*Dedicated to the Preservation of California Native Flora*

# The California Native Plant Society

Bristlecone Chapter Newsletter

**Volume 44, No. 2**
**March–April 2023**

## President's Message

Inspiration is never far away living in the Owens Valley. A casual glance through the window or walk around the block rewards us with views of snow-covered peaks to the west and colorful rugged mountains to the east. Many residents and visitors experience this sense of fascination and love for the region. It's the reason I live here—the land, sky, wildlife, plants, and open space. There is just no other place like it.

Lately I've also been inspired by Mary Austin's life and works. In "The Land of Little Rain", Mary reminds us that "The desert floras shame us with their cheerful adaptations to the seasonal limitations. Their whole duty is to flower and fruit, and they do it hardly, or with tropical luxuriance, as the rain admits". Perhaps with the copious rain and snow in December through February, we will have the fortune to experience a "tropical luxuriance" of wildflowers in our chapter area this year. If not, the beauty of this land will still be just outside the door.

In the meantime, please stay tuned for some remarkable upcoming guest speakers and amazing field trips. Try to attend if you can—there's so much to learn and observe! Also, we'll be seeking volunteers for an early spring cleanup at the DeDecker Native Plant Garden with date and time still to be announced. Hope to see you soon!

*—Kelly Bahr*

## General Meeting
## Wednesday, March 22nd—CANCELED!

**Instead, please attend the White Mountain Research Center's Public Lecture on March 23rd, Thursday, 6:00–7:30 pm, ONLINE**. Peri Lee Pipken, a 2022 WMRC Mini Grant and Bristlecone Chapter DeDecker Grant recipient will present *Black Holes, White Gold: A Floristic Inventory of the Silver Peak Range, Esmeralda County, NV*.

A Master's student at California Botanic Garden, Peri Lee is conducting a floristic inventory of the Silver Peak mountains in Esmeralda County, Nevada. These desert mountains are arid yet full of incredible biodiversity, ranging from valleys of alkali wetlands, cactus flats to red rock canyons, and peaks bearing lupines and bristlecone pines. Several species of interest in the area, include the endemic and endangered Tiehm's buckwheat and rare Tecopa bird's beak. In addition to this floristic inventory, Peri Lee is also writing a conservation plan to preserve the threatened population of Tecopa's bird's beak that occurs in the alkali wetlands.

The free Zoom talk requires registration at https://ucla.zoom.us/meeting/register/tJYsdO6uqTgpHtJuJs4m9wvq0yods9XqxEwF and it will be recorded. Peri Lee is also seeking volunteers. Read more about the project on pages 5–6.

## Conservation Updates

**LADWP Pumping Plan 2023-24**

By April 20th, LADWP will have released their plan of operations for 2023-24 which will include important information about pumping plans and mitigation projects. Inyo County will have 10 days to raise concerns which LADWP must attempt to resolve within the following 10 days. Operations have the potential to adversely impact native vegetation and

rare plants such as the Owen's Valley checkerbloom (*Sidalcea covillei*) and the Inyo County star tulip (*Calochortus excavatus*). To read the entirety of the Annual Operations Plan, as well as past plans and comments, please refer to the Inyo County Water Department's website: https://www.inyowater.org/documents/pumping/dwp-annual-operations-plans/

**Bureau of Land Management Initiates Utility-Scale Solar Energy Planning**

The Bureau of Land Management (BLM) initiated preliminary scoping for a process that may lead to changes in where renewable energy development is prioritized and how specific projects are implemented. Currently, the 2012 Western Solar Plan and 2016 Desert Renewable Energy Conservation Plan (DRECP) are used to guide renewable energy development on BLM lands in California. However, we may see changes to one or both of these plans as the BLM is tasked with increasing opportunities for renewable energy development to advance federal renewable energy goals.

There is a possibility that BLM's new planning effort could open the DRECP for revision which could be detrimental for California's desert species. Considerable resources were invested in the DRECP process including eight years of public participation, hundreds of public meetings, thousands of public comments, and numerous scientific studies. While many agree that the DRECP is not perfect, the plan contains numerous conservation and management actions that are intended to protect important native plant communities and rare species while incentivizing renewable energy development in areas with apparent low-resource conflict. CNPS and other local and regional conservation organizations have sent in scoping letters to urge the BLM to exclude the DRECP area from any updates to these regional planning efforts.

Additionally, it is possible that changes to existing exclusion criteria in the 2012 Western Solar Plan could lead to a large increase in areas where renewable energy development is allowed and/or prioritized in California and other western states. We hope that the BLM will continue to exclude lands identified for their conservation values such as Areas of Critical Environmental Concern and lands within the National Landscape Conservation System. Although the official window to submit scoping comments closed on February 28th, there will be additional opportunities for the public to engage at later stages in the process. The BLM expects to release a draft Programmatic Environmental Impact Statement (EIS) later this summer and the Final Programmatic EIS in the summer of 2024.

*—Maria Jesus*

## Bryophytes of Coyote Ridge and Flat, Inyo County, California

*Originally published in the CNPS San Gabriel Mountains Chapter Newsletter (Nov 2022).*

As a recent graduate of the MS Botany program at California Botanic Garden (CalBG) and Claremont Graduate University, I completed a floristic inventory of Coyote Ridge and Flat, a mostly subalpine to alpine site on the eastern slope of the Sierra Nevada in northwest Inyo County, California. A floristic inventory involves the thorough documentation of plant diversity within a particular area. My study area covered about 50 square miles and ranged from 8,500 – 13,500 ft in elevation. Motivated by a $500 research grant offered by the CNPS Bryophyte Chapter and tales of bryological fame and fortune from Sarah DeGroot (a botanist and colleague at CalBG), I decided to include bryophytes (i.e., mosses, liverworts, and hornworts) in my inventory of the area. For, as I was told by Sarah and others, our understanding of bryophyte biodiversity was far behind that of the vascular plants (ferns, conifers, flowering plants, etc.), and significant discoveries were still commonplace within the field. Through the

*Marchantia polymorpha* (common liverwort or umbrella liverwort) from Coyote Creek, an easily recognized and charismatic liverwort species with a nearly worldwide distribution. See their namesake umbrella-shaped archegoniophores in this photo by Martin Purdy.

casual collection of mosses, I envisioned myself accumulating a long list of new records for the county, state, and perhaps even science itself. Three years later, I can claim little to no prestige and even less expertise within the field, but what I have obtained is a greater appreciation for these incredible yet often overlooked members of the plant kingdom.

Mosses, liverworts, and hornworts, collectively referred to as bryophytes, represent the earliest diverging lineages of land plants. As such they are often thought of as the most "ancient" or "primitive" living land plants, and while this is technically incorrect (all living land plants descended from the same ancestor and are therefore equally ancient or evolved) bryophytes have retained many traits which are considered primitive and intermediate between their aquatic ancestors and terrestrial relatives. For instance, they lack roots and the specialized vascular tissue (e.g., xylem and phloem) shared by all other land plants. As a result, bryophytes are generally quite small and most abundant and diverse in wet habitats.

The Dashboard Moss Dryer by Martin Purdy: a patented design and my preferred method of drying bryophytes in the field. Frequently wet when collected, bryophytes need to be completely dried for long term storage and preservation just like vascular plants. Unlike vasculars, however, they are best dried outside of a plant press.

Given their small size and lack of showy reproductive structures (no flowers or cones) they are also notoriously difficult to identify and, accordingly, ignored by most botanists. Bryophyte keys generally require the use of dissecting and compound microscopes to observe the shape of individual leaf cells—not a great field character! Consequently, I was hugely relieved when Jim Shevock, a renowned California botanist and bryologist, offered to help identify my specimens. Without the help of Jim Shevock and David Toren, both researchers at the California Academy of Sciences, the bryoflora of Coyote Ridge and Flat would not yet be a reality and I would probably still be working on identifying many of my specimens.

Including 14 historical collections and the 241 I made for this study, a total of 69 bryophyte species were documented within the project area. Mosses made up 95.7% of the diversity with 66 species, liverworts 5.4% with just three species (the ID of a fourth liverwort species is pending), and no hornworts were found. When vascular plants are included, bryophytes make up about 13.3% of the total species diversity in the area. Considering the dry Eastern Sierra climate of my study area, I was surprised to learn that this is larger than the proportion of bryophytes in the California flora as a whole where they comprise about 11.8% of total plant species diversity (this using an estimated 800 bryophyte species [Shevock 2015] and 5967 vascular plant species [Baldwin et al. 2012] for the state). The largest bryophyte families and genera along with some other summary statistics for the 'Coyote' bryoflora are presented in Table 1.

Table 1. Numerical summary of the bryoflora of Coyote Ridge and Flat. When taxonomic rank is not indicated, count is for species in each category.

| Category | Count | % of bryoflora |
|---|---|---|
| Flora | | |
| Families | 21 | |
| Genera | 44 | |
| Species | 69 | |
| Minimum-rank taxa | 69 | |
| Mosses | 66 | 95.7 |
| Liverworts | 3 | 4.3 |
| Native | 69 | 100 |
| Non-native | 0 | 0 |
| Rare* | 0 | 0 |
| Five Largest Families | | |
| Bryaceae | 10 | 14.5 |
| Pottiaceae | 8 | 11.6 |
| Brachytheciaceae | 7 | 10.1 |
| Amblystegiaceae | 7 | 10.1 |
| Mielichhoferiaceae | 5 | 7.2 |
| Six Largest Genera | | |
| *Ptychostomum* | 6 | 8.7 |
| *Pohlia* | 5 | 7.2 |
| *Syntrichia* | 4 | 5.8 |
| *Brachytheciastrum* | 3 | 4.3 |
| *Grimmia* | 3 | 4.3 |
| *Philonotis* | 3 | 4.3 |

*Several documented bryophyte species have extremely limited distributions in California but none have rare plant ranks or an official conservation status within the state.

Although none of the bryophytes documented have rare plant ranks or special status within California, a handful of my collections represent range extensions or new records for political or geographic boundaries. These include: the first California records of Amblyodon dealbatus (short-toothed hump moss) which are disjunct 350 miles from the next closest occurrence in northeastern Nevada; the first Sierra Nevada records of Campylostelium laegerae and Trichostomum crispulum (curly crisp moss), the former a recently described species previously known only from two Mojave Desert mountain ranges; and the first Inyo County record of Tortula leucostoma (alpine screw moss) a species which is known only from four previous collections in California. All four of these species have fewer than 10 occurrences within the state, far fewer than most California rare vascular plant species, yet none are currently afforded any protection status.


*Amblyodon dealbatus* (short-tooth hump moss) from the Coyote Flat area, a new record for California; sporophytes (A) and leaves (B). Images by Martin Purdy.

Many bryophyte distributions in California (like those discussed above) are characterized by few isolated occurrences making them susceptible to localized extirpation (Shevock 2015). Additionally, as Jim Shevock writes in his Introduction to the 2021 Madroño issue devoted to recent bryofloras, "California and the West remain that portion of the United States where new bryophyte discoveries are guaranteed to be made with ongoing inventory effort." In the face of increased modern impacts to natural ecosystems from things like climate change and severe wildfires, the documentation and conservation of bryophyte diversity on the landscape today is particularly urgent.

—Martin Purdy

## 2023 Wildflower Exhibit
## Friday March 31–Sunday April 2
## Admission $2.00

*Mentzelia eremophila* by Nick Panzer.

Every spring the Maturango Museum in Ridgecrest (100 E. Las Flores Ave.) hosts the annual Wildflower Exhibit during which visitors can see the wide variety and abundance of wildflowers that grow in the Indian Wells Valley and surrounding canyons. Collectors with the proper BLM permits spend multiple days gathering the wildflowers which are placed into bottles or vases then set onto tables according to their family. This allows visitors to have a close-up view of the many wildflowers from this area—all in one room!

The exhibit features annuals and flowering shrubs—from the tiny white cryptantha (forget-me-nots) to the bright and showy coreopsis (bright yellow wildflower) and to the common desert shrub, the creosote bush. Each species is identified by a group of professional botanists and labeled with its common and scientific names.

The speaker for this year is Nina House. Nina, a recent botanist graduate, is giving a presentation on *A Vascular Flora of the Manter and Salmon Creek Watersheds in the Southern Sierra Nevada, Tulare County, CA*. Her presentation will be given on Sat. April 1st at 3:00 pm at the Maturango Museum. As in past years, local artists from the Desert Artist League will be drawing and painting selected wildflowers throughout the weekend.

With the winter rains, this spring promises a colorful and fragrant display of wildflowers for this exhibit!

*Museum hours are from 10:00 am to 5:00 pm daily. Website is www.maturango.org and phone number is (760) 375-6900.*

**Nina House, Guest Speaker for the Annual Wildflower Exhibit**

Nina House is the guest speaker for the 2023 Maturango Museum Wildflower Exhibit. Nina will give a presentation of her study area on Saturday, April 1st, 2023 at 3:00 pm at the Maturango Museum.

The title of her presentation is, *A Vascular Flora of the Manter and Salmon Creek Watersheds in the Southern Sierra Nevada, Tulare County, CA*. Her study area encompassed a 51-square-mile section of the Kern Plateau, including 25 square miles of the Domeland Wilderness area. Conducting a systematic floristic inventory of this under-documented region provided an opportunity to record rare plant locations, new county records, species at the edge of their range, and disjunct plant populations. Documenting this diversity is vital as there are several ongoing impacts from land use and climate change. Cattle grazing, off-highway vehicular use, logging, severe drought, and an altered fire regime were all documented during the study. These disturbances will have lasting impacts on the flora. Throughout the project, Nina completed a total of 24 field trips, totaling 90 field days, and resulted in the collection of 1,412 herbarium specimen records.


Nina House at the Domeland Wilderness. Photo by Nina House.

Nina received her Biology B.S. degree in 2017 before working toward her Master's degree in Botany from Claremont Graduate University. She is currently a Museum Scientist at the UC and Jepson Herbaria at the University of California Berkeley. She works on coordinating the Jepson Workshop program and revising the Jepson eFlora.

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## Volunteer and Job Opportunities

**Volunteer to Survey the Flora of the Silver Peak Mountains for a Graduate Student's Project, *Black Holes, White Gold: A Floristic Inventory of the Silver Peak Range, Esmeralda County, NV***

Master's student Peri Lee Pipkin is a recent Mary DeDecker grant recipient studying botany at the California Botanic Garden, and she has been working on compiling a floristic inventory of vascular and nonvascular plants in the Silver Peak mountain range of Esmeralda County, NV. Located about an hour from Bishop, CA, the area is high in biodiversity and is home to multiple rare plants and animals. These beautiful mountains are home to bristlecone pines (*Pinus longaeva*), mountain-top vernal pools, pinyon juniper forests, sagebrush steppes, creeks and mossy canyons, and alkali wetlands and hot springs. It's also rich in human history with many arrowheads and ruins to be seen. So far, close to 1800 collections have been made representing a little over 400 plant taxa! Nevada's botanical diversity is largely under-documented, and the Silver Peak Range is what's known as a "botanical black hole", so next season may bring some new and interesting finds as well. This unique area is in the backyard of the CNPS Bristlecone chapter—only about 30 miles as the crow flies from the Owens Valley!

Despite the lack of botanical documentation, we know that the Silver Peak Range is home to rare and endangered species, such as Tiehm's buckwheat (*Eriogonum tiehmii*) and Tecopa bird's beak (*Chloropyron tecopense*). Its proximity to other specialized habitats, such as those located in the White Mountains and Death Valley National Park in California, as well as the presence of unique ecosystems such as alkali wetlands lends potential for this area to host high levels of species richness and endemism. It also straddles the transition zone between the Great Basin and Mojave deserts, and it includes the northernmost extent of the western Joshua trees (*Yucca brevifolia*), a species predicted to undergo widespread extirpation in the southernmost region of its range. In addition to this, the rare wildflower Tecopa bird's beak grows in the area's wetlands and depends on groundwater for survival.

In its narrow habitat range, groundwater extraction for agriculture and geothermal energy threaten the Tecopa bird's beak and many other rare plants and animals found in this unique desert wetland. The subalpine peaks of the range descend into unusual geology that bears both diverse plant communities and mineral rich soil, some of which are notably high in lithium. Because of this, the region is a hot-spot for proposed lithium extraction, a critical mineral in our transition to renewable energy sources. This increase in demand for lithium has been dubbed the "White Gold Rush". This demand leaves the area immediately vulnerable to the destructive practices of resource extraction. As demand for minerals grows and new projects are being proposed on public lands, baseline biological data is needed to inform management decisions that can maximize protection of biodiversity.

Collecting herbarium specimen data and understanding geographic patterns of plant diversity can inform appropriate land use in order to reduce conflicts with sensitive resources, such as rare plants and ecological communities. My project will also provide much needed data for understudied rare plant species facing existential conservation threats. These factors also underscore the urgency and importance of a floristic inventory of this region. Without the generous funding and support of the CNPS Bristlecone chapter, this research would not have been possible.

If you'd like to volunteer to help with collecting efforts this summer, please get in touch with Peri Lee (ppipkin@calbg.org)! The season starts around May and goes through mid-July and offers a chance to see spring wildflower blooms; subalpine trails with views of the Sierras, Whites, and Death Valley; and beautiful desert scenery.

**Volunteer for Rare Plant Monitoring at Eureka Dunes, Death Valley National Park**

Volunteers are needed to help from the beginning of April through early May. If interested, please contact Carol Fields by email Carol_Fields@nps.gov or phone (760)786-3252.

**GLORIA Great Basin Peak Opportunity Fellowships 2023**

Through their new Peak Opportunity Fellowships, GLORIA Great Basin will fully support two students (upper-division undergraduate or graduate students) to join them on White Mountains or Sweetwater Mountains surveys this summer. We will provide the successful applicants with transportation, field gear, room and board, and wages (totaling $2,500 per student), and mentorship (e.g., facilitating networking, providing guidance on job applications, etc.) both leading up to and following the field campaign.

Fellowships will be awarded on a competitive basis. To apply, please submit a 1) a CV including 1–2 references, and 2) a 1-page statement that describes your current research interests, self-identification of axes of diversity, and how this fellowship will contribute to your future goals to brian@gloriagreatbasin.org. The **application deadline is April 1, 2023**.

**Seeds of Success, 2023 Field Positions**

The Seeds of Success program is led by the Bureau of Land Management in partnership with other groups, such as Chicago Botanic Garden. Its primary goal is "to collect, conserve, and develop native plant materials for stabilizing, rehabilitating, and restoring lands in the United States". A field crew is needed to make large seed collections from native species on BLM land, working out of the BLM Bishop Field Office. Local botanical enthusiasts are needed to fill two positions: a lead botanist and field technician. Gain valuable field botany skills while contributing to critical work in the native plant materials development process. Positions are 5–7 months long, approximately Apr 1st–Sep 1st, 2023. Senior Botanists: $31.22/hr; Lead Botanists: $22.60/hr; Field Technicians: $18.50/hr.

Learn more about the program at: https://www.blm.gov/programs/natural-resources/native-plant-communities/native-plant-and-seed-material-development/collection

Please direct any questions to Chris Woolridge at: cwoolridge@chicagobotanic.org

## Snowy Winter Welcome to New Members

Thank you for joining our chapter from across the state! Belinda in Camarillo, Javier in Fresno, Matthew in Mariposa, Steve in Nipomo, Emi in San Diego, Elizabeth and Samuel in San Francisco, we welcome you all with warm wishes.

## Up-Coming Events

**(For updated information, visit www.bristleconecnps.org/events)**

### Chapter Events

**Wednesday, March 15, 6:00 pm**
**Board Meeting via Zoom**
All members are welcome to join. Contact our Secretary, Kathleen Nelson, at secretary@bristleconecnps.org for the Zoom link.

**Saturday, March 18, 9:00 am**
**CNPS Bristlecone Chapter Plot,**
**Bishop Community Demonstration Garden in Bishop City Park, 688 N. Main St.**
Join Sue Weis every third Saturday, 9:00 am, to help work in our plot of native plants. Workdays will be canceled if raining or snowing. Questions? Contact sue.weis98@gmail.com

~~**Saturday, March 25, 10:00 am–1:00 pm**~~ **NEW DATE/TIME:**
**Sunday May 7, 9:00–1:00pm**
**Field trip - Rising from the ashes, Hogback Fire area near Lone Pine**
**Leaders: Richard Potashin & Nancy Hadlock**
Fires have been demonized for centuries. However, fires can produce a positive effect. Following wildland fires, some plant seeds are stimulated by the flames and fertilized by the ashes. What comes up the following years can be a profusion of plant species that have not been viewed for years. Join the BLM volunteer leaders in search of what has appeared this season following 2021's fire season.

Meet at Moffitt Ranch turn-off from Hwy 395 (about 3 miles south of Manzanar). High clearance vehicles recommended. Bring water, hats, snacks/lunch, boots. Any questions, contact 760-258-6574 or aspenluv1@gmail.com

### Other Events

**Thursday, March 23, 1:00–4:00 pm**
**CNPS Rare Plant Treasure Hunt and Vegetation Sampling Training, Online**
This is an introductory webinar for participants to build skills in vegetation sampling. Amy Patten and Jennifer Buck-Diaz will discuss applications of Rare Plant Treasure Hunt surveys and of fine-scale vegetation sampling, classification, and mapping. Registration for the free Zoom webinar at https://www.cnps.org/education/workshops

## Up-Coming Events

**(For updated information, visit www.bristleconecnps.org/events)**

**Friday–Sunday, April 21–23**
**Friends of the Inyo's Owens Lake Bird Festival**
**142 East Bush St., Lone Pine**
Since 2015, Friends of the Inyo's Owens Lake Bird Festival in Lone Pine, CA has been celebrating the migration of thousands of birds as they alight at Owens Lake to replenish their strength before continuing their transcontinental journey along the Pacific Flyway, which extends from Alaska to Patagonia. Owens Lake has been designated a Nationally Significant Important Bird Area by the National Audubon Society and the American Bird Conservancy.

This Festival is more than just about birding, and outings are designed to cover topics that include botany, photography, geology, local history and culture, and more to complement the experience. To find out the scheduled activities and register, go to: https://friendsoftheinyo.org/birdfestival/

## Please send any submissions to us by April 15, 2023 for the next issue.

**Bristlecone Chapter Directory**

President: Kelly Bahr kbahr@cnps.org
Vice President: **OPEN**
Secretary: Kathleen Nelson secretary@bristleconecnps.org
Treasurer: Sue Weis treasurer@bristleconecnps.org
Chapter Council Delegate: Stephen Ingram stephen@ingramphoto.com
Conservation/Partnerships: **OPEN**
Education: **OPEN**
Programs: **OPEN**
DeDecker Grants: Kathleen Nelson secretary@bristleconecnps.org
Field Trips: **OPEN**
Bishop Plant Sales: Katie Quinlan plant_sale@bristleconecnps.org
Publicity: Gaylene Kinzy gkinzyreische@gmail.com
Newsletter: Elaine Chow newsletter@bristleconecnps.org
Membership: Sue Carter membership@bristleconecnps.org
Website: **OPEN**
T-shirt Sales: Katie Quinlan plant_sale@bristleconecnps.org
DeDecker Gardener: Kelly Bahr kbahr@cnps.org

**The California Native Plant Society**
Bristlecone Chapter
P.O. Box 364
Bishop, CA 93515-0364
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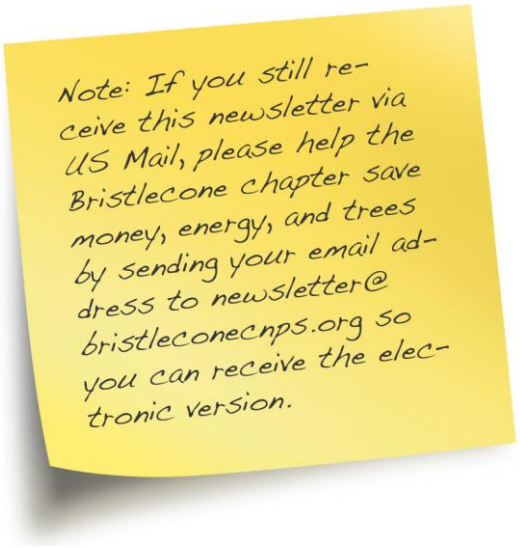


# Membership

*The California Native Plant Society is an organization of laypersons and professionals united by an interest in the plants of California. It is open to all. The society, working through its local chapters, seeks to increase the understanding of California's native flora and to preserve this rich resource for future generations.*
**To join or renew online**: Go to www.cnps.org and click JOIN/RENEW (at the top-right or select it after clicking the menu button at the top left of the webpage) or mail the form below:

**Name:** _____
**Address:** _____
**City:** _____ **State:** _____
**Zip Code:** _____ **Phone:** _____
**Email:** _____
I wish to be affiliated with the Bristlecone Chapter: _____
Other: _____

**Membership Category**

| | |
|---|---|
| __ Student / Fixed Income | $25 |
| __ Individual | $50 |
| __ Plant Lover | $120 |
| __ Supporter | $500 |
| __ Patron | $1,000 |
| __ Benefactor | $2,500 |
| __ Steward | $5,000 |
| __ Guardian | $10,000 |
| __ Additional Contribution | _____ |

**Membership Type:** ___ New Member
___ Renewal

**Mail To / Make Payable To:**
California Native Plant Society, Attn: Membership
2707 K Street, Suite 1
Sacramento, CA 95816

**Gift Contribution:** _____Wherever needed ☐
Specific Area: _____

**Go Perennial!** To become a monthly sustaining (perennial) member, join or renew online at **www.cnps.org/perennial**