Meet the Class of 2024: GRASS Scholars *continued*



Ernesto Chavez-Velasco, 2021 & 2024 GRASS Scholar

Cal Poly Humboldt

Project Title: *Supporting less commonly used plant species in California grassland restoration by linking functional plant traits with site characteristics*

I'm Ernesto Chavez-Velasco. I'm currently pursuing a master's degree in natural resources at Cal Poly Humboldt where I'm researching commonly unused plant diversity in California grassland restoration projects. I completed my undergraduate degree from UC Santa Cruz in 2021, where I first gained research and restoration experience concerning California grasslands. Since 2019, I have been a restoration practitioner in Santa Barbara County and in Point Blue's Students and Teachers Restoring a Watershed Program in the Bay Area. Most recently, I was an assistant field botanist for CNPS in the North Coast bioregions. I also volunteer and participate in regional prescribed burn associations where I can apply "good fire" in our grassland ecosystems. I enjoy sharing my genuine appreciation and love for California's grassland systems for their often-overlooked beauty and their vital role in supporting the state's diverse flora and fauna.

Meet the Class of 2024: GRASS Scholars *continued*

Ian Cooke, 2024 GRASS Scholar

San Jose State University

Project Title: *Restoring native coastal prairie through mechanical pre-treatment and prescribed fire*

Ian Cook is a first-year MS student at San Jose State University focusing on prescribed fire ecology. After graduating with a BS in Molecular Environmental Biology from UC Berkeley in 2017, he spent several years in parks maintenance throughout the Bay Area. A few deeply unsettling fire seasons, coupled with the wider shift toward more urgent prioritization of fire in land management decisions, led him to pursue prescribed fire research, and he aims to help return beneficial fire to California's landscapes in a way that is proactive, compassionate, and ecologically sound. Ian's current research involves restoring coyote brush-encroached coastal prairie grasslands by combining prescribed fires with mechanical pre-treatments. He's been particularly excited to gain fluency with remote sensing tools to better understand these treatments' efficacy. Ian is also a devoted cat dad, forager, sci-fi enthusiast, and okay guitarist.

Lauren Glevanik, 2024 GRASS Scholar

UC Los Angeles

Project Title: *Assessing impact of seed dispersal on coexistence in Coastal California annual grasslands*

I am a second-year PhD student with Dr. Nathan Kraft's lab in the Department of Ecology and Evolutionary Biology at UCLA. I work with annual wildflower and grass species in a serpentine grassland system in Southern California to answer questions about how differential investment in seeds and seed dispersal across species shapes patterns of biodiversity from local to landscape scales. My research integrates empirical data (seed dispersal distances in the field, plant traits) with modeling to investigate how accounting for differences in seed dispersal impacts local community assembly dynamics and landscape-level diversity. This work informs broader applications in range shift modeling, restoration, conservation, and reserve management.

Meet the Class of 2024: GRASS Scholars *continued*

Kenia Gomez, 2024 GRASS Scholar

Cal Poly Humboldt

Project Title: *Effect of woody debris on* Pleuropogon hooverianus *under drought stress*

I am a post-baccalaureate student in the Rangeland Resource Science program at Cal Poly Humboldt. Prior to returning to school, I worked as a sustainability consultant where I learned about resource management in the built environment. While working on large-scale waste management studies I became interested in learning about natural resource management. While pursuing my second bachelor's degree I interned for NRCS Idaho and competed on the Collegiate Soil Judging team. My research project is focused on understanding the ecological conditions which may influence *Pleuropogon hooverianus* development.

Caitlin Lackey, 2024 GRASS Scholar

San Jose State University

Project Title: *Photoload sampling series for Wilder Ranch State Park*

Caitlin is a fourth-year Public Health student in the Wilkin Fire Ecology Lab at San José State University. She is studying fuel load mapping methods of coastal prairies to help predict prescribed fires and wildfires. She is excited to learn how this can help with the conservation and management of coastal grasslands

Mark Mullinger, 2024 GRASS Scholar

University of Vermont

Project Title: *Phylogentics of Melica: Digging into the evolution of bulb-forming grasses*

Mark is a pre-candidacy doctoral student in Plant Biology at the University of Vermont where he's working on the genus Melica as an emerging model system for understanding trait evolution in temperate grasses, i.e., subfamily Pooideae. Mark has previously received a MSc in the Biodiversity and Taxonomy of Plants from the University of Edinburgh & the Royal Botanic Garden Edinburgh. Before that, he achieved a BS in Biology from Mercyhurst University in Erie, Pennsylvania. Mark cultivates a broad interest in the evolution of plant forms and functions, with a working focus on grasses, monocots, and geophytes. He also enjoys thinking about landscape-level changes over time and considers himself an amateur paleobotanist. Mark is excited for the opportunity to explore California's grassland ecosystems and observe his study organisms *in-situ* thanks to this CNGA award.

Meet the Class of 2024: GRASS Scholars *continued*

Andrea Nebhut, 2024 GRASS Scholar

Stanford University

Project Title: *Climate-tracking communities enrich the productivity and diversity of remnant California serpentine grasslands at local and regional scales*

I am a second-year PhD student at Stanford University Department of Biology, advised by Dr. Tadashi Fukami and Dr. Jeffrey Dukes. My work focuses on the intersection of climate change, plant invasion, and ecosystem functioning, with forays into field and experimental research, analysis of continental-scale datasets, and mathematical modeling. I received my BS in Biology and Environmental Studies from Trinity University, where I studied how shortwave UV-B radiation alters plant pigmentation, and my MS in Forestry and Natural Resources from Purdue University, where I studied the impacts of invasive plants on their recipient communities. Currently, I am using serpentine grassland mesocosms as a model system to understand how competitive outcomes are shaped by the traits of the competitors and the climatic environment in which they compete.

Peter Nguyen, 2024 GRASS Scholar

UC San Diego

Project Title: *Integrated mechanistic prediction of ecological and evolutionary responses to increasing aridity across the range of* Eschscholzia californica*, California poppy*

Hello! I am a first-year PhD student in the Sexton Lab at the University of California, Merced, in the Quantitative Systems Biology Graduate Group. My research focuses on landscape genetics—specifically, with *Eschscholzia californica*, the California poppy. As part of the California Conservation Genomics Project (CCGP), we sequenced an improved chromosome-level genome assembly for *E. californica* to explore its genetic adaptability under increasing aridity due to climate change. My ongoing research focuses on identifying gene variants indicative of natural selection in response to drought and increasing aridity, significant challenges posed by global climate change in California. A key aspect of my work involves assessing areas within the species' range that exhibit high genetic diversity and effective population sizes, which will aid in predicting potential climate change adaptation. Furthermore, I integrate common garden experiments and field-based demographic assessments to evaluate plant traits systematically.

Meet the Class of 2024: GRASS Scholars *continued*

Sophie Noda, 2024 GRASS Scholar

UC Davis

Project Title: *Burn pile recolonization dynamics in a coastal prairie restoration site*

I am a Master's student in the Eviner Lab at UC Davis interested in the factors that dictate the establishment of *Baccharis pilularis* (coyote brush), a species of management interest in coastal prairies because of its ability to drive succession and reduce coastal prairies in the absence of disturbance. I am studying how different densities of native grass seeding affect coyote brush establishment in burn pile scars where coastal prairie is being restored in coastal Marin County. I also work for Point Blue Conservation Science as an ecologist in the Working Lands Group, where my focus is a project called the Rangeland Monitoring Network that monitors birds, plants, and soils as ecological feedbacks for management.

Jessica Solis, 2023 & 2024 GRASS Scholar

San Francisco State University

Project Title: *Investigating the Impact of Wildfire Disturbance and Microclimate on Carbon and Water Fluxes in a Coastal Fog-Influenced Grassland Ecosystem*

Hi! My name is Jessica Solis, and I am a Master's student at San Francisco State University majoring in Geography: Resource Management and Environmental Planning. My research focuses on studying the effects of microclimate and wildfire disturbance on carbon and water vapor fluxes in a coastal grassland situated at Swanton Pacific Ranch in Santa Cruz County. I aim to advance our comprehension of vegetation recovery post-fire and the related carbon dynamics that play a crucial role in enhancing climate-adaptive land management practices.

Rebecca Wynd, 2024 GRASS Scholar

UC Davis

Project Title: *Native forb response to grazing and fire disturbances in a California grassland*

Rebecca is a first year MS student at UC Davis, researching how disturbances, such as grazing and fire, influence the abundance and composition of native forbs in grassland ecosystems — a group of plants critical for grassland health and resilience! She comes to Davis with five years of experience working in tidal wetland habitat restoration in the Bay Area, and two years of experience as a field botanist throughout the state of California. She is excited to bring her passion for botany and restoration to California grassland ecosystems and connect with others who have knowledge of these systems.

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*Join us for **A Celebration of Grassland Science** at CNGA's Symposium February 5–7 at the Hopland Research and Extension Center. Details this Fall!*

Front cover: A banded garden spider, *Argiope trifasciata*, September 2023. These spiders can be found in tall grasses in summer and fall. This one was found in an oak grassland that is a part of The Willits Bypass Mitigation Project in Mendocino County. / *Photo: Emily Allen, CNGA Board Member*

Back cover: *Achillea millefolium*, yarrow, at a restoration site along the Napa River in Yountville in May 2019. / *Photo: Emily Allen, CNGA Board Member*